

STUDY MATERIAL
CLASS XII (Informatics Practices)

INDEX

Sr. No.	Contents	Page No.
1	Syllabus	
2	Unit-1: Introduction to Computer System	1-7
3	Unit-2: Introduction to Programming	8-58
4	Unit-3: Relational Database Management System	59-81
5	Unit-4: IT Applications	82-86
6	Sample Question Paper	87-98
7.	Previous Year CBSE Question Paper (2014)	99-106

Informatics Practices (065)

COURSE DESIGN CLASS XII (2014-15)

Unit	Topic	Marks
1	Networking and Open Standards	10
2	Programming	25
3	Relational Database Management System	30
4	IT Applications	05
		70

Unit 1: Networking and Open Standards

Computer Networking:

- Networking: a brief overview;
- Communication Media: Wired Technologies — Co-Axial, Ethernet Cable, Optical Fiber; Wireless Technologies — Blue Tooth, Infrared, Microwave, Radio Link, Satellite Link;
- Network Devices: Hub, Switch, Repeater, Gateway — and their functions;
- Types of network: LAN, MAN, WAN, PAN;
- Network Topologies: Star, Bus, Tree;
- Network Protocols: HTTP, TCP/IP, PPP;
- Identifying computers and users over a network: Basic concept of domain name, MAC (Media Access Control), and IP Address, domain name resolution;
- Network security: denial of service, intrusion problems, snooping;
- Internet Applications: SMS, Voice Mail, Electronic Mail, Chat, Video Conferencing;
- Wireless/Mobile Communication: GSM, CDMA, WLL, 3G, 4G;
- Network Security Concepts: Cyber Law, Firewall, Cookies, Hackers and Crackers.

Open Source Concepts:

- Open Source Software (OSS), common FOSS/FLOSS examples (e.g., GNU/Linux, Firefox, OpenOffice, Java, Netbeans, MySQL), common open standards (WWW, HTML, XML, ODF, TCP, IP).
- Indian Language Computing: character encoding, UNICODE, different types of fonts (open type vs true type, static vs dynamic), Entering Indian Language Text — phonetic and key map based.

Unit 2: Programming

Review of Class XI;

Programming Fundamentals

(Refer to Appendix A for Swing Control Methods & Properties, and Appendix B for sample guidelines of GUI Programming)

- Basic concept of Access specifier for class members (data members and methods).
- Basic concept of Inheritance.
- Commonly used libraries:
 - String class and methods: toString(), concat(), length(), toLowerCase(), toUpperCase(), trim(), substring()
 - Math class methods: pow(), round()
- Accessing MySQL database using ODBC/JDBC to connect with database.
- Web application development: URL, Web Server, Communicating with the web server, concept of Client and Server Side.
- HTML based web pages covering basic tags — HTML, TITLE, BODY, H1..H6, Paragraph (P), Line Break (BR), Section Separator (HR), FONT, TABLE, LIST (UL, OL), FORM.
- Creating and accessing static pages using HTML and introduction to XML.

Unit 3: Relational Database Management System

Review of RDBMS from Class

XI Database Fundamentals

- Concept of Database Transaction, Committing and revoking a Transaction using COMMIT and ROLLBACK.
- Grouping Records: GROUP BY, Group functions - MAX(), MIN(), AVG(), SUM(), COUNT(); using COUNT(*), DISTINCT clause with COUNT; Group Functions and Null Values.
- Displaying Data From Multiple Tables: Cartesian product, Union, concept of Foreign Key, Equi-Join
- Creating a Table with PRIMARY KEY and NOT NULL constraints, Viewing Constraints, Viewing the Columns Associated with Constraints using DESC command.
- ALTER TABLE for
 - deleting column(s), modifying data type(s) of column(s),
 - adding a constraint, enabling constraints, dropping constraints.
- DROP Table for deleting a table

Unit 4: IT Applications

- Front-end Interface: Introduction; content and features; identifying and using appropriate component (Text Box, Radio Button, CheckBox, List, etc., as learnt in Unit 2 (Programming)) for data entry, validation and display.
- Back-end Database: Introduction and its purpose, exploring the requirement of tables and its essential attributes.
- Front-End and Database Connectivity: Introduction, requirement and benefits.
- Demonstration and development of appropriate Front-end interface and Back-end Database for e- Governance, e-Business and e-Learning applications.
- Impact of ICT on society: Social and Economic benefits.

In each of the above domains, identify at least two real-life problems, list the expected outputs and the input(s) required for the output, and describe the problem solving approach and develop relevant front-end interface and back-end database.

UNIT – 1

NETWORKING AND OPEN STANDARDS

Important Definitions

Network: A Computer Network is a number of computers (Usually called terminals interconnected by one or more transmission paths. **Need of Networking:**

1. Resource Sharing
2. File and data sharing.
3. Data security and centralized security
4. High Reliability :
5. Communication Media

Application of Networks

1. Sharing of data, services and resources
2. Access to remote database
3. Communication facilities

Elementary Terminology of Networks :

1. Nodes (Workstations):- The term nodes refer to the computers that are attached to a network and are seeking to share the resources.

2. Server:- A computer that facilitates the sharing of data, software and hardware resources on the network

3. Network Interface Unit (NIU) or NIC:- An interpreter that helps establish a connection between the servers and workstations.

4. MAC Address:-It refers to the physical address assigned by NIC manufacturers. It is a unique 6 byte address separated by colon where first three bytes refer to manufacturer id and last three are card no. *e.g. 10:B5:03:63:2E:FC*

4. IP Address:- Every machine on a TCP/IP Network has a unique identifying no.

called an IP Address. *e.g. 216.27.61.231*

5. Domain Name:-It is a unique name assigned to a website. It has three parts: i) www

ii) Name describing the website's purpose iii) TLD (Top Level Domain) such as .com, .net, .in, .edu, .org etc.

6. DNS (Domain Name Resolution):- It refers to the process of obtaining corresponding IP Address from a domain name.

NETWORK TOPOLOGIES : The pattern of interconnection of nodes in a network is called Topology.

- 1) Bus Topology or Linear Topology :** In this topology a single length of the transmission medium is used onto which the various nodes are attached. The transmission from any station travels the length of the bus, in both directions and can be received by all other stations. The bus has a terminator at either end which absorbs the signal, removing it from the bus.

Characteristics:

1. Short cable length and Simple wiring layout
2. A single cable called trunk is used through which all data propagates and to which all nodes are connected
3. Easy to extend
4. There is no central point of failure on a bus because there is no hub.
5. Entire network shuts down if there is break in the main cable.
6. Terminators are required at both ends of the backbone cable.
7. Addition of nodes negatively affects the performance of the whole network.

2) Ring Topology: In a ring topology each node is connected to two and only two neighboring nodes. Data is accepted from one of the neighboring nodes and is transmitted onwards to another. Thus data travels only in one direction.

1. Every computer serves as a repeater to boost signals
2. Short cable length.
3. Suitable for optical fiber
4. Difficult to add computers
5. More expensive
6. If one computer fails, whole network fails
7. Data clashes can also occur if two machines send messages at the same time.

3) Star Topology: A star topology is designed with each node connected directly to the server via hub or switch. This topology is used in most existing information network. Data on a star network passes through the hub or concentrator before continuing to its destination.

1. Easy to install and wire
2. No disruptions to the network when connecting or removing devices.
3. Easy to add new station as each station has direct cable connection to hub or switch.
4. Depending on the intelligence of hub, two or more computers may send message at the same time
5. One malfunctioning node does not affect the rest of the network.
6. Required more cable length than a linear topology.
7. All signals transmission through the hub; if down, entire network down

4) Tree Topology

A tree topology (hierarchical topology) can be viewed as a collection of star networks arranged in a hierarchy. This tree has individual peripheral nodes (e.g. leaves), which are required to transmit to and receive from one node to other node and are not required to act as repeaters or regenerators. Unlike the star network, the functionality of the central node may be distributed.

As in the conventional star network, individual nodes may be isolated from the network in case of failure, if a link connecting a leaf fails, that leaf is isolated. If a connection to a non-leaf node fails, an entire section of the network becomes isolated from the rest.

NETWORK DEVICES

1. MODEM(MODulator DEModulator) : Modem is a device that converts digital data originating from a terminal or computer to analog signals used by voice communication network such as the telephone system.

At one end, modems convert the digital pulse to audible tones and convert audio tones back to digital pulses at the other

2. RJ –45 Connector:

The RJ-45 is a single line jack for digital transmission over ordinary phone wire. It is a 8 wire connector which is commonly used to connect computers on the LAN(especially Ethernets). RJ – short for Registered Jack – 45

- 3. Hub:** Hub is a device used to connect several computers together. It is a multi-port card. Hubs forward any data packets including e-mail, word processing documents or print request – they receive over one port from one workstation to all of their remaining ports
- 4. Switches :** Switches are smart hubs that send data directly to the destination rather than everywhere within network. When the switch receives a packet, the switch examines the destination and source hardware address and compare them to a table of a network segments and addresses. If the segments are the same the packet is dropped and if the different then the packet is forwarded to the proper segments.
- 5. Repeaters :**A repeater is a device that amplifies a signal being transmitted on the network. Since a signal loses strength as it passes along a cable, it is often necessary to boost the signal with this device.. The repeater electrically amplifies the signal it receives and rebroadcasts it.
- 6. Router:** A device that works like a bridge but can handle different protocols, is known as router. It is used to separate different segments in a network to improve performance and reliability.
- 7. Gateway :**A network device that connects dissimilar networks. It establishes an intelligent connection between a local network and external network with completely different structures.
- 8. Bridges :** It is used to interconnect two LANs which are physically separate but logically same.

Types of Networks

1. **LAN(Local Area Network):-**Small computer networks that are confined to a localized area(e.g. in an office, a building, or a factory)
2. **MAN(Metropolitan Area Network):** These are spread over a city. E.g. Cable TV Networks.
3. **WAN(Wide Area Network):-**These are spread across countries and facilitate fast and efficient exchange of information at lesser costs and high speeds. E.g. Internet
4. **PAN(Personal Area Network):** Refers to a small network of communication capable IT enabled devices within a range of upto 10 meters. It can be wired(using USB) or wireless(using Bluetooth)

Communication Media:-

Wired Transmission Media:- Twisted

Pair:

A cable composed of two small-insulated conductors twisted together without a common covering. Also known as copper pair. The wires are twisted around each other to minimize interference from other twisted pairs in the cable. Twisted pairs have less bandwidth than coaxial cable or optical fiber.

Coaxial Cables:

A cable consisting of two concentric conductors (an inner conductor and an outer conductor) insulated from each other by a dielectric, commonly used for the transmission of high-speed electronic data and/or video signals. Coaxial cable is used as a transmission line for radio frequency signals, in applications such as connecting radio transmitters and receivers with their antennas, computer network (Internet) connections, and distributing cable television signals.

Optical Fiber:

A flexible optically transparent fiber, usually made of glass or plastic, through which light can be transmitted by successive internal reflections.

An optical fiber is made up of the core, (carries the light pulses), the cladding (reflects the light pulses back into the core) and the buffer coating (protects the core and cladding from moisture, damage,

etc.). Together, all of this creates a fiber optic, which can carry up to 10 million messages at any time using light pulses.

Ethernet Cables:

Ethernet is used to connect computers in a company or home network as well as to connect a single computer to a cable modem for Internet access.

Wireless Technologies:

Bluetooth:

Bluetooth is an open wireless technology standard for exchanging data over short distances (using short length radio waves) from fixed and mobile devices, creating personal area networks (PANs) with high levels of security.

Infra Red Technologies:

Infrared is electromagnetic energy at a wavelength or wavelengths somewhat longer than those of red light. IR wireless is used for short- and medium-range communications and control.

IR wireless technology is used in intrusion detectors; home entertainment control units; robot control systems; cordless microphones, headsets, modems, and printers and other peripherals. IR wireless cannot pass through walls. Therefore, IR communications or control is generally not possible between different rooms in a house, or between different houses in a neighborhood.

Microwave Link:

A microwave link is a communications system that uses a beam of radio waves in the microwave frequency range to transmit video, audio, or data between two locations, which can be from just a few feet or meters to several miles or kilometers apart.

Microwave links are commonly used by television broadcasters to transmit programmes across a country, for instance, or from an outside broadcast back to a studio.

Satellite Link:

A satellite link is a communications subsystem that involves a link between a transmitting earth station and a receiving earth station via a communications satellite.

Network Security:

Network security consists of the provisions made in an underlying computer network infrastructure, policies adopted by the network administrator to protect the network and the network-accessible resources from unauthorized access.

Threats

Snooping: Refers to unauthorized access of someone else's data, email, computer activity or data communication.

Eavesdropping: Act of secretly listening someone else's private communication/data or information.

Denial of Services Attack: Attacks that prevent the legitimate users of the system, from accessing the resources, information or capabilities of system.

Measures of security:

Firewall: System designed to prevent unauthorized access to or from a private network. Proper security policy for your organization. Giving file permissions

FREE AND OPEN SOURCE SOFTWARE

Free Software: It means software is freely accessible, free to use, changed, improved, copied, and distributed without any payments.

Four kinds of freedom

Freedom to run the program for any purpose Freedom to redistribute copies.

Freedom to study how the program works

Freedom to improve the program and release your improvements to the public.

Open Source Software:

Definition: The categories of software / programs whose Licenses do not impose many conditions.

Features:

- Freedom to run and use the software

- Modify the program

- Redistribute copies of either original or modified program (without paying royalties to previous developers).

It can be freely used for modifications, but it does not have to be free of charge. Its source code is available.

Criteria for the distribution of open source software

- Free distribution

- Source code

- Derived works

- Integrity of the Author's Source code

- No discrimination against fields of endeavor.

- Distribution of License

- License must not be specific to a product

- License must not restrict other software **FLOSS**

(free libre and open software):

- Free software- no payments

- Open source software- for technical progress

OSS

- OSS- Source code is available

(Open source modified and redistributed software) free of cost or with nominal charge.

FSF (Free Software Foundation)

Non-profit organization created for the purpose of supporting free software movement. **GNU**

(GNUs Not Unix)

To create a system compatible to UNIX but not identical with it.

Now it offers a wide range of software, including applications apart from operating system.

Proprietary software (neither open nor freely available)

Its use is regulated and further distribution and modification is either forbidden or requires special permission by the supplier. Source code is not available.

Freeware

- Free of cost

- Copying and further distribution but not modification.

- Source code is not available

 - E.g. Microsoft Internet Explorer

Shareware

- Right to redistribute copies

- After a certain period of time license fee should be paid.

- Source code is not available.

- Modifications are not possible.

- Main aim is to increase user's will to pay for the software. Limits functionality after a trial period of 1-3 months.

Some Open Source Softwares

LINUX

- Linux: - free and open source operating system software.

- It can be downloaded from www.linux.org

Linux is a part of popular web server program LAMP (Linux, apache, MySql, PHP).

Mozilla Freeware

No source code available

Free internet browsing software

It can be downloaded from www.mozilla.org

Apache Server

The most common web server (or HTTP server) software on the Internet.

Apache is designed as a set of modules, enabling administrators to choose which features they wish to use and making it easy to add features to meet specific needs including handling protocols other than the web-standard HTTP.

Apache HTTP server is an open source web server.

It is component of LAMP.

Proprietary Standards and Open Standards.

Proprietary standards are those for which users have to buy license to use them. For e.g. MS

Office format .doc, .ppt, .xls etc

Open Standards are internationally accepted technical standards that guarantee that data can be exchanged across platforms and for any applications. Open is feely open to all.

Advantages of Open Standards:

Making the data accessible to all.

It ensures data is application and platform independence.

Diversity and Interoperability in the Industry i.e. it enables business and people to go for any technology of their choice as per their needs and budget.

E.g.: ASCII Characters, HTML file, Joint Photographic Expert Group, Portable Network Graphic etc.

Ogg Vorbis:

It is a new audio compression which is open format developed by Xiph.org. It is roughly comparable to mp3, mpeg-4 formats and is completely free, open and unpatented.

Indian Language Computing:

Indian Language computing refers to ability to interact in diverse Indian language on electronic system.

Representing characters in Memory:

ASCII: American Standard Code for Information Interchange is widely used alphanumeric code in most microcomputers and minicomputers and in many mainframes. It is 7 bit code hence it can represent standard $2^7 = 128$ characters.

ISCII: Indian Standard Code for Information Interchange (ISCII) is an eight bit code capable of coding 256 characters. It retains all ASCII characters and also offers coding for Indian Scripts. Thus it is also called as Indian Script code for Information Interchange.

Transliteration: When we type Indian Language words phonetically in English script and tool will automatically convert them into corresponding language words called as transliteration. E.g. UNICODE for typing hindi letters

Unicode:-

Unicode provides a unique number for every character, no matter what the platforms, no matter what the program, no matter what the language. Unicode can represent more than 94000 characters.

Unicode standard has incorporated Indian Scripts under the group named Asian scripts. Indian scripts included as Devnagari, Bengali, Gurmukhi, Gujarati, Oriya, Tamil, Telgu, kannada, and Malayalam.

Fonts:

A Font refers to a set of displayable text characters called glyphs, having specific style and size. There are two categories of font: **True Type Font** and **Open Type Font**.

True Type Font: It is developed by Apple and licensed to Microsoft. It is 8 bit font which is compatible with Microsoft Windows and MAC OS.

Open Type Font: It is the extension of the True Type Font Format which is 16 bits font and support 65536 characters (Unicode characters).

Indian Language Text Entry:

Many Tools / software have been developed to facilitate the typing of Indian Language text. There are two types text entries:

Phonetic Text Entry: Words typed as per their pronunciation in English script and later on converted to Corresponding (Hindi/Gujarati) language work is known as phonetic text entry.

Key map based text entry: When you type text from a keyboard having key mapping of Indian language characters, is known as key map based text entry..

UNIT – 2 PROGRAMMING

JAVA GUI PROGRAMMING REVISION TOUR –I

Programming Fundamentals

Token

The smallest individual unit in a program is known as Token. Java has the following types of tokens:- Keyword ,Identifier, Literals, Punctuators and operators.

Keywords:

The following list shows the reserved words in Java. These reserved words may not be used as constant or variable or any other identifier names.

abstract	assert	boolean	break
byte	case	catch	char
class	const	continue	default
do	double	else	enum
extends	final	finally	float
for	goto	if	implements
import	instanceof	int	interface

long	native	new	package
private	protected	public	return
short	static	strictfp	super
switch	synchronized	this	throw
throws	transient	try	void
volatile	while		

Literals:

A literal is a source code representation of a fixed value. They are represented directly in the code without any computation. Literals can be assigned to any primitive type variable. For example:

```
byte a = 68; char
a = 'A'
```

byte, int, long, and short can be expressed in decimal(base 10), hexadecimal(base 16) or octal(base 8) number systems as well.

Prefix 0 is used to indicate octal and prefix 0x indicates hexadecimal when using these number systems for literals. For example:

```
int decimal = 100;
int octal = 0144; int
hexa = 0x64;
```

String literals in Java are specified like they are in most other languages by enclosing a sequence of characters between a pair of double quotes. Examples of string literals are:

```
"Hello World"
"two\nlines"
"\\"This is in quotes\""
```

String and char types of literals can contain any Unicode characters. For example:

```
char a = "\u0001";
String a = "\u0001";
```

Identifiers

All Java components require names. Names used for classes, variables and methods are called identifiers.

In Java, there are several points to remember about identifiers. They are as follows:

- All identifiers should begin with a letter (A to Z or a to z), currency character (\$) or an underscore (_).
- After the first character identifiers can have any combination of characters.
- A key word cannot be used as an identifier.
- Most importantly identifiers are case sensitive.
- Examples of legal identifiers: age, \$salary, _value, __1_value
- Examples of illegal identifiers: 123abc, -salary

Java Operators

Java provides a rich set of operators to manipulate variables. We can divide all the Java operators into the following groups:

- Arithmetic Operators
- Relational Operators
- Bitwise Operators
- Logical Operators
- Assignment Operators
- Misc Operators

Data Types

There are two data types available in Java:

- Primitive Data Types
- Reference/Object Data Types

Primitive Data Types:

There are eight primitive data types supported by Java. Primitive data types are predefined by the language and named by a keyword. Let us now look into detail about the eight primitive data types.

Byte, short, int, long, float, double, Boolean, char Reference

Data Types:

- Reference variables are created using defined constructors of the classes. They are used to access objects. These variables are declared to be of a specific type that be changed. For example, Employee, Puppy etc.
- Class objects, and various type of array variables come under reference data type.
- Default value of any reference variable is null.
- A reference variable can be used to refer to any object of the declared type or any compatible type.
- Example: `Animal animal = new Animal("giraffe");`

Scope of a variable:-The part of program where a variable is usable is called scope of a variable.

Block: A group of statement enclosed in pair of parenthesis is called block or a compound statement

Programming Construct

1. Sequence
2. Selection:-Simple if, If-Else, else if ladder, Switch
3. Iteration:- while ,do-while, for loop

Entry control loop/Pre-tested loop/Top-tested loop

An entry control loop first test the terminating condition and then executes the loop body. If the condition is found true the loop body is execute otherwise the loop terminates. In case if the condition is false in first in the first time only then loop will not get executes even once.

Exit control loop/Post- tested loop/Bottom-tested loop

An exit control loop first executes the loop body and then test the terminating condition .if the condition is found true the loop body executed again otherwise the loop terminates. .In case if the condition is false in first time only then the loop will still get execute at least once.

Commonly available Swing Controls in Java

- **JPanel** is Swing's version of the AWT class Panel and uses the same default layout, Flow Layout. JPanel is descended directly from JComponent.
- **JFrame** is Swing's version of Frame and is descended directly from that class. The components added to the frame are referred to as its contents; these are managed by the content Pane. To add a component to a JFrame, we must use its content Pane instead.
- **JInternalFrame** is confined to a visible area of a container it is placed in. It can be confined , maximized and layered.
- **JWindow** is Swing's version of Window and is descended directly from that class. Like Window, it uses Border Layout by default.
- **JDialog** is Swing's version of Dialog and is descended directly from that class. Like Dialog, it uses BorderLayout by default. Like JFrame and JWindow, JDialog contains a rootPane hierarchy including a contentPane, and it allows layered and glass panes. All dialogs are modal, which means the current

thread is blocked until user interaction with it has been completed. `JDialog` class is intended as the basis for creating custom dialogs; however, some of the most common dialogs are provided through static methods in the class `JOptionPane`.

- **JLabel**, descended from `JComponent`, is used to create text labels.
- The abstract class `AbstractButton` extends class `JComponent` and provides a foundation for a family of button classes, including **JButton**.
- **JTextField** allows editing of a single line of text. New features include the ability to justify the text left, right, or center, and to set the text's font.
- **JPasswordField** (a direct subclass of `JTextField`) you can suppress the display of input. Each character entered can be replaced by an echo character. This allows confidential input for passwords, for example. By default, the echo character is the asterisk, `*`.
- **JTextArea** allows editing of multiple lines of text. `JTextArea` can be used in conjunction with class `JScrollPane` to achieve scrolling. The underlying `JScrollPane` can be forced to always or never have either the vertical or horizontal scrollbar; `JButton` is a component the user clicks to trigger a specific action.
- **JRadioButton** is similar to `JCheckBox`, except for the default icon for each class. A set of radio buttons can be associated as a group in which only one button at a time can be selected.
- **JCheckBox** is not a member of a checkbox group. A checkbox can be selected and deselected, and it also displays its current state.
- **JComboBox** is like a drop down box. You can click a drop-down arrow and select an option from a list. For example, when the component has focus, pressing a key that corresponds to the first character in some entry's name selects that entry. A vertical scrollbar is used for longer lists.
- **JList** provides a scrollable set of items from which one or more may be selected. `JList` can be populated from an `Array` or `Vector`. `JList` does not support scrolling directly, instead, the list must be associated with a scroll pane. The view port used by the scroll pane can also have a user-defined border. `JList` actions are handled using `ListSelectionListener`.
- **Focus:-** The control under execution is said to have the focus. The control having the focus obtains input from the user.
- **getText():-** `getText()` method is used to obtain the text from a `JTextField` during the run time.
- **setText():-** `setText()` method is used to set or change the text of a `JTextField` during run time.

GUI DIALOGS: -

A Dialog: It is a small separate window that appears to either provide or request to/from the user.

Java Swing provides four dialog types:

- a) **JDialog** (General purpose dialogs)
- b) **JOptionPane** (Pre-defined styles)
- c) **JFileChooser** (dialog for choosing files) **and**
- d) **JColorChooser** (dialog for choosing colour)

JOptionPane dialog Type:

There are four built-in dialog styles:

- i. Message dialog_ **JOptionPane.showMessageDialog()** displays the message dialog
- ii. Input dialog_ **JOptionPane.showInputDialog()** displays the input dialog
- iii. Confirm dialog_ **JOptionPane.showConfirmDialog()** displays the confirm dialog
- iv. Option dialog_ **JOptionPane.showOptionDialog()** displays the option dialog

Solved Questions

Q1. Name any two Object Oriented Programming languages?

Ans. C++ and Java

Q2. Why is java called a platform independent language?

Ans. Java program can be easily moved from one computer system to another ,anywhere anytime. Changes and upgrade in operating system, processors and system resources will not force any change in the java program. Hence it is called a platform independent language.

Q3. Why do we write a comment in a program? What are two ways of writing comment in a java program?

Ans. Comments are added to a program for making it more readable and understandable.

Single line comment : //

Multi –line Comment:- /*-

-----*/

Q4. What is a syntax error in context of a program?

Ans. Error in the way of writing a statement in a program, yields a syntax error.

Q5. Name and explain the usage of nay two data types used in java to store numbers with decimals.

Ans. Two data types available in java for storing numbers with decimals are

1. float:-for single precision floating point values for example float num=20.0F
2. double: for double precision floating point value. This is the default data type for decimal numbers for example double num=15.0

Q6. Name and explain the usage of any one relational and one logical operator in java.

Ans. One relational operator in java is == .This operator results in true if both its operands are equal otherwise false. One logical operator in java is&&.This operator is used to combine two logical values. The result of the && will be true if and only if both its operands (both condition) are true otherwise false.

Q7. What is the difference between = and == operator in java?

Ans. Represent an assignment operator. It sets the value of the variable on its left side with the result of expression on its right side.

= = represents a equality operator. It checks for the equality of both its operands. If both the operands are equal, condition evaluates to true otherwise to false .

Q8. What is the purpose of break statement in java?

Ans. Break is used to terminate the current switch statement or the loop.

Q9. What is the purpose of continue statement in java?

Ans. Continue statement skips the remaining part of the current loop begins the next iteration of the loop.

Q10. What is the difference between Entry controlled loop and exit controlled loop? Ans. Entry controlled loop:- In this , condition is tested before entering into the loop, if the testcondition evaluates to true, the loop body executed. The loops belonging to this category are **for loop and while loop.**
Exit Controlled loop:- this loop first executes the loop body and then evaluates the continuation condition. The loop belonging to this category is **do-while loop.** This types of loops are useful when you have to execute the loop body atleast once irrespective of the test-condition's evaluation such as for displaying menu option

Output Finding Questions:

Q.1. Write the output of the following code: `int x,y=0; for(x=1;x<=5;++x) y=x++; --y`

Ans. x=7,y=4

Q.2. Write the output of the following code

```
Int f=1,i=2; do{ f*=I;
}while(++i<5);
System.out.println(f);
```

Ans. f= 24

Q.3. What will be the value of j and k after execution of the following code:

```
int j=10,k=12;
if(k>=j) { k=j;
j=k;
}
```

Ans. j=10,k=10

Q.4. How many times ,the following loop gets executed?

```
i=0; while(i>20)
{
//statements
}
```

Ans: zero times

Q,5, How many times ,the following loop gets executed?

```
i=0; do{
//statements
}while(i>20);
```

Ans. one time

Q.6. What will be the contents of TextField after exec using the following statement:

```
int num=4;
num=num+1; if(num>5)
jTextField1.setText(Integer.toString(num)); else
jTextField1.setText(Integer.toString(num*4));
```

Ans. 20

Q.7.find the output int

```
number1=7,number2=8; int
second=73;
if(number1>0||number2>5)
if(number1>7)
jTextField1.setText("code worked"); else
jTextField1.setText("code might work");
else
```

```
textField1.setText("code will not work ");  
work
```

Ans. code might

Q.8. How many times will the following loop get executed?

```
x=5; y=36; while(x<=y)  
{ x+=6;  
}
```

Q.9. What will be the content of the JTextArea1 after executing the following code?

```
int num=1;  
do {  
jTextArea1.setText(Integer.toString(++num)+"\n");  
num=num+1;  
}while(num<=10);
```

Ans. 10

Q.10. Give the output for the following code fragment:

```
v=20; do{  
jOptionPane.showMessageDialog(numm,v+"");  
}while(v<50);  
jOptionPane.showMessageDialog(numm,v+"");
```

Ans. infinite loop

Q.11. Give the value after executing following java code. Also find how many times the following loop will execute?

```
int a=10; int  
b=12; int  
x=5; int  
y=6;  
while(a<=b)  
{ if(a%2==)  
x=x+y;  
else x=x-y;  
a=a+1;  
}
```

Ans. x=11

Q.12. What will be the output produced by following code fragment?

```
float x=9; float  
y=5; int  
z=(int)(x/y);  
switch(z) { case  
1: x=x+2; case  
2: x=x+3;  
default: x=x+1;  
}
```

```
System.out.println("value of x:"+x);
```

Ans. 15

Q.13. Predict the output of the following code fragment:

```
int i,n;  
n=0;i=1;  
do {  
n++;i++;  
}while(i<=5);
```

Ans. 6

Q.13. What will be the values of x and y after executing the following expressions.

```
int x=20,y=35;  
x= y++ + x++;  
y= ++y + ++x;
```

Ans x=56, y=93

Q.14. What will be the values of x and y after executing the following expressions.

```
int y=-1;
System.out.println("x:"+(-y--));
System.out.println("y:"+y);
```

Ans. x:= -1 ,y=-2

Q.15. What will be the values of x and y after executing the following expressions.

```
int x = 45;
x = x + x++;
```

```
System.out.println(x);
```

```
int y = 45; y =
```

```
y++ + y;
```

```
System.out.println(y);
```

Ans .x=90 , y=91

Q.16. What values will be assigned to the variable ua,ub,uc and fail after execution of the following program segment: int i=0,ua=0,ub=0,uc=0,fail=0; while(i<=5){ switch(i++)

```
{ case 1:++ua; case
2:++ub;uc++;break;
case 3;
case 4:++uc;ua++;ub++;break;
default:++fail;
}
```

Ans. ua=1, ub=1, uc=0

Q.17. Predict an output of the following code fragment:

```
int i=1,j=0,n=0;
while(j<4) {
for(j=1;j<=I;j++)
{ n+=1;
i=i+1;
}
System.out.println(n);
}
```

Ans. 6

Q.18. Give the output of the following code:

```
int m=100;
while(m>0)
{ if(m<10)
break;
m=m-10;
}
System.out.println("m is "+m);
```

Ans. 0

Error Finding Questions:

Q.1. The following code has some errors. Rewrite the corrected code:

```
int i=2,j=5; while(j>i
{jTextField1.getText("j is greater");
j--;++ I;
}
```

JOptionPane.showMessageDialog("Hello"); Q.2.

Identify the errors:

```
switch(ch)
{ case 'a':
case 'A':
```

```

case 'e':
case 'E':
case 'i':
case 'E':
case 'u':
case 'U':++vowels; break;
default:++others;

```

Ans: Two case constant doesn't have the same value

```

Q.3. int j=5; i==j+5; if(i=j)
jTextField1.setText("I and j are equal"); else
jTextField1.setText(" I and j are unequal");

```

```

Ans. int i,j=5; i=j+5; if(i==j)
jTextField.setText("I and j are equal"); else
jTextField1.setText(" I and j are unequal");

```

Q.4. Rewrite the code after making correction. Underline the correction. Int sum;value;inct;

```

Int i
For(i==0;i<=10;i++)
Sum=sum+I;
Inct++; Ans. int
sum,value,inct;
int i;
for(i=0;i<=10;i++)
sum=sum+i; inct++;

```

Q.5. The following code has some error(s).Rewrite the correct code underlining all the corrections made.

```

Int y=3;
Switch(y) {
case 1: System.out.println("yes its one"); case >2:
System.out.println("yes it is more than two"); break;
case else: System.out.println("invalid number");
Ans. int y=3; switch(y) {
case 1 : System.out.println("yes its one"); break;
case 2: System.out.println("yes its more than two");
break;
default: System.out.println("invalid number");
}

```

Q.6. Rewrite the following java code after underlining the correction made:

```

int x==0;
int n=Integer.parseInt(jLabel1.getText()); Ans.
int x=0;
int n=Integer.parseInt(jLabel1.getText());

```

Q.7. find out errors if any:

```

M=1;n=0;
For(;m+n<19;++n)
System.out.println("hello");
M=m+10;
Ans. m=1;n=0; for(;m+n<19;++n)
System.out.println("hello"); m=m+10;

```

Q.8. The following code has some error(s). Rewrite the correct code underlining all the corrections made.

```
int y=6,p;  
Do  
{ y=3.14*y;  
p=y%10;  
If p=2  
System.out.print("two");  
While(y>1)  
Ans.int y=6,p;  
do {  
y=3.14*y;  
p=y%10; if(  
p==2)  
System.out.print("two");  
}while(y>1);
```

Rewrite Questions

Q.1. Rewrite the following program code using a for loop:

```
int I,sum=0; while(I<10)  
{ sum+= I  
;  
I+=2;  
} Ans.  
int I,sum=0;  
for(I=0;I<10; I+=2)  
{  
Sum+=I;  
}
```

Q.2. rewrite the following code using while loop: int

```
i,j;  
for(i=1;i<=4;i++)  
{ for(j=1;j<=I;++j)  
System.out.print(j);  
}  
System.out.println(); }  
Ans. int  
i=1,j;  
while(i<=4)  
{ J=1;  
while(j<=i)  
{  
System.out.print(j);  
++j; }  
i++;  
System.out.println();  
}
```

Q.3. Write a equivalent while loop for the following code:

```
int sz=25; for(int i=0,sum=0;i<sz;i++) sum+=I;
```

```
System.out.println(sum);
```

```
Ans. int sz=25; int
```

```
i=0,sum=0; while(i<sz)
```

```
{ sum+=i;
```

```
i++;
```

```
}
```

```
System.out.println(sum);
```

Q.4.Rewrite the following if-else segment using switch –case statement

```
char ch='A'; if(ch=='A')
```

```
System.out.println("Account");
```

```
if((ch=='C')||(ch=='G'))
```

```
System.out.println("Admin"); if(ch=='F')
```

```
System.out.println("advisor");
```

```
Ans. char ch='A';
```

```
switch(ch) {
```

```
case 'A':System.out.println("account");
```

```
break; case 'C': case 'G':
```

```
System.out.println("admin"); break;
```

```
case 'F': System.out.println("advisor");
```

```
}
```

Q..5. Rewrite the following code using while loop int

```
i, j;
```

```
for(i=1,j=2;i<=6;i++,j+=2)
```

```
System.out.println(i++);
```

```
System.out.println("finished!!!");
```

```
Ans. int i=1,j=2; while (i<=6)
```

```
{
```

```
System.out.println(i++);
```

```
i++; j+=2;
```

```
}
```

```
System.out.println("finished!!!");
```

Q.6. Rewrite the following code using for loop.

```
int i=0;
```

```
while(++i<20)
```

```
{ if(i==8)
```

```
break;
```

```
System.out.println(i++);
```

```
}
```

```
Ans. int i;
```

```
for(i=1;i<20;++i)
```

```
{ if(i==8) break;
```

```
System.out.println(i++);
```

```
}
```

Q.7.Rewrite the code using switch statement:

```
if(k==1) day="Monday"; else if(k==2)
```

```
day="Tuesday";
```

```
else if (k==3)
```

```
day="Wednesday"; else
```

```
day="-";
```

```
}
```

```
Ans. switch(k)
```

```

{
case 1:day="Monday";
break;
case 2:day="Tuesday"; break;
case 3 :day="Wednesday";
break;
default:
day= " ";
}

```

Questions

1. How do you write an infinite loop using the for statement?
2. How do you write an infinite loop using the while statement?

3. What will be the output of :.


```

if (aNumber >= 0)
if (aNumber == 0)
System.out.println("first string");
else System.out.println("second string");
System.out.println("third string");

```

 If aNumber is (i) 0 (ii) 2

4. . What will be the output of the program?


```

int count = 1;
do

```

```

{
System.out.println("Count is: " + count);
count++;
} while (count < 11);

```

5. What will be the output of the program


```

int i=1,j=-1; switch(i)
{ case 1,-1: j=1; case 2 : j=2; default :j=0; }

```

6. . What will be the output of the program?


```

int i = 1, j = 10;
do {
if(i > j)
{
break; }
j--;
} while (++i < 5);
System.out.println("i = " + i + " and j = " + j);

```

7. . What will be the output of the program?


```

final static short x = 2;

```

```

for (int z=0; z < 3; z++)
{
switch (z)

```

```

        {
            case x: System.out.print("0 ");
            case x-1: System.out.print("1 ");
            case x-2: System.out.print("2 ");
        }
    }

```

8. What will be the output of the program?

```

        for (int i = 0; i < 4; i += 2)
    {
        System.out.print(i + " ");
    }
    System.out.println(i);

```

9. What will be the output of the program?

```

int x = 3;
int y = 1; if
(x = y)
{
    System.out.println("x = " + x);
}

```

10. What will be the output of the program?

```

        for(int i = 0; i < 3; i++)
    {
        switch(i)
        {
            case 0: break;
            case 1: System.out.print("one ");
            case 2: System.out.print("two ");
            case 3: System.out.print("three ");
        }
    }

```

System.out.println("done"); 11. What will be the output of the program?

```

        int i = 1, j = 0;
        switch(i)
    {
        case 2: j += 6;
        case 4: j += 1;
        default: j += 2;
        case 0: j += 4;
    }
    System.out.println("j = " + j);

```

12. What will be the output of the program?

```

        int i = 1, j = 0;
        switch(i)
    {
        case 2: j += 6;
        case 4: j += 1;
        default: j += 2;
        case 0: j += 4;
    }

```

```

}
System.out.println("j = " + j); }

```

13. What will be the output of the program?

```

long a=78345,s1=0,s2=0,r;
while(a>0)
{
r=a%10;
if(r%4==0)
s1+=r;      else
s2+=r;
a/=10;
}
System.out.println("S1="+s1);
System.out.println("S2="+s2);

```

14. What will be the output of the program?

```

int nos=100;
while(nos>=45)
{
if(nos%5==0)
nos+=10;      else
nos+=20;
}

```

15. What will be the output of the:

(i) byte b; double
d=417.35; b=(byte)d;
System.out.println(b);

(ii) int m=100;
int n=300; while(++m<--
n)
System.out.println(m+" "+n);

(iii) int
x=10,y=20;
if((x<=y)||((x==5)>10))
System.out.println(x);
else
System.out.println(y);

(iv) int x=10;
float y=10.0;
System.out.println((x>y)?true:false);

JAVA GUI PROGRAMMING REVISION TOUR-II

Solved Question

Some Important Questions with Answers

1. Which window is used to design the form

Ans. Design Window

2. Which window contains the Swing Controls components?

Ans. Palette window

3. What is the most suitable component to accept multiline text.

Ans. TextArea

4. Name the different list types controls offered by Java Swing.

Ans. (i) JList (ii) JComboBox

5. Name any two commonly used methods of JList.

Ans. (i) getSelectedIndex() (ii) getSelectedValue()

6. By default a combo box does not offer editing feature. How would you make a combo box editable.

Ans. By setting its editable property to true.

7. What is the name of event listener interface for action events?

Ans. ActionListener

8. What is the difference between a Container and Component control?

Ans. A container is a control that can hold other controls within it. E.g. Panel (there can be multiple controls inside Panel, Frame (where you can put so many controls on it.) Component: Controls inside the container are known as sub-components

9. Differentiate between

- (a) TextField and TextArea components
- (b) TextField and PasswordField
- (c) Combo box and list box

(a) Ans. The TextField allows the user to enter a single line of text only. But TextArea component allows to accept multiline input from the user or display multiple lines of information.

(b) TextField displays the obtained text in unencrypted form whereas password field displays the obtained text in encrypted form. This component allows confidential input like passwords

(c) List box :- In the list box, the users can only select from the list of choices, but in a combobox a user can select from the list of choices as well as enter his/her choice (combobox = listbox + textfield)

10. Why are data types important?

Ans. Data Types define the way the values are stored, the range of the values and the operations that are associated with that type.

11. What is a variable?

Ans. Variable is named temporary storage locations.

12. What is an identifier?

Ans. Identifiers are fundamental building blocks of a program and are used as the general terminology for the names given to different parts of the program.

13. What is casting? When do we need it?

Ans. Assigning a value of one type to the variable of another type is known as type casting
int x=10; byte y= (byte) x;

14. Is Java case sensitive? What is meant by case sensitive?

Ans. Yes, Java is case sensitive. Case sensitive means upper case and lower case letters are treated differently.

15. What does getPassword() on a password field return?

Ans. A character array.

16. Which component is the best suited to accept the country of the user?

Ans. JList and JComboBox both

17. What command do you need to write in actionPerformed() event handler of a button in order to make it Exit button?

Ans. System.exit(0);

18. Which control displays text that the user cannot directly change or edit?

Ans. Label

19. Which control provides basic text editing facility?

Ans. TextField

20. Occurrence of an activity is called.

Ans. Event

21. Which property is used to set the text of the label?

Ans. Text

22. The object containing the data to be exhibited by the combo box by which property

Ans. Model

23. What is GUI programming?

Ans. We can create a GUI application on Java platform using Swing API, which is part of Java foundation classes (JFC).

24. What is an event? What is event handler, source, object?

Ans. An event is occurrence of some activities either initiated by user or by the system. In order to react, you need to implement some event handling system in your application.

Event source:-It is the GUI component that generates the event eg. Button

Event Handler or Event Listener:- It is implemented as in the form of code. It receives and handles events through listener interface.

Event object or message:- It is created when event occurs. It contains all the information about the event which includes source of event and type of event etc.

25. Which property would you set the setting the password character as \$?

Ans. echoChar

26. Which method returns the password entered in a password field?

Ans. getPassword()

27. Which method would you determine the index of selected item in a list?

Ans. getSelectedIndex(int Index)

28. Which method would you use to insert an item at specified index, in the list?

Ans. setSelectedIndex(4)

29. How can you determine whether 5th item in a list is selected or not?

Ans. isSelectedIndex(4)

30. Which method would you use to insert "hello" at 10th position in the TextArea control.

Ans. insert("hello",9) //index starts from zero

31. Which property would you like to set to make a combo box editable?

Ans. Editable

32. What do you understand by focus.

Ans. A Focus is the ability to receive user input/response through Mouse/Keyboard. When object or control has focus, it can receive input from user.

a) An object or control can receive focus only if its enabled and visible property are set to true.

b) Most of the controls provide FOCUS_GAINED() and FOCUS_LOST() method

33. What is meant by scope of a variable?

Ans. In Java, a variable can be declared anywhere in the program but before using them.

1. The area of program within which a variable is accessible, known as its scope.

2. A variable can be accessed within the block where it is declared

```
{ int x=10; if(a>b) { int y=5;
```

```
//scope of x and y
} else {
int z=3;
//scope of z } }
```

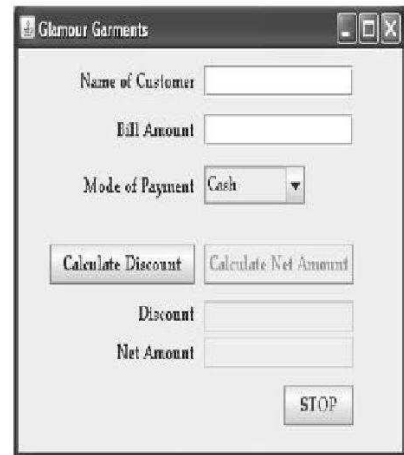
DESIGN PROBLEMS

Q1.

Glamour Garments has developed a GUI application for their company as shown below :

The company accepts payments in 3 modes- cheque , cash and credit cards. The discount given as per mode of payment is as follows.

Mode of Payment	Discount
Cash	8%
Cheque	7%
Credit Card	Nil



If the Bill Amount is more than 15000 then the customer gets an additional discount of 10% on Bill Amount.

- (1) Make Discount and Net amount uneditable.
- (2) Write codes for calculate Discount and calculate Net Amount Buttons
- (3) Write code to exit program when STOP button is clicked.

Solution:

```
(1) txtDiscount.setEditable(false);
txtNetAmt.setEditable(false);
(2)
//Code for calculate button
```

```
String name= txtname.getText();
```

```
double bm=Double.parseDouble(txtbillamt.getText()); double
disc=0.0, netAmt=0.0;
```

```
String s= cmbMode.getSelectedItem();
if(s.equals("Cash"))
{ disc= 0.08*bm;
}
else if(s.equals("Cheque"))
{ disc=0.07*bm;
}
else if(s.equals("Cash"))
{ disc=0;
```

```

}
netAmt=bm-disc; txtDiscount.setText(""+disc); txtNetAmt.setText(""+netAmt);
(3)
//code for stop button

```

```
System.exit(0);
```

2. Create a Java Desktop Application to find the incentive (%) of Sales for a Sales Person on the basis of following feedbacks:

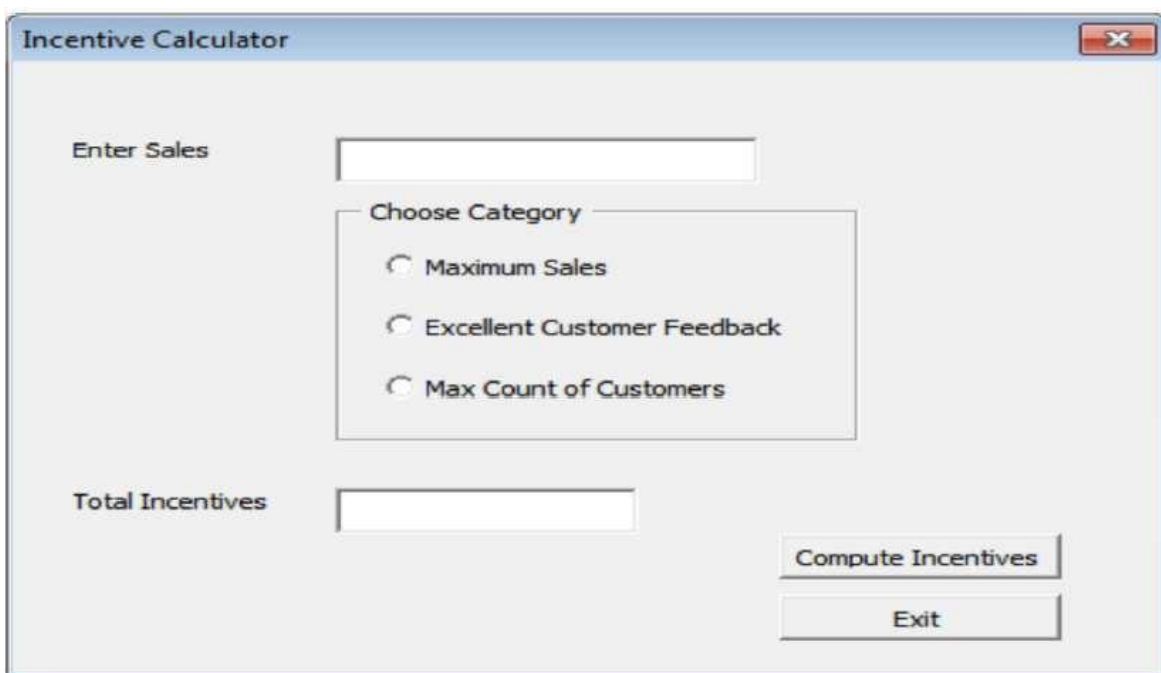
Feedback	Incentive (%)
Maximum Sales	10
Excellent Customer Feedback	8
Maximum Count Customer	5

Note: that the sales entry should not be space. Calculate the total incentive as :

Sales amount* Incentive.

The feedback will be implemented in JCheckBox controls. Using a JButton's (Compute Incentive) click event handler, display the total incentives in a JTextField control. Assume the nomenclature of the swing components of your own.

Note that the JFrame from IDE window will be shown as given:



```

Ans:- private void btnIncActionPerformed (java.awt.ActionEvent evt)
{ int sales = 0;
  if (! txtSales.getText().trim().equals( ""))
  { sales=Integer.parseInt(txtSales.getText().trim ());
  }
  double incentive = 0.0; if
  (jCheckBox1.isSelected ())

```

```

    { incentive = incentive + 0.1;
    }
    if (jCheckBox2.isSelected ( ))
    { incentive = incentive + 0.8;
    }
    if (jCheckBox3.isSelected ( ))
    { incentive = incentive + 0.05;
    }
    txtInc.setText ( "" + Math.round(sales * incentive));
}

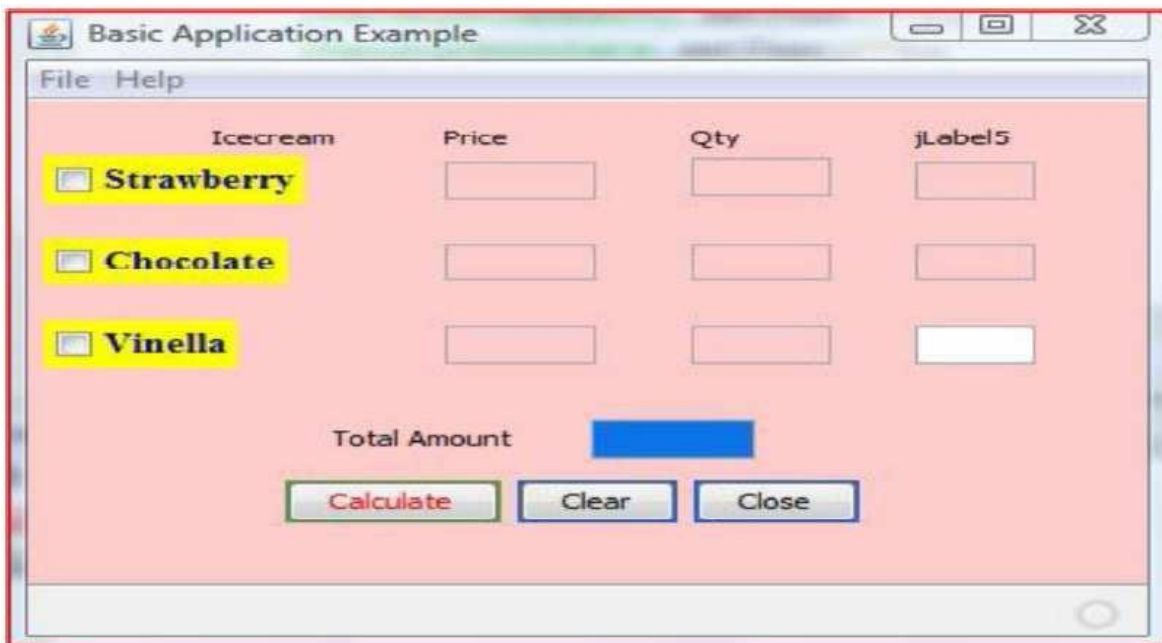
```

}

3. Assume the following interface built using Netbeans used for bill calculation of a ice-cream parlor. The parlor offers three varieties of ice-cream – vanilla, strawberry, chocolate. Vanilla icecream costs Rs. 30, Strawberry Rs. 35 and Chocolate Rs. 50. A customer can chose one or more ice-creams, with quantities more than one for each of the variety chosen. To calculate the bill parlor manager selects the appropriate check boxes according to the varieties of ice-cream chosen by the customer and enter their respective quantities.

Write Java code for the following:

- On the click event of the button ‘Calculate’, the application finds and displays the total bill of the customer. It first displays the rate of various ice-creams in the respective text fields. If a user doesn’t select a check box, the respective ice-cream rate must become zero. The bill is calculated by multiplying the various quantities with their respective rate and later adding them all.
- On the Click event of the clear button all the text fields and the check boxes get cleared.
- On the click event of the close button the application gets closed.



Ans: (a)

```

private void jBtncalculateActionPerformed(java.awt.event.ActionEvent evt)
{ if(jchkStrawberry.isSelected()==true)
    jTxtPriceStrawberry.setText("35");
    else
    { jTxtPriceStrawberry.setText("0");
      jTxtQtyStrawberry.setText("0");
    }
    if(jChkChocolate.isSelected()==true) jTxtPriceChocolate.setText("50");
}

```

```

else
{ jTxtPriceChocolate.setText("0");
  jTxtQtyChocolate.setText("0");
}
if(jChkVinella.isSelected()==true) jtxtPriceVinella.setText("30");
else
{ jtxtPriceVinella.setText("0");
  jTxtQtyVinella.setText("0");
}
int r1,r2,r3,q1,q2,q3,a1,a2,a3,gt;
r1=Integer.parseInt(jTxtPriceStrawberry.getText());
r2=Integer.parseInt(jTxtPriceChocolate.getText());
r3=Integer.parseInt(jtxtPriceVinella.getText());
q1=Integer.parseInt(jTxtQtyStrawberry.getText());
q2=Integer.parseInt(jTxtQtyChocolate.getText());
q3=Integer.parseInt(jTxtQtyVinella.getText()); a1=r1*q1;
jTxtAmtStrawberry.setText(""+a1); a2=r2*q2;
jTxtAmtChocolate.setText(""+a2); a3=r3*q3;
jTxtAmtVinella.setText(""+a3); gt=a1+a2+a3;
jTxtTotalAmt.setText(""+gt);
}

```

Ans.(b)

```

private void jBtnClearActionPerformed(java.awt.event.ActionEvent evt)
{ jTxtPriceStrawberry.setText("");
  jTxtPriceChocolate.setText("");
  jtxtPriceVinella.setText("");
  jTxtQtyStrawberry.setText("");
  jTxtQtyChocolate.setText("");
  jTxtQtyVinella.setText("");
  jTxtAmtStrawberry.setText("");
  jTxtAmtChocolate.setText("");
  jTxtAmtVinella.setText("");
  jchkStrawberry.setSelected(false);
  jChkChocolate.setSelected(false);
  jChkVinella.setSelected(false);
}

```

Ans: (c)

```

private void jBtnCloseActionPerformed(java.awt.event.ActionEvent evt) {
  System.exit(0);
}

```

4. Read the following case study and answer the questions that follow.

TeachWell Public School wants to computerize the employee salary section.

The School is having two categories of employees : Teaching and Non Teaching. The Teaching employees are further categorized into PGTs, TGTs and PRTs having different Basic salary.

The School gives addition pay of 3000 for employees who are working for more than 10 years.

Employee Type	Basic Salary	DA (% of Basic Sal)	HRA (% of Basic Sal)	Deductions (% of Basic sal)
Non-Teaching	25001	31	30	12
PGT	14500	30	30	12
TGT	12500	21	30	12
PRT	11500	20	25	12

(a) Write the code to calculate the Basic salary, deductions, gross salary and net salary based on the given specification. Add 3000 to net salary if employee is working for more than 10 years.

Gross salary=Basic salary + DA + HRA

Net salary = Gross salary – deductions (b)Write

the code to exit the application.

(c)Write the code to disable textfields for gross salary, deductions and netsalary.

Ans: (a)

```
double bs=0,da=0,net=0,ded=0,gross=0,hra=0;
if (rdnon.isSelected()==true)
{ bs=12500;
  da=(31*bs)/100;
  hra=(30*bs)/100;
  ded=(12*bs)/100;
}
else if (rdpgt.isSelected()==true)
{ bs=14500;
  da=(30*bs)/100;
  hra=(30*bs)/100;
  ded=(12*bs)/100;
}
else if (rdtgt.isSelected()==true) {
  bs=12500; da=(21*bs)/100;
  hra=(30*bs)/100;
  ded=(12*bs)/100;
}
else if (rdprt.isSelected()==true)
{ bs=11500;
  da=(20*bs)/100;
```

```

        hra=(25*bs)/100;
        ded=(12*bs)/100;
    }
    gross=bs+da+hra; net
    = gross – ded;
    if(chk10.isSelected()==true)
    { net=net+3000;
    }
    tfded.setText(""+ded); tfgross.setText("
"+gross); tfnet.setText(""+net);
    tfbs.setText(""+bs);

```

Ans:(b)

```
System.exit(0);
```

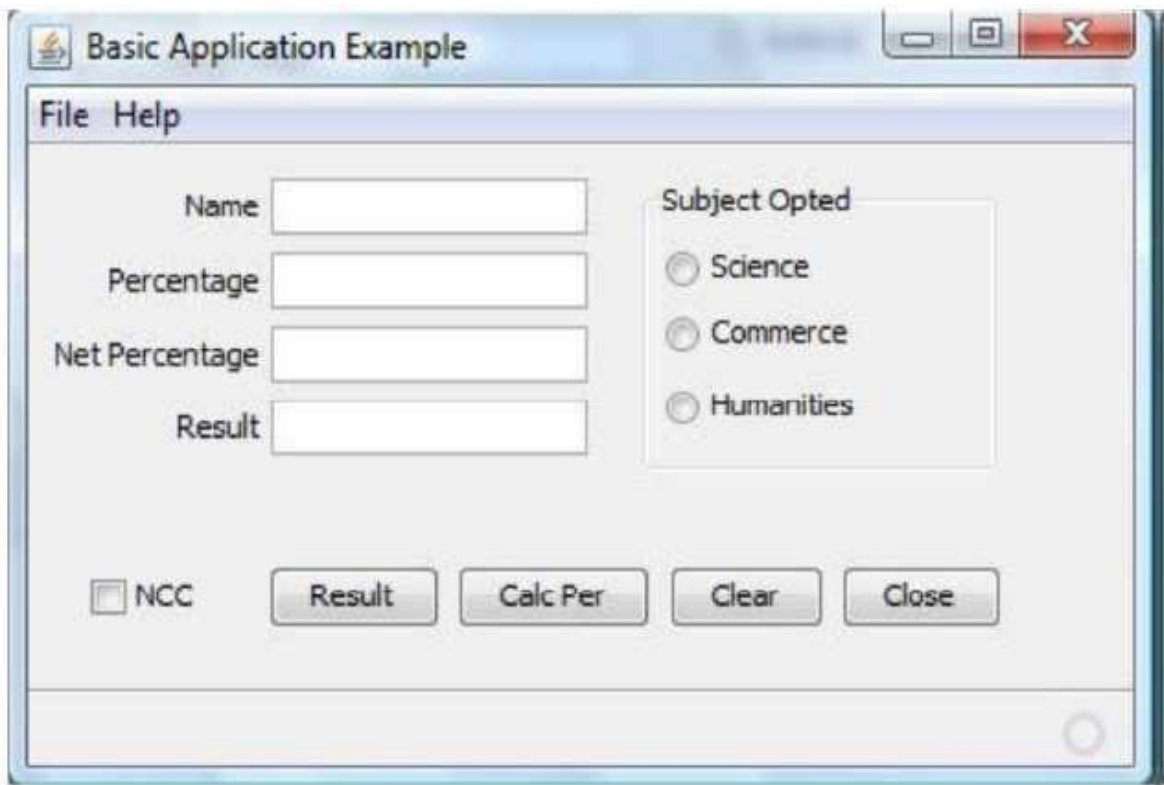
Ans:(c) tfgross.setEditable(false);

```
tfded.setEditable(false);
```

```
tfnet.setEditable(false);
```

5. ABC School uses the following interface built in java to check the eligibility of a student for a particular stream from science, commerce and humanities. The user first enters the total percentage and selects the desired stream by selecting the appropriate option button. An additional 5% is marks is given to students of NCC. Write Java Code for the following

- a. On Action event of the button 'Calc Percentage' Net percentage of the student is calculated and displayed in the appropriate text filed. Net percentage is same as that of the actual percentage if the student doesn't opts for NCC otherwise 5% is added to actual percentage.
- b. On Action event of the button 'Result', the application checks the eligibility of the students. And display result in the appropriate text field. Minimum percentage for science is 70, 60 for commerce and 40 for humanities.
- c. On the Click event of the clear button all the text fields and the check boxes get cleared.
- d. On the click event of the close button the application gets closed.



Ans:

a.

```
private void jBtnCalcPerActionPerformed(java.awt.event.ActionEvent evt)
{ int p;
  p=Integer.parseInt(jTextField2.getText());
  if (jCheckBox1.isSelected()) p=p+5;
  jTextField3.setText(Integer.toString(p));
}
```

b.

```
private void jBtnResultActionPerformed(java.awt.event.ActionEvent evt)
{ int p;
  p=Integer.parseInt(jTextField3.getText()); if(
  jRadioButton1.isSelected())
  { if ( p>=70) jTextField4.setText("Eligible for all subject");
  else jTextField4.setText("Not Eligible for science"); }
  else if( jRadioButton2.isSelected())
  { if ( p>=60 ) jTextField4.setText("Eligible for Commerce and Humanities");
  else jTextField4.setText("Not Eligible for Science and Commerce");
  } else
  { if ( p>=40 ) jTextField4.setText("Eligible for Humanities");
  else jTextField4.setText("Not Eligible for any subject ");
  }
}
```

c.

```
private void jBtnClearActionPerformed(java.awt.event.ActionEvent evt)
{ jTextField1.setText(" ") OR jTextField1.setText(null)
  jTextField1.setText(" ") OR jTextField1.setText(null)
```

```

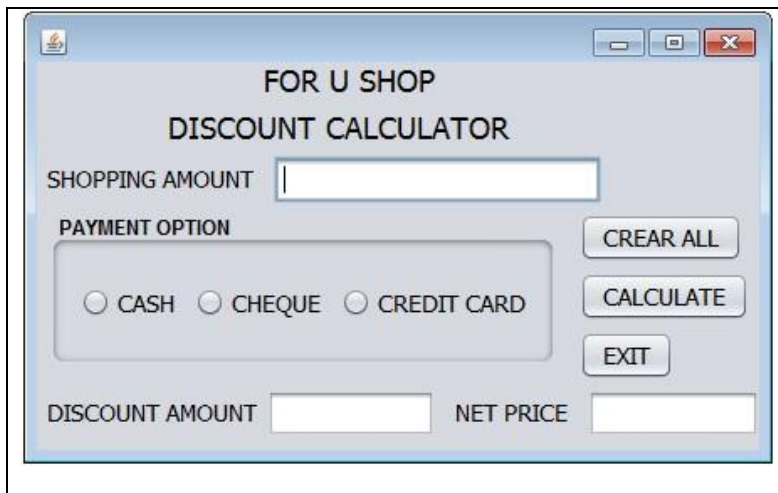
jTextField1.setText("") OR jTextField1.setText(null)
jTextField1.setText("") OR jTextField1.setText(null)
jCheckbox1.setSelected(false);
}

d.
private void jBtnCloseActionPerformed(java.awt.event.ActionEvent evt) {
    System.exit(0);
}

```

Unsolved Questions:

1. Describe the relationship between properties, methods and events.
2. What is container tag?
3. What does a getPassword() method of a password field returns?
4. What will be the contents of jTextField1 after executing the following statement: 1
5. jTextField1.setText("Object\nOriented\tProgramming"); 6. What is difference between jRadioButton and jCheckBox?
7. What does a JList fire when a user selects an item?
8. What is Layout Manager? Discuss briefly about layout managers offered by NetBeans?
9. Name three commonly used properties and methods of the following controls.
10. (a) text field (b) text area (c) label (d) Check Box (e) button.
11. What is dispose() used for ?
12. What is the difference between-
13. (a) Text field & Text area
14. (b) List & Combo
15. (c) Radio Button & Check Box
16. What is the significance of following properties of a text area?
17. (a) lineWrap (b) wrapStyleword
18. What is the significance of a button group ? How do you create a button group?
19. Discuss about some commonly used properties of lists and a combo boxes.
20. What methods obtain the current selection of a combo box? Give a code example.
21. The FOR U SHOP has computerized its billing. A new bill is generated for each customer. The shop allows three different payment modes. The discount is given based on the payment mode.



Credit Card Type	Shopping Amount	Discount
Cash	< 10000	20 %
	>= 10000	25 %
Cheque	< 15000	10 %
	>= 15000	15 %
Credit Card	< 10000	10 %
	>= 10000	12 %

- Write the code for the CmdClear Button to clear all the Text Fields.
- Write the code for the CmdCalc Button to display the Discount Amount and Net Price in the TxtDisc and the TxtNet Text Fields respectively.

JAVA GUI PROGRAMMING REVISION TOUR –III

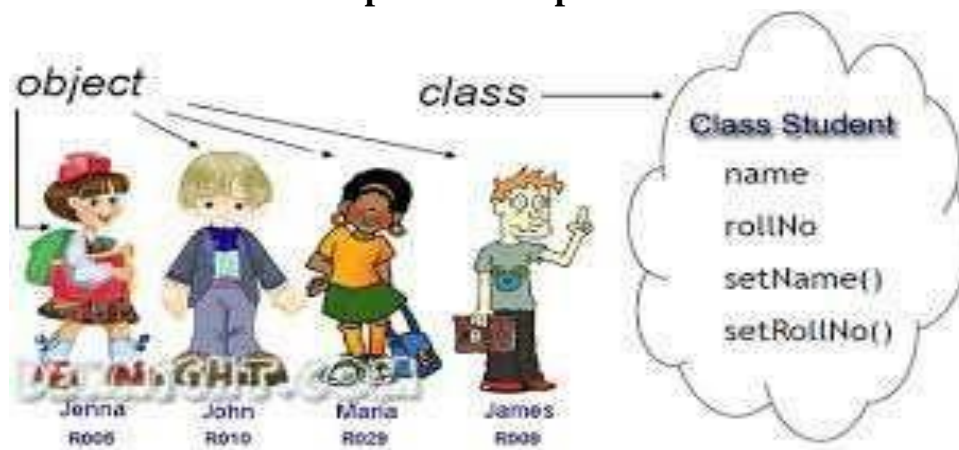
What is an object?

An object is an identifiable entity with some characteristics and behavior.

“Yourself” are also an example of object. Your unique identity is your name. Your characteristics are: you have eyes, nose, ears, hands, legs, heart, brain etc.

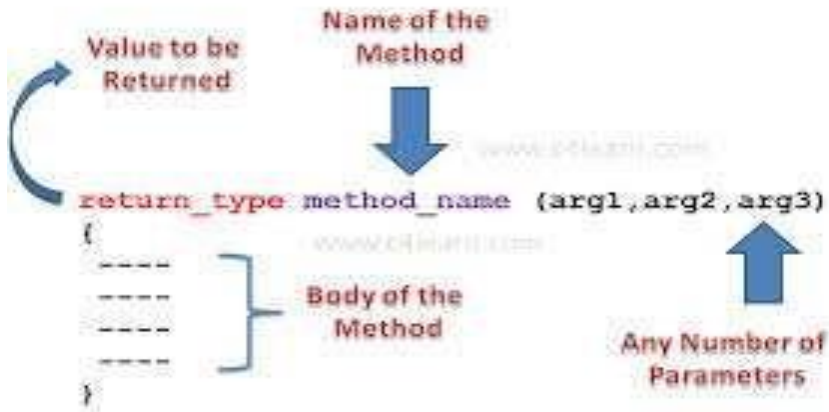
Your behavior is :” you can walk, talk, eat, sleep, sing, dance. etc

Class:- A class is a blueprint that represents a set of similar objects.



Methods:-The behavior of an object is described through associated functions called methods.

Defining method



Solved Questions

Q1. What do you understand by Class and Object?

Ans. The basic unit of OOP is the Class. It can be described as a blue print of objects. In other words, an object is an instance of a class. A java program may have various class definitions.

An object is an entity having a unique identity, characteristics (properties) and behavior (methods).

Q2. How to do declare a class in java?

Ans. In java a class is declared /defined by using class keyword followed by a class name.

For example:

```
public class student
{
String Name; int
rollno; String fname;
String DOB; void
getAdmission( )
{
.....
}
void getTransfer( )
{.....
.....
}
void feeDeposit( )
{
.....
.....
}
}
```

Q3. What is the difference between instance and static variable?

Ans. Instance Variable:- These data member are created for every object of the class i.e. replicated with objects.

Class Variable(Static):- These data members that is declared once for each class and all objects share these members. Only a single copy is maintained in the memory. These are declared with static keyword.

Q4. What do you understand by methods? What are the advantages of methods?

Ans. A method or function is sequence of statement which are written to perform a specific job in the application. In object oriented Programming, Method represents the behavior of the object. A

message can be thought as a call to an object's method. The following three advantages/reasons describes that why we use methods. **To cope with complexity:**

When programs become more complex and big in size, it is best technique to follows "Divide and Conquer". i.e. a complex problem is broken in to smaller and easier task.,so that we can make it manageable.

Hiding details:

Once a method is defined, it works like a Black-Board and can be used when required without concerning that "How it Works?" **Reusability of code:**

Once a method is implemented, it can be invoked or called from anywhere in the program when needed i.e. Method can be reused. Even a packaged method may be used in multiple applications.

This saves our time and effort.

Access Specifier for Class Members:

The access specifiers control access to members of class from/within java Program .Java supports various Access Specifiers to control the accessibility of class members.

Private: A variable or method declared as private, may not be accessed outside of the class. Only class member can access them, since they are private to others.

Protected: Protected members can be accessed by the class members and subclasses(derived classes) and current package, but they are not accessible from beyond package or outside. **Public:**-Class members declared as public are accessible to any other class i.e. everywhere, since they are public.

Package(default):-if no any specifier is mentioned ,default or friendly access is assumed .Class member may be accessed by any other class members available in the same package, but not accessible by the other classes outside the package, even subclasses.

Private Access Specifier:-

Members declared as private are accessible by the members of the same class, since they are private. A private key word is used to specify.

```
class abc{ private
int p;
private void method1()
{
P=10;
System.out.print(" I am private method");
} } class
xyz
{
...
void method2()
{
abc x=new abc(); x.p=10;
x.method1();
}
}
```

Protected Access Specifier

Protected members are accessible by all the classes in the same package and subclasses (same or different package).A protected keyword is used to specify.

```
package mypackage;
class abc {
protected int p;
protected void method1()
{ p=10;
```

```

System.out.print("protected method");
} } class
xyz
{
.....
void method2() {
abc x=new abc();
x.p=10;
xmethod1();}
}

```

Lets another package..

```

package yourpackage;
import mypackage.*;
class pqr extends abc
{
void method3()
{
abc x =new abc(); pqr
y=new pqr(); x.p=10;
x.method1();
y.p=10;
y.method1();
}
}

```

Public Access Specifier

Public Members can be access at anywhere i.e. same or different package.A public keyword is used to specify.

```

package mypackage;
class abc { public int
p; public void
method1()
{ p=10;
System.out.print("public method");
}
}
package ourpackage; import
mypackage.*;
class xyz
{.....
void method2()
{
abc x=new abc(); x.p=10;
x.method1();
}
}

```

Package (friendly) access specifier

If no specifier is explicitly specified, Java assumes default (friendly) access ie. All the members are accessible in all other classes of the same package only, since they are trusted or friends. This is called package level access. No any key word is used to specify default access.

```
package mypackage;
class abc {
int p;
void method1()
{ p=10;
System.out.print("package method");
} }
class xyz
{.....
void method2()
{
abc x=new abc(); x.p=10;
x.method1();
}
}
```

MORE ABOUT CLASSES AND LIBRARIES:-

A set of ready-made software routines that can reused in new programs, is called in new programs, is called a Library.

String Library:

1. **Concat():**- This method appends one String to the end of another. The method returns a String with the value of the String passed in to the method appended to the end of the String used to invoke this method.

Syntax: String concat(String s)

```
String s = "Strings are immutable";
s = s.concat(" all the time");
System.out.println(s);
}
```

This produces the following result:

```
Strings are immutable all the time
```

2. **Length():** It returns the number of characters contained in the string.

```
String palindrome = "Dot saw I was Tod";
int len = palindrome.length();
System.out.println( "String Length is : " + len );
```

This would produce the following result

```
String Length is : 17
```

3. **toLowerCase():** It returns the String, converted to lowercase.

```
String Str = new String("Welcome to KVS");
System.out.print("Return Value :");
System.out.println(Str.toLowerCase());
```

This produces the following result:

```
Return Value :welcome to kvs
```

4. **toUpperCase():** It returns the String, converted to uppercase.

```
String Str = new String("Welcome to kvs");
System.out.print("Return Value :" );
System.out.println(Str.toUpperCase() );
```

This produces the following result:

```
Return Value :WELCOME TO KVS
```

5. **Trim():** It returns a copy of this string with leading and trailing white space removed, or this string if it has no leading or trailing white space.

```
String Str = new String(" Welcome to kvs ");
System.out.print("Return Value :" );
System.out.println(Str.trim() );
```

This produces the following result:

```
Return Value :Welcome to kvs
```

6. **SubString() :** This method returns a new string that is a substring of other string. The substring begins with the character at the specified index and extends to the end of this string or up to endIndex,- 1 if second argument is given.

```
public String substring(int beginIndex)
public String substring(int beginIndex, int endIndex)
```

- **beginIndex** -- the begin index, inclusive.
- **endIndex** -- the end index, exclusive.

```
String Str = new String("Welcome to KENDRIYA VIDYALAYA SECTOR-22 ROHINI");
System.out.print("Return Value :" );
System.out.println(Str.substring(11) );
System.out.print("Return Value :" );
System.out.println(Str.substring(11, 15) );
}
```

This produces the following result:

```
Return Value : KENDRIYA VIDYALAYA SECTOR-22 ROHINI
Return Value : KENDR
```

7. **toString():**-This method returns itself a string

```
public String toString()  
  
    String Str = new String("Welcome to our Nation" );  
    System.out.print("Return Value :");  
    System.out.println(Str.toString());  
}  
}
```

This produces the following result:

```
Return Value :Welcome to our Nation
```

Math Library Function

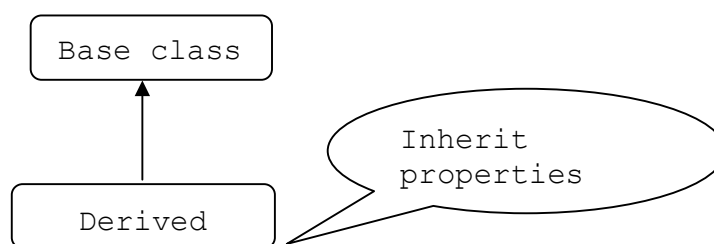
1. **pow():** To compute something in the form a^b where a and b are numbers, you can use pow() method of math Library i.e. `Math.pow()` `math.pow(a,b)`
`math.pow(2,4)` returns 16
2. **round() :-** To round off a number to its nearest integer, you can use round() method of math library i.e `math.round()`.
`math.round(1.5)` returns 2 `math.round(-1.5)` returns -1

INHERITANCE :-

Inheritance is a act of deriving a new class from an existing one. Inheritance can be defined as the process where one object acquires the properties of another. With the use of inheritance the information is made manageable in a hierarchical order..

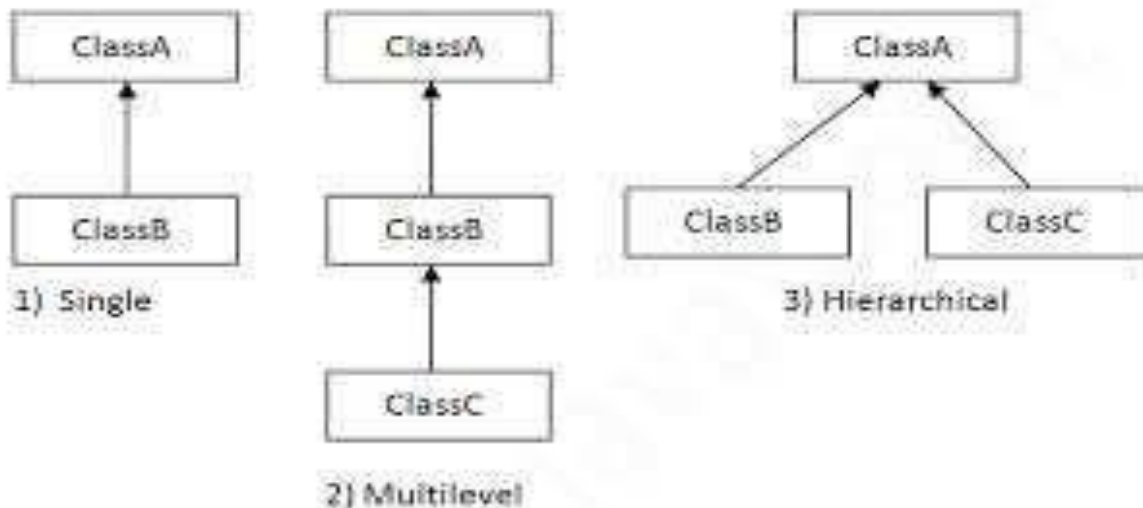
Basics of inheritance

When a class is defined in normal class declaration, it is called a base class. A class at the top of the hierarchy is the base class and the other class is the derived class. That is a child class o one parent can itself be the parent of another derived class. Furthermore, multiple classes can be derived from a single parent..



Types of inheritance

1. Single inheritance
2. Multilevel
3. hierarchical



Declaring derived class:

A derived class inherits data members and member functions from its base class. However a derived class does not inherit any constructor and destructor. A derived class may itself be a base class from which additional classes could be derived. for eg.

A inherits properties from the base class at the top level. Derived class B inherits those properties plus any new ones in class A. Derived class C inherits properties from the top base class and from derived class A and B. Base Class e.g. class baseclass

```

{
    private int counter;
    public baseclass()
    {
        counter=0;
    }
    void newset(int n) //member function of base class
    {
counter=n;
    }
    void factorial(void);
}
  
```

Child class

```

class childclass extends baseclass
{
public childclass()
{ }
void changecounter(int n)
{ newset(n);
factorial();
}
}
  
```

DEMONSTRATING INHERITANCE

```

class baseclass { int counter; baseclass(){
counter=0; }
public void factorial()

{ int i=1; double fact=1.0; for(i=1;i<=counter;i++)
fact=fact*i;
Txtfact.setText(Double.toString(fact));
} }
class childclass extends baseclass
{
void changeval(int n)
{
counter=n;
}
}

```

On double click of factorial button int n=
Integer.parseInt(txtnum.getText());
Childclass obj1=new childclass();
Obj1.changeval(n);
Obj1.factorial();

Solved Questions :

1. What do you understand about inheritance? Write the advantages of inheritance.

Ans. Inheritance is a form of software reusability in which new classes are created from existing classes by absorbing their attributes and behaviors and overriding these with capabilities, the new classes require.

The advantage is that, when creating a new class, instead of writing completely new data members and members functions, the programmer can designate that the new class is to inherit the data members and member function of a previously defined base class. The new class is referred to as a derived class.

2. Describe the relationship between a parent class and a child class

Ans. A child class is derived from a parent class using inheritance. The methods and variables of the parent automatically become a part of the child class to the rules of the visibility modifiers used to declare them.

3. How does inheritance support software reuse?

Ans. Because a new class can be derived from an existing one, the characteristics of the parent class can be reused without the error prone process of copying and modifying code.

JAVA DATABASE CONNECTIVITY TO MYSQL:-

Important points

1. Classes used for Database Connectivity
 - (a) Driver Manager Class
 - (b) Connection Class
 - (c) Statement Class
 - (d) Resultset Class
2. Prerequisites for connecting to MYSQL from java
MYSQL provides connectivity for client application developed in the java programming language via a JDBC driver known as MYSQL Connector/J.
3. Connection: A connection is the session between the application program and the database.
To do anything with database, one must have a connection object.
4. Connecting to MYSQL from Java:

Steps for creating Database Connectivity Application

There are mainly six steps:-

Step 1:- Import the packages required for database programming.

Step 2:- Register the JDBC Driver.

Step 3:- Open a connection

Step 4:- Execute a Query

Step 5:- Extract Data from resultSet.

Step 6:- Clean up the Environment.

Now to connect to a database, you need to know database's complete URL, the user's ID and password:-

```
Jdbc:mysql://localhost/<database-name>?user="username"&password="password"
```

Result Set Methods

A result set (represented by a `ResultSet` object) refers to a logical set of records that are fetched from the database by executing a query and made available to the application program. There are various resultset methods such as:-

1. `next()` :- moves the cursor forward on row.
2. `first()` :- Moves the cursor to the first row in the resultset object.
3. `last()` :- Moves the cursor to the last row in the resultset object.
4. `relative(in rows)` :- moves the cursor relative to its current position.
5. `absolute(int r-no)` :- moves the cursor on the r -noth row of the resultset object.
6. `getRow()` :- retrieves the current row number the cursor is pointing at. If cursor is at first row the `getRow()` will return 1.

Solved Questions

Q1. What is the importance of `java.sql.*`; in java jdbc connection?

Ans. The `java.sql` package has to be imported first before we can create a java jdbc connection to the database.

Q2. What is Driver Manager?

Ans. `DriverManager` a class of `java.sql` package that controls a set of JDBC drivers.

Each driver has to be registers with this class.

Q.3 What is the purpose of `connection.close()` method?

Ans. This method is used for disconnecting the connection. It frees all the resources occupied by the database.

Q4. Name the four component of JDBC?

Ans. JDBC consist of four component: The JDBC API, JDBC Driver Manager, JDBC Test Suite and JDBC-ODBC bridge.

Q5. What is resultset?

Ans. A result set refers to a logical set of records that are fetched from the database by executing a query and made available to the application program.

Q6 What type of parameter that used in `executeQuery()` method?

Ans. The `executeQuery()` method has a single String parameter. This parameter must be valid SQL statement.

Q7. What is connection? What is its role?

Ans. A connection is the session between the application program and the database. To do anything with database, one must have a connection object.

Q8. Name the methods which are useful for executing SQL statements.

Ans. There are two methods which are responsible for executing SQL statements are:

- a. `executeQuery()` :- For sql statements that produce a single result set

- b. executeUpdate():- for executing INSERT,UPDATE or DELETE statements and also SQL DDL (Data Definition language) statements

WEB APPLICATION DEVELOPMENT:-

Brief Summary of the Chapter:

World Wide Web is an example of an information protocol/service that can be used to send and receive information over the internet. It supports:

Multimedia Information

Hyper Text Information

3. Graphical User Interface

The World Wide Web is an example of an information protocol/service that works using a Client/Server software design. A service that uses Client/Server design requires two pieces of software to work:

Client software (e.g. Web Browser) to request information, and

Server software(Web server) to answer requests and provide their information. Most Web applications are designed this way. **Key Points of the Chapter:**

URL(Uniform Resource Locator): The uniform resource locator (URL) is the unique identifier of a web page.

Protocol : A standard set of regulations and requirements that allow two electronic items to connect to and exchange information with one another. Protocols regulate data transmission among devices as well as within a network of linked devices. E.g HTTP

Web Server: Web server delivers (serves) content, such as web pages, using the Hypertext Transfer Protocol (HTTP), over the World Wide Web.

Web Browser: A web browser is a client that initiates communication by making a request for a specific resource. The server then responds with the content of that resource, or an error message if unable to do provide the contents due to any reason.

Client Server Computing: It refers to a network set-up in which programs and information reside on the server and clients connect to the server for network access.

Dynamic Web Page: A dynamic document is created by web server whenever a browser requests the documents.

Static Web Page: A static document is a fixed content document that is created by web server whenever a browser requests the documents.

HTML-I : BASIC HTML ELEMENTS:-

The World Wide Web (or simply the Web or WWW) is a system of sharing interlinked hypertext documents over the internet. These documents are stored on web-servers on the internet and contain text, images, videos and other multimedia. These documents also contain

hyperlinks to navigate among them. HTML (Hyper Text Markup Language) is the basic language which is used to create Hypertext documents. In this lesson we are going to learn how to create hypertext documents using HTML.

Key Points of the Chapter:

- HTML stands for Hyper Mark-up Language.
- HTML is the subset of SGML (Standard Generalised Markup Language)
- The head of the HTML document is where you enter the title of the page.
- Headings are typically displayed in larger and/or bolder fonts than normal body text. HTML has six levels of heading, numbered 1 to 6, with 1 being the largest.
- The BACKGROUND is the image attribute in <BODY> tag where you can place graphic object to make more attractive Web page.
- The BGCOLOR attribute is used to set the background color of your Web page with <BODY> tag.
- <HR> is used as a section separator and attributes used in it are width and size to specify width and height of the line
-
 is used for line break in the page
- <P> tag is used to specify a paragraph body
- The tag specifies an image to be displayed in a Web page. This is an empty element, which is coded in HTML document. It has attributes like : SRC, ALIGN, BORDER, HEIGHT, WIDTH and ALT.

e.g. • Links

between Web pages is known as hyperlink.

- The anchor tag <A> marks the text as hypertext link.
- The HREF attribute specifies the destination of a link.
- The HREF or the name attribute must be present in the <A> tag.
- HREF is an attribute for the <A> tag, which is displayed in a browser, the work Text describing link would appear underlined and in another order to indicate that clicking that text initiates the hypertext link.

e.g.

 Open KVS Sangathan's website

Or

 Click to see my photo

Tags are not case sensitive

HTML-II :LISTS, TABLES AND FORMS:-

Key Points of the Chapter:

Lists

The numbered/ordered list tag is used to indicate a list item as contained in an ordered or numbered form.

e.g.

1. Keyboard
2. Mouse
3. CPU

Bulleted/unordered list tag is used to indicate a list item as contained in an unordered or bulleted form. e.g.

- Keyboard ○
Mouse
- CPU

 list tag is used to denote the beginning of each new list item.

- The TYPE attribute is used to change the bulleted symbol in a list. The attribute may have a value of circle, disc, or square. For example, <UL TYPE=disk>.
- The list items are marked with bullets (typically small black circles).
- The START attribute is used to change the beginning value of an ordered list. Normally, the ordered list starts with 1. For example, <OL START = A>

Table

A table is divided into rows (with the <tr> tag), and each row is divided into data cells (with the <td> tag). The letters td stands for “table data”, which is the content of a data cell.

<Table> </Table> is used to specify that Table is to be created

Attributes which may be used in Table tag are **Border, Align, Background, Bgcolor, Height, Width etc.**

<TR> </TR> is used to specify that table row is specified

<TD> </TD> is used to specify columns of the table by specifying Table Data. e.g.

Source Code	Result						
<pre style="font-family: monospace; font-size: 0.9em; margin: 0;"><!-- Codes by HTML.am --> <table border="1"> <tr> <th>Table Header</th> <th>Table Header</th> </tr> <tr></pre>	<table border="1" style="margin: auto; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Table Header</td> <td style="padding: 5px;">Table Header</td> </tr> <tr> <td style="padding: 5px;">Table cell 1</td> <td style="padding: 5px;">Table cell 2</td> </tr> <tr> <td style="padding: 5px;">Table cell 3</td> <td style="padding: 5px;">Table cell 4</td> </tr> </table>	Table Header	Table Header	Table cell 1	Table cell 2	Table cell 3	Table cell 4
Table Header	Table Header						
Table cell 1	Table cell 2						
Table cell 3	Table cell 4						

COLSPAN and ROWSPAN

Table cells can span across more than one column or row. The attributes COLSPAN ("how many across") and ROWSPAN ("how many down") indicate how many columns or rows a cell should take up.

For example, we might want to create header cells for each department in our table of names and phone numbers. In this table, the header cells in the first and fifth rows span across two columns to indicate the department for each group of names.

```
<TABLE BORDER=2 CELLPADDING=4>
<TR> <TH COLSPAN=2>Production</TH> </TR>
<TR> <TD>Raha Mutisya</TD> <TD>1493</TD> </TR>
<TR> <TD>Shalom Buraka</TD> <TD>3829</TD> </TR>
<TR> <TD>Brandy Davis</TD> <TD>0283</TD> </TR>
<TR> <TH COLSPAN=2>Sales</TH> </TR>
<TR> <TD>Claire Horne</TD> <TD>4827</TD> </TR>
<TR> <TD>Bruce Eckel</TD> <TD>7246</TD> </TR>
<TR> <TD>Danny Zeman</TD> <TD>5689</TD> </TR>
</TABLE>
```

which gives us:

Production	
Raha Mutisya	1493
Shalom Buraka	3829
Brandy Davis	0283

Sales	
Claire Horne	4827
Bruce Eckel	7246
Danny Zeman	5689

Forms

HTML Forms are required when you want to collect some data from the site visitor. For example during user registration you would like to collect information such as name, email address, credit card, etc.

A form will take input from the site visitor and then will post it to a back-end application such as CGI, ASP Script or PHP script etc. The back-end application will perform required processing on the passed data based on defined business logic inside the application.

There are various form elements available like text fields, textarea fields, drop-down menus, radio buttons, checkboxes, etc.

HTML Form Controls

There are different types of form controls that you can use to collect data using HTML form: *Text*

Input Controls

Checkboxes Controls

Radio Box Controls

Select Box Controls

File Select boxes

Hidden Controls

Clickable Buttons

Submit and Reset Button **Example:**

```
<form method="post" action="datacollection.php">
Name<input type="text" name="txtname">
<br>
Name<input type="text" name="txtname">
</form>
```

Similarly other form tags may be used . The visual example shows the FORM in the form of table so form will be create dinside the table <td> tag. It basically nests the two major tags.

Name	Value
Name	<input type="text"/>
Sex	<input type="radio"/> Male <input checked="" type="radio"/> Female
Eye color	green ▾
Check all that apply	<input type="checkbox"/> Over 6 feet tall <input type="checkbox"/> Over 200 pounds
Describe your athletic ability:	
<input type="text"/>	
<input type="button" value="Enter my information"/>	

Problem 1

```
<html>
<body>
<P ALIGN =RIGHT>
<RIGHT><H1>PIZZA FACTORY</H1></RIGHT>
<form method="post">
<p aling=right
<right><h1><hr>PIZZA
FORM</hr></h1></right>
Name
<input type="text" name="name"/>
<br>
Address
<input type="text" name="address"/>
<br />
<p aling=right>
<right><h1>SIZE</h1></right>
</p>
<input type="radio" name="size" value ="small"/>small
<br />
<input type="radio" name="size" value ="medium"/>medium
<br />
<input type="radio" name="size" value ="large"/>large <br
/>
<p aling=right>
<right><h1>TOPPINGS</h1></right>
</p>
<br />
<input type ="checkbox" name="s1" value="cheese">cheese
<br />
<input type ="checkbox" name="s2" value="olives">olives
<br/>
<input type ="checkbox" name="s3" value="pepperoni">pepperoni
<br />
<input type ="checkbox" name="s4" value="bacon">bacon
<br />
<p>
<input type="submit" name="request" value="process order">
<input type ="reset" name="clear" value="clear">
<br />
<textarea rows="5" cols="50" name="">
</textarea>
</p>
</form>
</body>
</html>
```

ORDER

PIZZA FACTORY

PIZZA ORDER FORM

Name:

Address:

SIZE

small
 medium
 large

TOPPINGS

cheese
 olives
 pepperoni
 bacon

Problem 2

A screenshot of a web form. It contains two text input fields labeled 'first name:' and 'e.mail'. Below them is a section titled 'select choose the one thing you love best of my pages' with three radio button options: 'that gorgeous picture of you and your dog', 'the inspiring recap about your childhood', and 'the detailed list of your hobbies'. Underneath is a section titled 'Check all that apply:' with three checkbox options: 'i really like your web site', 'one of the best site i've seen', and 'i have no taste so your site didn't do much for me:'. A 'submit' button is at the bottom.

```
<html>
<body>
  <form...> first
  name:
  <input type="text" name ="first_name" />
  <br>
  e.mail
  <input type = "text" name ="e.mail" />
  <p>select choose the one thing you love best of my pages</p>
  <br>
  <input type ="radio" name ="choose the one thing you love best of my pages"
  value ="that gorgeous picture of you and your dogs"/> that gorgeous picture
  of you and your dog
  <br>
  <input type ="radio" name ="choose the one thing you love best of my pages"
  value ="the inspiring recap about youe childhood" />the unspiring recap
  about your childhood
  <br>
  <input type ="radio" name ="choose the one thing you love best of my pages"
  value ="the detailed list of your hobbies"/>the detailed list of your hobbies
  <br>
  <p> Check all that apply:</p>
  <input type ="checkbox" name = "s1" value ="i really like your web site"/> i
  really like your web site
  <br>
```

```

 one
of the best site i've seen<br>


```

```

<br><input type="submit" name="submit" value="submit"/>
</form>
</body>
</html>

```

Problem 3

A	B		
C	D	E	
G	H		F

```

<html>
<head>
<title>first page</title>
</head>
<body>
<table border=all>
<tr>
<td rowspan=3>A<br>C<br>G</td>
<td colspan=3>B</td>
</tr>
<tr>
<td>D</td>
<td>E</td>
<td rowspan=2>F</td>
</tr>
<tr>
<td colspan=2>H</td>
</td>
</table>
</form> </body>
</html>

```

eXtensible Markup Language:-

Brief Summary of the Chapter:

It is a markup language. Markup language is a set of rules that defines the structure and format of text while presenting text. XML stands for eXtensible Markup Language. XML is designed to transport, store and describe data. Whereas HTML was designed to display data. XML tags are not predefined. We must define your own tags in XML. An XML document that follows all grammar rules is well formed document.

KEY POINTS OF THE CHAPTER

A markup language is a set of rules that defines the structure and format of text while presenting text.

XML is a markup language.

A meta-language is a language that is used to define other languages.

XML is based on SGML. SGML was the first markup language.

XML is different from HTML as it does not display the data but describes and carries it.

XML is free and extensible.

XML is platform independent.

The XML document that obeys XML grammar rule is called well-formed document.

DTD (Document definition type) is a set of rules that defines what tags appear in an XML document.

CSS (Cascading Style Sheet) are a collection of forming rules that control the appearance of content in a webpage.

Important full forms:

- (i) XML-extensible Markup Language
- (ii) EDI-Electronic Data Interchange
- (iii) CSS- Cascading Style Sheet
- (iv) DTD- Document Type Definition

HTML versus XML

	<i>HTML</i>	<i>XML</i>
1	HTML document formats and displays	XML documents carry data along with their
2	HTML tags are predefined	New tags can be created as per our
3	HTML may not have closing tags.	XML must have closing tags.
4	HTML tags are not case sensitive	XML tags are case sensitive.
5	HTML documents are directly viewable in a browser.	XML documents are viewed only if proper style sheet file is also available.

UNIT – 3

Relational Database Management System

MYSQL REVISION TOUR

A database system is basically a computer based record keeping system. There are different data models available. The most popular data model is Relational Data Model (RDBMS). In RDBMS data is arranged in the form of table. MYSQL is software to manipulate database. It is free, open-source RDBMS.

In order to access data within MYSQL database, all programs and users must use, Structured Query Language (SQL). SQL is the set of commands that is recognized by nearly all RDBMS.

SQL commands can be classified into three categories. These are:

DDL (Data Definition Language) DML
(Data Manipulations Language) and TCL
(Transmission Control Language).

Apart from MYSQL is commands, it has various functions that performs some operation and returns a single value.

KEY POINTS OF THE CHAPTER

Database Management System(DBMS) It is a computer based record keeping system that stores the data centrally and manages data efficiently.

Relational Data Model In this model the data is organized into tables called relations .The relationship is established between 2 tables on the basis of common column.

Network Data Model In this model the data is represented by collections of records and relationships among data are represented by links .

Hierarchical Data Model In this model records are organized in the form of parent-child trees.

Object Oriented Data Model in this model objects represent the data and associated operations where an object is identifiable entity with some characteristics and behavior.

Normalization Is a process of attaining good database design by removing/reducing data anomalies.

DDL: Data Definition Language ○ Part of the SQL that facilitates defining creation/modification etc. of database object such as tables, indexes, sequences etc.

DML: Data Manipulation Language.

○ Part of the SQL that facilitates manipulation (additions/deletions/modification) of data which residing in the database tables.

Meta Data

○ Facts/data about the data stored in table.

Data Dictionary

○ A file containing facts/data about the data stored in table

Relational Data Model

○ In this model data is organized into tables i.e. rows and columns. These tables are called relations.

The Network Data Model

- In this model data are represented by collection of records & relationships among data. The collections of records are connected to one another by means of links.

The Hierarchical Data Model

- In this model records are organized as trees rather than arbitrary graphs.

Object Oriented Data Model

- Data and associated operations are represented by objects. An object is an identifiable entity with some characteristics and behavior.

Relation: ○ Table

in Database **Domain:**

- Pool of values from which the actual values appearing

Tuple:

- Any single row of a relation **Attribute:**

- Any column of relation **Degree:**

- Number of attributes(fields) in a relation **Cardinality:**

- Number of tuples(rows) in a relation

View:

- Virtual table that does not really exist in its own right but can be used to vies

Primary Key:

- Set of one or more attributes that can uniquely identify tuples with in the relation.

Candidate Key:

- A Candidate Key is the one that is capable of becoming Primary key i.e., a field or attribute that has unique value for each row in the relation.

Alternate Key: ○ A candidate key that is not primary key is called alternate key.

Foreign Key:

- A non-key attribute, whose values are derived from the primary key of some other table.

Integrity Constraints ○ Integrity Constraints are the rules that a database must comply all the times. It determines what all changes are permissible to a database.

DATA TYPES IN MySQL

<i>Class</i>	<i>Data Type</i>	<i>Description</i>	<i>Format</i>	<i>Example</i>
Text	CHAR(size)	A fixed-length string between 1 and 255 characters in length right-padded with spaces to the specified length when stored. Values must be enclosed in single quotes or double quotes.	CHAR(size)	'COMPUTER' 'CBSE'

	VARCHAR(size)	A variable-length string between 1 and 255 characters in length; for example VARCHAR(20).	VARCHAR (size)	'SCIENCE' 'Informatics'
NUMERIC	DECIMAL(p,s)	It can represent number with or without the fractional part. The size argument has two parts : <i>precision</i> and <i>scale</i> . <i>Precision (p)</i> indicates the number of significant digits and <i>scale (s)</i> maximum number of digits to the right of the decimal point.	Number(p,s)	58.63
	INT	It is used for storing integer values	INT	164
Date	DATE	It represents the date including day, month and year between 1000-01-01 and 9999-12-31	YYYY-MMDD	2014-08-27

Difference between CHAR and VARCHAR

The CHAR data-type stores fixed length strings such that strings having length smaller than the field size are padded on the right with spaces before being stored. The VARCHAR on the other hand supports variable length strings and therefore stores strings smaller than the field size without modification.

SQL Constraints/ Integrity Constraints

- 1-SQL Constraint is a condition or check applicable on a field or set of fields.
- 2- They can also be defined or modified after creating the tables.
- 3- When constraints are defined any data entering in the table is first checked to satisfy the condition specified in particular constraint if it is, only then table data set can be updated. If data updation/insertion is violating the defined constraints, database rejects the data (entire record is rejected).
- 4- When a constraint is applied to a single column, it is called a column level constraint but if a constraint is applied on a combination of columns it is called a table constraint. Following constraints can be defined on a table in SQL:

Constraints name	Description
PRIMARY KEY	Used to create a primary key
UNIQUE	to create a unique key
NOT NULL	to define that column will not accept null values.
FOREIGN KEY/ REFERENCES	to define referential integrity with another table.
DEFAULT	to define the columns default value.
CHECK	to define the custom rule.

Not Null and Default constraints can be applied only at column level rest all constraints can be applied on both column level and table levels.

■ **Accessing Database in MySql :**

Through USE keyword we can start any database Syntax:
USE <database Name>;
Example: USE ADDRESS;

■ **CREATING TABLE IN MYSQL**

Through Create table command we can define any table.
CREATE TABLE <tablename>
(<columnname><datatype>[(<Size>)],.....);
CREATE TABLE ADDRESS(SNo integer, City char(25));

■ **INSERTING DATA INTO TABLE**

The rows are added to relations using INSERT command.
INSERT INTO <tablename>[<columnname>]
VALUES (<value>, <value>...);
INSERT INTO ADDRESS (SNo, City)
VALUES (100,'JAIPUR');

■ **SELECT COMMAND:**

The SELECT command is used to make queries on the database. A query is a command that is given to produce certain specified information from the database table(s). The SELECT command can be used to retrieve a subset of rows or columns from one or more tables. The syntax of Select Command is:

```
SELECT <Column-list>  
FROM <table_name>  
[Where <condition>]  
[GROUP BY <column_list>]  
[Having <condition>]  
[ORDER BY <column_list [ASC|DESC ]>]
```

Example:

```
SELECT * FROM ADDRESS WHERE SNo=100;
```

■ **Eliminating Redundant Data**

■ DISTINCT keyword eliminates redundant data
SELECT DISTINCT City FROM ADDRESS;

■ **Selecting from all the rows**

```
SELECT * FROM ADDRESS;
```

■ **Viewing structure of table:**

```
DESCRIBE/DESC <tablename>;  
DESCRIBE ADDRESS;
```

Using column aliases:

```
SELECT <column name> AS [columnalias][,...]
```

```
FROM <tablename>;
SELECT SNo, City AS "STUDENTCITY"
FROM ADDRESS;
```

■ **Condition based on a range:**

Keyword BETWEEN used for making range checks in queries.
 SELECT SNo, CITY FROM ADDRESS WHERE SNo BETWEEN 10 AND 20;

■ **Condition based on a list:**

Keyword IN used for selecting values from a list of values.
 SELECT rno, sname FROM student WHERE rno IN (10, 20, 60);

■ **Condition based on a pattern matches:**

Keyword LIKE used for making character comparison using strings percent(%) matches any substring underscore(_) matches any character
 SELECT SNo, City FROM ADDRESS WHERE City LIKE '%ri';

■ **Searching for NULL**

The NULL value in a column is searched for in a table using IS NULL in the WHERE clause (Relational Operators like =, <> etc cannot be used with NULL).

For example, to list details of all employees whose departments contain NULL (i.e., novalue), you use the command:

```
SELECT empno, ename
FROM emp
Where Deptno IS NULL;
```

■ **ORDER BY clause:**

It is used to sort the results of a query.
 SELECT <column name> [, <column name>, .]
 FROM <table name>
 [WHERE <condition>] [ORDER BY <column name>];
 SELECT * FROM ADDRESS WHERE SNo>50 ORDER BY City;

■ **Creating tables with SQL Constraint :**

CREATE TABLE command is used to CREATE tables , the syntax is:
 CREATE TABLE <Table_name>
 (column_name 1 data_type1 [(size) column_constraints], column_name
 1 data_type1 [(size) column_constraints],
 :
 :
 [<table_constraint> (column_names)]);

■ **SQL Constraint:**

A Constraint is a condition or check applicable on a field or set of fields.

■ **NOT NULL/UNIQUE/DEFAULT/CHECK/PRIMARY KEY/FOREIGN KEY Constraint:**

```
CREATE TABLE student (rollno integer NOT NULL );
```

```
CREATE TABLE student (rollno integer UNIQUE );
```

```
CREATE TABLE student (rollno integer NOT NULL, Sclass integer, Sname varchar(30), Sclass
DEFAULT 12 );
```

```
CREATE TABLE student (rollno integer CHECK (rollno>0), Sclass integer, Sname varchar(30));
```

```
CREATE TABLE student (rollno integer NOT NULL PRIMARY KEY, Sclass integer, Sname
varchar(30));
```

```
CREATE TABLE teacher (Tid integer NOT NULL, FOREIGN KEY (Studentid )
REFERENCES student (Sid));
```

■ Modifying data in tables:

Existing data in tables can be changed with UPDATE command.

The Update command is use to change the value in a table. The syntax of this command is:

```
UPDATE <table_name>
SET column_name1=new_value1 [,column_name2=new_value2,.....]
WHERE <condition>;
```

```
UPDATE student SET Sclass=12 WHERE Sname='Rohan';
```

■ Deleting data from tables:

The DELETE command removes rows from a table. This removes the entire rows, not individual field values. The syntax of this command is

```
DELETE FROM <table_name>
[WHERE <condition>;
```

e.g., to delete the tuples from EMP that have salary less than 2000, the following command is used:

```
DELETE FROM emp WHERE sal<2000;
```

To delete all tuples from emp table:

```
DELETE FROM emp;
```

MySQL functions:

A function is a special type of predefined command set that performs some operation and returns a single value.

Single-row functions return a single result row for every row of a queried table. They are categorized into: Numeric functions, String functions, and Date and Time functions. **1)**

Numeric Functions

• **POWER()** : Returns the argument raised to the specified power. POW () works the same way.

Example: (i) POW(2,4); Result:16 (ii) POW(2,-2); Result:0.25 (iii) POW(-2,3) Result: -8

• **ROUND()** : ROUND(X) Rounds the argument to the zero decimal place, Where as ROUND(X,d) Rounds the argument to *d* decimal places.

Example :(i) ROUND(-1.23); Result: -1 (ii) ROUND(-1.58); Result: -2
(iii) ROUND(1.58); Result: 2 (iv)ROUND(3.798, 1);Result: 3.8
(v) ROUND(1.298, 0); Result: 1 (vi) ROUND(23.298, -1); Result: 20

• **TRUNCATE()** : Truncates the argument to specified number of decimal places. Example: (i) TRUNCATE(7.29,1)Result: 7.2 (ii) TRUNCATE(27.29,-1) Result: 20

2) Character/String Functions

- **LENGTH()** : Returns the length of a string in bytes/no.of characters in string. Example: LENGTH('INFORMATICS'); Result:11

- **CHAR()** : Returns the corresponding ASCII character for each integer passed.

Example : CHAR(65); Result : A

- **CONCAT()**: Returns concatenated string i.e. it adds strings.

Example : CONCAT('Informatics',' ','Practices'); Result : Informatics Practices

- **INSTR()**: Returns the index of the first occurrence of substring.

Example : INSTR('Informatics',' mat');

Result : 6(since 'm' of 'mat' is at 6th place)

- **LOWER()/LCASE()**: Returns the argument after converting it in lowercase.

Example: LOWER('INFORMATICS'); Result : informatics

- **UPPER()/UCASE()**: Returns the argument after converting it in uppercase. Example: UCASE('informatics'); Result :INFORMATICS

- **LEFT()** : Returns the given number of characters by extracting them from the left side of the given string.

Example : LEFT('INFORMATICS PRACTICES', 3); Result : INF

- **MID()/SUBSTR()** : Returns a substring starting from the specified position in a given string.

Example: MID('INFORMATICS PRACTICES',3,4); Result : FORM

- **LTRIM()** : Removes leading spaces.

Example : LTRIM(' INFORMATICS'); Result: 'INFORMATICS'

- **RTRIM()**: Removes trailing spaces.

Example : RTRIM('INFORMATICS '); Result: 'INFORMATICS'

- **TRIM()** : Removes leading and trailing spaces.

Example: TRIM(' INFORMATICS '); Result: 'INFORMATICS'

3) Date/Time Functions

- **CURDATE()** : Returns the current date

Example: CURDATE(); Result:'2014-07-21'

- **NOW()**: Returns the current date and time

Example: NOW(); Result: '2014-07-21 13:58:11'

- The HAVING clause place conditions on groups in contrast to WHERE clause that place conditions on individual rows. While WHERE condition cannot include aggregate functions, HAVING conditions can do so.

- **ALTER TABLE COMMAND:-**

The ALTER Table command is used to change the definition (structure) of existing table.

Usually , it can:

- (i) Add columns to a table
- (ii) Delete columns
- (iii) Modify a column

The syntax of this command is:

For Add or modify column:

```
ALTER TABLE <Table_name> ADD/MODIFY <Column_definition>;
```

For Delete column

```
ALTER TABLE <Table_name> DROP COLUMN <Column_name>;
```

Example :

To add a new column address in EMP table command will be :

```
ALTER TABLE EMP ADD (address char (30));
```

To modify the size of sal column in EMP table, command will be:

```
ALTER TABLE EMP MODIFY (sal number(9,2) );
```

To delete column Address from Table EMP the command will be: ALTER

```
TABLE EMP DROP COLUMN address;
```

- **Cartesian Product (or Cross Join):** Cartesian product of two tables is a table obtained by pairing each row of one table with each row of the other. A Cartesian product of two tables contains all the columns of both the tables.
- **Equi-Join:** An equi join of two tables is obtained by putting an equality condition on the Cartesian product of two tables. This equality condition is put on the common column of the tables. This common column is, generally, primary key of one table and foreign key of the other.
- **Foreign Key:** It is a column of a table which is the primary key of another table in the same database. It is used to enforce referential integrity of the data.
- **Referential Integrity:** The property of a relational database which ensures that no entry in a foreign key column of a table can be made unless it matches a primary key value in the corresponding column of the related table.
- **Union:** Union is an operation of combining the output of two SELECT statements.

Display data from multiple Tables :-

It does no good to put records in a database unless you retrieve them eventually and do something with them.

Creating Joins on tables :-

If a SELECT statement names multiple tables in the FROM clause with the names separated by commas, MySQL performs a full join. For example, if you join t1 and t2 as follows, each row in t1 is combined with each row in t2:

```
mysql> SELECT t1.*, t2.* FROM t1, t2;
```

```
+----+----+----+----+
| i1 | c1 | i2 | c2 |
+----+----+----+----+
| 1  | a  | 2  | c  |
| 2  | b  | 2  | c  |
| 3  | c  | 2  | c  |
| 1  | a  | 3  | b  |
| 2  | b  | 3  | b  |
| 3  | c  | 3  | b  |
| 1  | a  | 4  | a  |
| 2  | b  | 4  | a  |
| 3  | c  | 4  | a  |
+----+----+----+----+
```

A full join is also called a *cross join* because each row of each table is crossed with each row in every other table to produce all possible combinations. This is also known as the *cartesian product*. Joining tables this way has the potential to produce a very large number of rows.

If you add a WHERE clause causing tables to be matched on the values of certain columns, the join becomes what is known as an *equi-join* because you're selecting only rows with equal values in the specified columns:

```
mysql> SELECT t1.*, t2.* FROM t1, t2 WHERE t1.i1 = t2.i2;
```

```
+----+----+----+----+
| i1 | c1 | i2 | c2 |
+----+----+----+----+
| 2  | b  | 2  | c  |
| 3  | c  | 3  | b  |
+----+----+----+----+
```

The JOIN and CROSS JOIN join types are equivalent to the ',' (comma) join operator.

Solved Questions :-

Q1. Consider the following tables ACTIVITY and COACH. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (viii). Table: ACTIVITY

ACode	ActivityName	ParticipantsNum	PrizeMoney	ScheduleDate
1001	Relay 100x4	16	10000	23-Jan-2004
1002	High jump	10	12000	12-Dec-2003
1003	Shot Put	12	8000	14-Feb-2004
1005	Long Jump	12	9000	01-Jan-2004
1008	Discuss Throw	10	15000	19-Mar-2004

Table: COACH

PCode	Name	ACode
1	Ahmad Hussain	1001
2	Ravinder	1008
3	Janila	1001
4	Naaz	1003

(i) To display the name of all activities with their Acodes in descending order.

- (ii) To display sum of PrizeMoney for each of the Number of participants groupings (as shown in column ParticipantsNum 10,12,16).
- (iii) To display the coach's name and ACodes in ascending order of ACode from the table COACH.
- (iv) To display the content of the GAMES table whose ScheduleDate earlier than 01/01/2004 in ascending order of ParticipantNum.
- (v) SELECT COUNT(DISTINCT ParticipantsNum) FROM ACTIVITY;
- (vi) SELECT MAX(ScheduleDate), MIN(ScheduleDate) FROM ACTIVITY;
- (vii) SELECT SUM(PrizeMoney) FROM ACTIVITY; (viii) SELECT DISTINCT ParticipantNum FROM COACH;

Ans :

- (i) SELECT ActivityName, ACode FROM ACTIVITY ORDER BY Acode DESC;
- (ii) SELECT SUM(PrizeMoney), ParticipantsNum FROM ACTIVITY GROUP BY ParticipantsNum;
- (iii) SELECT Name, ACode FROM COACH ORDER BY ACode;
- (iii) SELECT * FROM ACTIVITY WHERE ScheduleDate < '01-Jan-2004' ORDER BY ParticipantsNum;
- (v) 3
- (vi) 19-Mar-2004 12-Dec-2003
- (vii) 54000 (viii) 16
10 12

Q2. Consider the following tables GAMES and PLAYER. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (viii).

Table: GAMES

GCode	GameName	Number	PrizeMoney	ScheduleDate
101	Carom Board	2	5000	23-Jan-2004
102	Badminton	2	12000	12-Dec-2003
103	Table Tennis	4	8000	14-Feb-2004
105	Chess	2	9000	01-Jan-2004
108	Lawn Tennis	4	25000	19-Mar-2004

Table: PLAYER

PCode	Name	Gcode
1	Nabi Ahmad	101
2	Ravi Sahai	108
3	Jatin	101
4	Nazneen	103

- (i) To display the name of all Games with their Gcodes.
- (ii) To display details of those games which are having PrizeMoney more than 7000.
- (iii) To display the content of the GAMES table in ascending order of ScheduleDate.
- (iv) To display sum of PrizeMoney for each of the Number of participation groupings (as shown in column Number 2 or 4).
- (v) SELECT COUNT(DISTINCT Number) FROM GAMES;
- (vi) SELECT MAX(ScheduleDate), MIN(ScheduleDate) FROM GAMES;
- (vii) SELECT SUM(PrizeMoney) FROM GAMES;
- (viii) SELECT DISTINCT Gcode FROM PLAYER;

- Ans : (i) SELECT GameName,Gcode FROM GAMES;
(ii) SELECT * FROM GAMES WHERE PrizeMoney>7000;
(iii) SELECT * FROM GAMES ORDER BY ScheduleDate;
(iv) SELECT SUM(PrizeMoney),Number FROM GAMES GROUP BY Number;
(v) 2
(vi) 19-Mar-2004 12-Dec-2003
(vii) 59000
(viii) 101
103
108

Q3. Consider the following tables HOSPITAL. Give outputs for SQL queries (i) to (iv) and write SQL commands for the statements (v) to (viii).

No	Name	Age	Department	Dateofadmin	Charge	Sex
1	Arpit	62	Surgery	21/01/06	300	M
2	Zayana	18	ENT	12/12/05	250	F
3	Kareem	68	Orthopedic	19/02/06	450	M
4	Abhilash	26	Surgery	24/11/06	300	M
5	Dhanya	24	ENT	20/10/06	350	F
6	Siju	23	Cardiology	10/10/06	800	M
7	Ankita	16	ENT	13/04/06	100	F
8	Divya	20	Cardiology	10/11/06	500	F
9	Nidhin	25	Orthopedic	12/05/06	700	M
10	Hari	28	Surgery	19/03/06	450	M

- (i) Select SUM(Charge) from HOSPITAL where Sex='F';
(ii) Select COUNT(DISTINCT Department) from HOSPITAL;
(iii) Select SUM(Charge) from HOSPITAL group by Department;
(iv) Select Name from HOSPITAL where Sex='F' AND Age > 20;
(v) To show all information about the patients whose names are having four characters only.
(vi) To reduce Rs 200 from the charge of female patients who are in Cardiology department.
(vii) To insert a new row in the above table with the following data :
11, 'Rakesh', 45, 'ENT', {08/08/08}, 1200, 'M'
(viii) To remove the rows from the above table where age of the patient > 60.

- Ans : (i) 1200
(ii) 4
(iii) 1050
700
1150
1300
(iv) Dhanya
(v) SELECT * FROM HOSPITAL WHERE NAME LIKE “_ _ _ _”;
(vi) UPDATEHOSPITAL SET CHARGE = CHARGE – 200 WHERE (DEPARTMENT = 'CARDIOLOGY' AND SEX = 'F');

- (vii) INSERT INTO HOSPITAL VALUES(11,'Rakesh',45,'ENT',{08/08/08}, 1200, 'M');
- (viii) DELETE FROM HOSPITAL WHERE AGE > 60;

Q4. Consider the following tables BOOKS. Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (viii).

Table : BOOKS

B_Id	Book_Name	Author_Name	Publisher	Price	Type	Quantity
C01	Fast Cook	Lata Kapoor	EPB	355	Cookery	5
F01	The Tears	William Hopkins	First	650	Fiction	20
T01	My C++	Brain & Brooke	FPB	350	Text	10
T02	C++ Brain	A.W.Rossaine	TDH	350	Text	15
F02	Thunderbolts	Anna Roberts	First	750	Fiction	50

- i). To list the names from books of Text type.
- ii). To display the names and price from books in ascending order of their price.
- iii). To increase the price of all books of EPB publishers by 50.
- iv). To display the Book_Name, Quantity and Price for all C++ books. v).
Select max(price) from books;
- vi). Select count(DISTINCT Publishers) from books where Price >=400; vii).Select Book_Name, Author_Name from books where Publishers = 'First'; viii).Select min(Price) from books where type = 'Text';

- Ans :
- (i) SELECT Book_Name FROM BOOKS WHERE Type = 'Text';
 - (ii) SELECT Book_Name, Price FROM BOOKS ORDER BY Price;
 - (iii) UPDATE BOOKS SET Price = Price + 50 WHERE Publisher = 'EPB';
 - (iv) SELECT Book_Name, Quantity, Price FROM BOOKS WHERE Book_Name LIKE '%C++%';
 - (v) 750
 - (vi) 2
 - (vii) The Tears William Hopkins
Thunderbolts Anna Roberts
 - (viii) 350

Q5. Consider the tables ITEMS & COMPANY. Write SQL commands for the statements (i) to (iv) and give the outputs for SQL queries (v) to (viii).

Table : ITEMS

ID	PNAME	PRICE	MDATE	QTY
T001	Soap	12.00	11/03/2007	200
T002	Paste	39.50	23/12/2006	55
T003	Deodorant	125.00	12/06/2007	46
T004	Hair Oil	28.75	25/09/2007	325
T005	Cold Cream	66.00	09/10/2007	144
T006	Tooth Brush	25.00	17/02/2006	455

4	Trisla	XII	8/8/95	F	Mumbai	450
5	Store	XII	8/10/95	M	Delhi	369
6	Marisla	XI	12/12/94	F	Dubai	250
7	Neha	X	8/12/95	F	Moscow	377
8	Nishant	X	12/6/95	M	Moscow	489

- (i) To Display all information about class XII students. (ii)
List the name of made student of class X.
- (iii) List names all class of all students in descending order of DOB.
- (iv) To count the number of student in XII Class of Mumbai city. (v)
SELECT DISTINCT(Sex) FROM Student.
- (vi) SELECT AVERAGE(Marks) FROM Student GROUP BY Sex.
- (vii) SELECT COUNT(*)FROM Student where Class = 'XI'
(viii) SELECT MAX(Marks) FROM Student.

3. (a) Write an SQL query to create the table books with following structure.

Field	Type	Constraints
BookID	Varchar (5)	Primary Key
BookName	Varchar (20)	
Author	Varchar (20)	
Price	Decimal (5, 2)	

(b) Following two tables are shown below are preset in database-

BOOK

EID	EbookName	Author
3	Internal terms	Okhla
4	RDBMS	Steve
5	NetBeans	Gosling

COST

Subj ID	EID	Cost
E40	1	2000
E41	4	1700
E42	3	1800
E43	5	1250

- i. Identify the foreign key column in the table COST.
- ii. Check every value in EID column of both in table. Do you find any discrepancy.

(c) Consider the tables product and client give below –

Product

PID	ProdName	Manufactures	Price
T P01	Pen	Cello	5

T P02	Gel pen	Luxar	10
T P03	Ink pen	Luxar	10
T P04	Pencil	Natraj	2
T P05	Sketch	Camel	2

Client

CID	CliName	City	PID
01	Rakesh	Delhi	TP01
02	Prakash	Mumbai	TP05
03	Suresh	Delhi	TP03
04	Dinesh	Delhi	TP02
05	Pravesh	Banglore	TP04

- i. To Display the details of products whose Price is in the range of 6 to 10
(Both value included)
 - ii. To display client name, city from table chart and ProdName and price from table product.
 - iii. To increase the price of all products by 10. (Product the output only)
 - iv.
4. Write the SQL query commands based on following table **Table : Book**

Book_id	Book_name	Author_name	Publisher	Price	Type	Quantity
C0001	Fast Cook	Lata Kapoor	EPB	355	Cookery	5
F0001	The Tears	William Hopkins	First Publi.	650	Fiction	20
T0001	My First c++	Brain & Brooke	FPB	350	Text	10
T0002	C++ Brain works	A.W. Rossaine	TDH	350	Text	15
F0002	Thunderbolts	Anna Roberts	First Publ.	750	Fiction	50

Table : issued

Book_Id	Quantity Issued
T0001	4
C0001	5
F0001	2

Write SQL query for (a) to (f)

- (a) To show book name, Author name and price of books of First Pub. Publisher
- (b) To list the names from books of text type
- (c) To Display the names and price from books in ascending order of their prices.
- (d) To increase the price of all books of EPB publishers by 50.
- (e) To display the Book_Id, Book_name and quantity issued for all books which have been issued

- (f) To insert a new row in the table issued having the following data. „F0003“, 1 (g) Give the output of the following
- Select Count(*) from Books
 - Select Max(Price) from books where quantity >=15
 - Select book_name, author_name from books where publishers="first publ."
 - Select count(distinct publishers) from books where Price>=400

5. Write the SQL query commands based on following table

Table : SchoolBus

Rtno	Area_covered	Capacity	Noofstudents	Distance	Transporter	Charges
1	Vasant kunj	100	120	10	Shivamtravels	100000
2	Hauz Khas	80	80	10	Anand travels	85000
3	Pitampura	60	55	30	Anand travels	60000
4	Rohini	100	90	35	Anand travels	100000
5	Yamuna Vihar	50	60	20	Bhalla Co.	55000
6	Krishna Nagar	70	80	30	Yadav Co.	80000
7	Vasundhara	100	110	20	Yadav Co.	100000
8	Paschim Vihar	40	40	20	Speed travels	55000
9	Saket	120	120	10	Speed travels	100000
10	Jank Puri	100	100	20	Kisan Tours	95000

- (b) To show all information of students where capacity is more than the no of student in order of rtno.
- (c) To show area_covered for buses covering more than 20 km., but charges less than 80000.
- (d) To show transporter wise total no. of students traveling.
- (e) To show rtno, area_covered and average cost per student for all routes where average cost per student is - charges/noofstudents.
- (f) Add a new record with following data:
(11, "Moti bagh",35,32,10," kisan tours ", 35000)
- (g) Give the output considering the original relation as given:
- select sum(distance) from schoolbus where transporter= " Yadav travels";
 - select min(noofstudents) from schoolbus;
 - select avg(charges) from schoolbus where transporter= " Anand travels";
 - select distinct transporter from schoolbus;

6. Write the SQL query commands based on following table

TABLE : GRADUATE

S.NO	NAME	STIPEND	SUBJECT	AVERAGE	DIV.
1	KARAN	400	PHYSICS	68	I
2	DIWAKAR	450	COMP. Sc.	68	I
3	DIVYA	300	CHEMISTRY	62	I
4	REKHA	350	PHYSICS	63	I
5	ARJUN	500	MATHS	70	I
6	SABINA	400	CEHMISTRY	55	II
7	JOHN	250	PHYSICS	64	I
8	ROBERT	450	MATHS	68	I

9	RUBINA	500	COMP. Sc.	62	I
10	VIKAS	400	MATHS	57	II

- (a) List the names of those students who have obtained DIV 1 sorted by NAME.
 (b) Display a report, listing NAME, STIPEND, SUBJECT and amount of stipend received in a year assuming that the STIPEND is paid every month.
 (c) To count the number of students who are either PHYSICS or COMPUTER SC graduates.
 (d) To insert a new row in the GRADUATE table: 11,"KAJOL", 300, "computer sc", 75, 1 (e)

Give the output of following sql statement based on table GRADUATE:

(i) Select MIN(AVERAGE) from GRADUATE where SUBJECT="PHYSICS";

(ii) Select SUM(STIPEND) from GRADUATE WHERE div=2;

(iii) Select AVG(STIPEND) from GRADUATE where AVERAGE>=65;

(iv) Select COUNT(distinct SUBJECT) from GRADUATE; (f) Assume that there is one more table GUIDE in the database as shown below:

Table: GUIDE

MAINAREA	ADVISOR
PHYSICS	VINOD
COMPUTER SC	ALOK
CHEMISTRY	RAJAN
MATHEMATICS	MAHESH

- g) What will be the output of the following query:
 SELECT NAME, ADVISOR FROM GRADUATE, GUIDE
 WHERE SUBJECT= MAINAREA;

7. Write SQL command for (i) to (vii) on the basis of the table SPORTS Table:

SPORTS

Student NO	Class	Name	Game1	Grade	Game2	Grade2
10	7	Sammer	Cricket	B	Swimming	A
11	8	Sujit	Tennis	A	Skating	C
12	7	Kamal	Swimming	B	Football	B
13	7	Venna	Tennis	C	Tennis	A
14	9	Archana	Basketball	A	Cricket	A
15	10	Arpit	Cricket	A	Atheletics	C

- (a) Display the names of the students who have grade 'C' in either Game1 or Game2 or both.
 (b) Display the number of students getting grade 'A' in Cricket.
 (c) Display the names of the students who have same game for both Game1 and Game2.
 (d) Display the games taken up by the students, whose name starts with 'A'. (e) Assign a value 200 for Marks for all those who are getting grade 'B' or grade 'A' in both Game1 and Game2.
 (f) Arrange the whole table in the alphabetical order of Name.
 (g) Add a new column named 'Marks'.

8. Write SQL command for (i) to (vii) on the basis of the table Employees & EmpSalary Table:
 Employees

Empid	Firstname	Lastname	Address	City
010	Ravi	Kumar	Raj nagar	GZB
105	Harry	Waltor	Gandhi nagar	GZB

152	Sam	Tones	33 Elm St.	Paris
215	Sarah	Ackerman	440 U.S. 110	Upton
244	Manila	Sengupta	24 Friends street	New Delhi
300	Robert	Samuel	9 Fifth Cross	Washington
335	Ritu	Tondon	Shastri Nagar	GZB
400	Rachel	Lee	121 Harrison St.	New York
441	Peter	Thompson	11 Red Road	Paris

Table: EmpSalary

Empid	Salary	Benefits	Designation
010	75000	15000	Manager
105	65000	15000	Manager
152	80000	25000	Director
215	75000	12500	Manager
244	50000	12000	Clerk
300	45000	10000	Clerk
335	40000	10000	Clerk
400	32000	7500	Salesman
441	28000	7500	salesman

Write the SQL commands for the following :

- (i) To show firstname,lastname,address and city of all employees living in paris (ii)
To display the content of Employees table in descending order of Firstname.
- (iii) To display the firstname,lastname and total salary of all managers from the tables Employee and empsalary , where total salary is calculated as salary+benefits. (iv)
To display the maximum salary among managers and clerks from the table Empsalary.
- (v) Give the Output of following SQL commands:
 - a) Select firstname,salary from employees ,empsalary where designation = 'Salesman' and Employees.empid=Empsalary.empid;
 - b) Select count(distinct designation) from empsalary;
 - c) Select designation, sum(salary) from empsalary group by designation having count(*) >2;
 - d) Select sum(benefits) from empsalary where designation ='Clerk';

DATABASE TRANSACTIONS

Brief Summary of the Chapter:

Reliability is a quality, which we seek for in everything that we get. The same is applicable to software and to database. A reliable database system is that which retains our database in a consistent state despite occurrence of many failures. Database Transaction is the field which requires utmost consistency. This chapter describes fundamentals of database transactions and its reliable implementation. A database can be called consistent when it follows ACID properties. A transactions can be called reliable when it either COMMITed i.e. successfully all its steps are carried out and changes are permanently reflected in the database or be ROLLBACKed i.e. in case of failures, if

transaction cannot be successfully completed then any data changes made by the transaction are brought back to the state that earlier was prior to the execution of this transaction.

KEY POINTS OF THE CHAPTER

- 1 **TRANSACTION:** A transaction is a logical unit of work (LUW) that must succeed or fail in its entirety.
- 2 **COMMIT** committing a transaction means all the steps of a transaction are carried out successfully and all the data changes are made permanent in the database .
- 3 **ROLLBACK** Transaction roll back means that the transaction has not been finished completely and hence all data changes made by the transaction in the data base , if any , are undone and the data base returns to the same state as it was before this transaction execution started .
- 4 **SAVEPOINT**-It is point in a transaction, up till which all changes have been saved permanently.
- 5 **ACID**- It is an acronym of ATOMOCITY, CONSISTENCY, ISOLATION, DURABILITY
- 6 **PROTOCOL** A **Protocol** means the rules that are applicable for a network. Protocol defines standardized formats for data packets, techniques for detecting and correcting errors and so on.
- 7 **DISTRIBUTED DATABASE** The **distributed database** may be defined as a database stored and running on a collection of machines that do not have shared memory, yet looks to its users like a single database on single computer.
- 8 **DATA FRAGMENTATION** A distributed database is broken into logical units called fragments and this is known as data fragmentation.

For example , transaction preparing result –card may involved following steps :

Open Marks file , Result file

Read Marks

Calculate Percentage

Calculate Grade

Write in Result file

Print Report card

Close both files

The above transaction will successfully terminate (COMMIT) if all of its steps are executed successfully, otherwise all of its steps would not be processed at all .That means , even if some of it steps get executed and then if an error occurs then all the executed steps would be undone(ROLLBACK)

SOLVED QUESTIONS

1. What are the two ways in which multiple transactions can be executed?

Ans. - Multiple transactions can be executed in one of the following two ways: (i) Serially (ii) Concurrently

2. What is a savepoint?

Ans. - Savepoints are special operations that allow you to divide the work of a transaction into different segments. In case of a failure, you can execute rollbacks to the savepoint only, leaving prior changes intact.

3. What to you understand by a database transaction?

Ans. - A database transaction is a logical unit of work that must succeed or fail in its entirety.

4. Why do understand by transaction COMMIT and ROLLBACK?

Ans-COMMITing a transaction means all the steps of a transaction are carried out successfully and all data changes are made permanent in the database. Transaction ROLLBACK means transaction has not been finished completely and hence all data changes made by the transaction in the database if any, are undone and the database returns to the state as it was before this transaction execution started.

5. What do you understand by ACID properties of database transaction?

Ans. -To ensure the data-integrity, the database system maintains the following properties of transaction. The properties given below are termed as ACID properties-an acronym derived from the first letter of each of the properties.

- (i) **Atomicity**-This property ensures that either all operations of the transactions are reflected properly in the database, none are. Atomicity ensures either all-or-none operations of a transaction are carried out.
- (ii) **Consistency**-This property ensures that database remains in a consistent state before the start of transaction and after the transaction is over.
- (III) **Isolation**-Isolation ensures that executing transaction execution in isolation i.e. is unaware of other transactions executing concurrently in the system.
- (IV) **Durability**-This property ensures that after the successful completion of a transaction i.e. when a transaction COMMITs, the changes made by it to the database persist i.e. remain in the database irrespective of other failures.

6. What the function is of redo and undo logs?

Ans. -Every database has a set of redo log files. It records all change in data including both committed and uncommitted changes. Undo logs stored roll backed data.

7. What TCL commands are supported by SQL?

Ans. -SQL supports following TCL commands

BEGIN |START TRANSACTION-Marks the beginning of a transaction

COMMIT-Ends the current transaction by saving database changes and starts a new transaction.

ROLLBACK-Ends the current transaction by discarding changes and starts a new transaction.

SAVEPOINT-Defines breakpoints for the transactions to allow partial rollbacks. **SET**

AUTOCOMMIT-Enables or disable the default autocommit mode.

8. Which two statements complete a transaction?

- a. DELETE employees;
- b. DESCRIBE employees;
- c. ROLLBACK TO SAVEPOINT C;
- d. GRANT SELECT ON employees TO SCOTT;
- e. ALTER TABLE employees
MODIFY COLUMN sal;
- f. Select MAX(sal)
FROM employees
WHERE department_id=20;

Ans. - C, E

UNSOLVED QUESTIONS

1. What is the benefit of transaction?
2. Define a transaction.
3. What are the five states of the transactions?
4. What will happen when COMMIT statement is issued?
5. What will happen when ROLLBACK statement is issued?
6. How can you start a new transaction?

UNIT-4
IT- Applications

Brief Summary

Three major groups of IT applications covered in this chapter are: e-Governance, e-Business, and e-Learning.

e-Governance involves applications which are used by government agencies/ organizations to provide better governance.

e-Business applications use technology to effectively access and deliver business related services and perform various kinds of business transactions.

e-Learning applications use technology to effectively deliver and monitor learning and teaching processes. They help the trainer to organize and manage his/her lesson plans, present them to students/learners, evaluate and take the feedback to enhance & fine-tune this process in future.

An IT application has two major parts: Front-end (The user interface) and back-end (The database).

The front-end of an IT application is usually a group of one or more forms through which the user enters the input values and is shown the corresponding output.

The back-end of an IT application is the database in which all the data is stored. This database resides in the server. All the data which is requested by the front-end is supplied by back-end.

A good back-end ensures sustainability, efficiency and easy modification of the application.

Use of ICT has its social and economic impacts.

People change their way of conducting the transactions and thus save their time, money, and energy. Economy is impacted as ICT leads to fast completion of data transfer and data processing jobs. ICT also brings transparency in the administration.

ICT stands for Information and Communication Technology. Like everything else that is used by common man, ICT (Information and Communication Technology) also has impacted the society. ICT has impacted the society in a much wider way than any other technology. Most of these impacts are positive, though there are some negative impacts also.

Social and Economic benefits of ICT:

- Social networking sites help people remain in touch with their nears and dears even when they are staying on opposite sides of the globe.
- Social networking sites help like-minded people come together and work for some cause.
- e-Governance sites help people save their productive time by performing various government related jobs like getting some forms, depositing bills online.
- ICT helps economy grow at a faster rate as it provides transparency in the processes and helps the government to keep check on defaulters.
- Due to e-Banking and use of plastic money more money is put in circulation leading to faster growth of GDP.
- **e-Learning** sites make quality study material available even to the students staying at remote places.

e-Business- To reach the customers and business associates in an effective and fast manner business houses (now a days many small shops like snacks corners and paan shops also) provide their services on the net.

These ICT enabled counters are used to get orders and feedbacks from the customers and also for inter-business transactions. This helps the businesses to widen their customer base.

1. Amazon.com (e-Business site of Amazon.com) - Amazon is the world's largest online store.

Through this URL Amazon does its online business

2. flipkart.com – Very popular online shopping store offering a range of products at very reasonable prices.

e-Learning : e-Learning has multiple goals. It is much more than having a net connection and/or CDs through which people learn. E-Learning is about giving freedom to people to learn whatever they want to learn and whenever they want to learn. This is irrespective of (except in exceptional cases)

age, caste, gender, economical background, or qualification of the learner. The only requirement is the will to learn. E-learning is available on almost all the topics imaginable.

1. www.khanacademy.com (e-Learning site) - You will access free tutorials in all web development technologies and almost on any topic of learning from a vast variety of subjects. Matter is available in interactive video formats.

2. www.cbseconline.in - It is an educational site where subject content and solved papers are present along with sample projects, from which students can benefit.

3. www.kvselearning.in- This portal provides interactive modules for students to learn various topics on informatics practices using interactive video lessons.

CLOUD COMPUTING(Future trends)

This means that cloud computing is a type of Internet-based computing, and it consists of every situation where the use of IT resources by an entity, including a person or an organization.

Properties of cloud computing are :

Access to the resources is:

Controlled by the entity, and restricted by them to their authorized users. Delivered via the Internet to all of these users.

The resources are:

Hosted by a service provider on behalf of the entity.

Dedicated to their exclusive use.

Data processed by the resources is:

Private to the entity and its associates.

Entered or collected by them, or automatically produced for them

Question- (Short Answers):-

Q. Write Short Notes on : e-Governance, e-Business, e-Learning.

Answer : **e-Governance** involves applications which are used by government agencies/organizations to provide better governance.

e-Business applications use technology to effectively access and deliver business related services and perform various kinds of business transactions.

e-Learning applications use technology to effectively deliver and monitor learning and teaching processes. They help the trainer to organize and manage his/her lesson plans, present them to students/learners, evaluate and take the feedback to enhance & fine-tune this process in future.

Q. What are Front-end (The user interface) and back-end (The database) ?

Answer : An IT application has two major parts: Front-end (The user interface) and backend (The database). The front-end of an IT application is usually a group of one or more forms through which the user enters the input values and is shown the corresponding output. A good front-end ensures the acceptance of the application in the first go. The back-end of an IT application is the database in which all the data is stored. This database resides in the server.

All the data which is requested by the front-end is supplied by back-end. A good back-end ensures sustainability, efficiency and easy modification of the application.

Q. What are the terms involved in Development of an IT application ?

Development of an IT application involves creation of front-end, back-end, and connecting these two. It also involves testing the application and then implementing it.

Q. What social and economic impacts are found of ICT. ?

Answer : Society is impacted as due to ICT people change their way of conducting the transactions and thus save their time, money, and energy. Economy is impacted as ICT leads to fast completion of data transfer and data processing jobs. ICT also brings transparency in the administration.

Q. What do you mean by Infomania ?

Answer : Infomania is the condition of reduced concentration caused by continually responding to electronic communications such as e-mail, SMSs, MMSs etc. ICT is making more and more people info maniac. This is making some people waste their productive time in the office, neglect their families and duties. Some people are also in a habit of frequently checking their e-mails even when they are on vacation with their families. We have to be careful in the use of ICT so that we use it constructively and not get obsessed with it and become info maniacs.

Q. What OS and fonts are used for Indic Language Support ?

Answer : Mac OS 10.5 supports Devanagari, Gujarati, Gurmukhi and Tamil. Linux based desktops support Bengali, Devnagari, Gujarati, Kannada, Malayalam, Oriya, Tamil, Telugu and Gurmukhi,

Q. Is it a good practice to take in the inputs using Text Fields only? Justify your answer. Answer : Text Field is used to get small textual information like Name, RollNo, email address, quantity, etc. Disabled/Uneditable Text Fields are also used to display such information so it is a good practice to take in the inputs using Text Fields. But we may also use Dialog to take input.

Q. How can be established Front-End and Database Connectivity ?

Answer:-A database application consists of Front-End and Database (Back-end). These two entities cannot work in isolation. Whatever data is entered by the user has to go to the database and whatever relevant data is extracted from the database is to be shown to the user through the Front-End. Therefore, the Front-End and the Database of an IT application must be connected. This connectivity is achieved as learnt in Chapter 6 (Database Connectivity). If the application is web based then the connectivity is achieved using some scripting language (like vbScript or JavaScript).

Q. Are there Websites in Indian languages ? Write about them ?

Ans: Yes, these days multiple Government and private organizations are providing their websites in Hindi and other regional languages also. The aim is to provide their services even to the common people in remote areas. Small towns where computers and internet have reached, information on the net should also be available in regional languages so that people not knowing English can also have access to the information. Language should not be a hindrance but a support to learning.

Understanding the importance of regional languages, many websites have also provided translation services so that the same page can be viewed in any language of user's choice.

Q. What do mean by Front-End Interface ?

Front-end and back-end are terms used to characterize program interfaces and services relative to the initial user of these interfaces and services. (The "user" may be a human being or a program.)

A "front-end" [application](#) is one that application users interact with directly.

A "back-end" application or program serves indirectly in support of the front-end services, usually by being closer to the required resource or having the capability to communicate with the required resource. The back-end application may interact directly with the front-end or, perhaps more typically, is a program called from an intermediate program that mediates front-end and back-end activities.

Q. What Components are used for creating Front-end of any software? Give details about those components.

Ans: To create a front-end various components, like those studied in Java GUI application development, are used. Some of the most commonly used components are discussed below:

Text Field: Text Field is used to get small textual information like Name, RollNo, email address, quantity, etc.

Text Area: Text Area is used to get long textual information which may span multiple lines of text. E.g. to get Address, Complaint, Suggestion etc.

Radio Button: Radio buttons are used to get an option out of several mutually exclusive (out of which only one can be selected) options. Examples of such options are Gender (Male or Female or Other), Type of Credit Card (Master or Visa or Other), Type of internet connection (DialUp or Braodband), etc.

Check Box: Check boxes are used to get one or more options out of several given options which are not mutually exclusive. Examples of such options are Hobbies (a user may have zero or more hobbies), Magazines to subscribe for (a user may subscribe to zero or more of the given magazines) etc.

List: A list is used to get one or more options out of several given options which may or may not be mutually exclusive. This may seem to be the case where Check Boxes are to be used, but the difference is in the number of options available. If the number of options is small, then Check Boxes can be used. In case of large number of options, using Check Boxes may take up a lot of space on the form and it may also be inconvenient for the user to select the desired options. In such cases Lists are preferred over checkboxes. Examples of such cases are: To select cities out of a given list of cities, to select magazines out of a given list of magazines, etc.

Combo Box: A Combo Box is used to get an option out of several given options which are mutually exclusive. This may seem to be the case where Radio Buttons are to be used, but the difference is in the number of options available. If the number of options is small, then Radio Buttons can be used. In case of large number of options, using Radio Buttons may take up a lot of space on the form and it may also be inconvenient for the user to select the desired option. In such cases Combo Boxes are preferred over radio buttons. Examples of such cases are: To select a city out of a given list of cities, to select a train out of a given list of trains, etc.

Password Field: A Password Field is used to get some secret textual information like Password, CVV number of a credit card etc.

Sample Paper

Subject : Informatics Practices (065)

Time Allowed : 3 hours

Class: XIIth

Max. Marks : 70

- 1 (a) Which Protocol is used for the transfer of hypertext document on the internet? 1
- (b) Two doctors in the same room have connected their Palm Tops using Bluetooth for working on a Group presentation. Out of the following, what kind of Network they have formed? 1
LAN, MAN, PAN, WAN
- (c) Arrange the following communication channels in ascending order of their data transmission rates.
Ethernet Cable, Optical Fiber, Telephone Cable, Co-axial Cable 1
- (d) Which of the following are open standards? 1
(i) .OGG (ii) .DOC (iii) .TTF (iv) .JPEG
- (e) Jai Khanna is confused between the terms Domain Name and URL. Explain the difference with the help of appropriate examples of each. 2 (f)
- Define any two threats to Network Security. 2
- (g) Differentiate between Star and Bus Topology of networks. 2
- 2 (a) While working in Netbeans, Ms Kanta Surbhi wants to display 'Cleared' or 'Re-attempt required' message depending the marks entered in jTextField. Help her to choose more appropriate statement out of 'If statement' and 'Switch statement' 1
- (b) What is the purpose of break statement in a loop? 1
- (c) How is tag different from tag of HTML? 1 (d)
What is the use of <H1> tag in an HTML document? 1
- (e) How many times are the following loops executed? 2
int num=5; do
{
System.out.println(num+1); num-
-;
} while (num !=0);
- (f) Differentiate between HTML and XML. 2

- (g) Write Java code that takes the price of a pencil from jTextField1 and quantity of pencils from jTextField2 and calculates total amount as price * quantity to be displayed in jTextField3 and also find 10% tax amount to be displayed in jTextField4. 2

- 3 (a) If a database "Student" exists, which MySql command helps you to start working in that database? 1
- (b) Sahil created a table in Mysql. Later on he found that there should have been another column in the table. Which command should he use to add another column to the table? 1
- (c) Pooja, a student of class XI, created a table "Book". Price is a column of this table. To find the details of books whose prices have not been entered she wrote the following query: 1 Select * from Book where Price = NULL;
Help Pooja to run the query by removing the errors from the query and rewriting it.
- (d) Rama is not able to change a value in a column to NULL. What constraint did she specify when she created the table? 1
- (e) Distinguish between a Primary key and Candidate key with the help of suitable example of each. 2

- (f) The LastName column of a table "Directory" is given below: 2

LastName

Batra
Sehgal
Bhatia
Sharma
Mehta

Based on this information, find the output of the following queries:

(i) SELECT lastname FROM Directory WHERE lastname like "_a%";

(ii) SELECT lastname FROM Directory WHERE lastname not like "%a";

- (g) A table "Stock" in a database has 5 columns and contains 17 records. What is the degree and cardinality of this table? 2

- 4 (a) What will be displayed in of jTextField1 after executing the following code? 2

```
int m = 16 ;  
m = m+1 ; if  
(m<15)
```

```
    jTextField.setText (Integer. toString (m) ) ; else  
    jTextField.setText (Integer. toString (m+15) ) ;
```

- (b) Rewrite the following program code using a Switch statement: if 2
(code ==1)

```
    Month = "January";  
else if (code ==2)  
    Month = "February";  
else if (code==3)  
    Month = "March";  
else if (code==4)  
    Month = "April";  
else  
    Month = "No Match";
```

(c) What will be displayed in JTextArea1 after executing the following statement? 1
 JTextArea1.setText ("cbse\nFinal_Exam \ tIp"); .

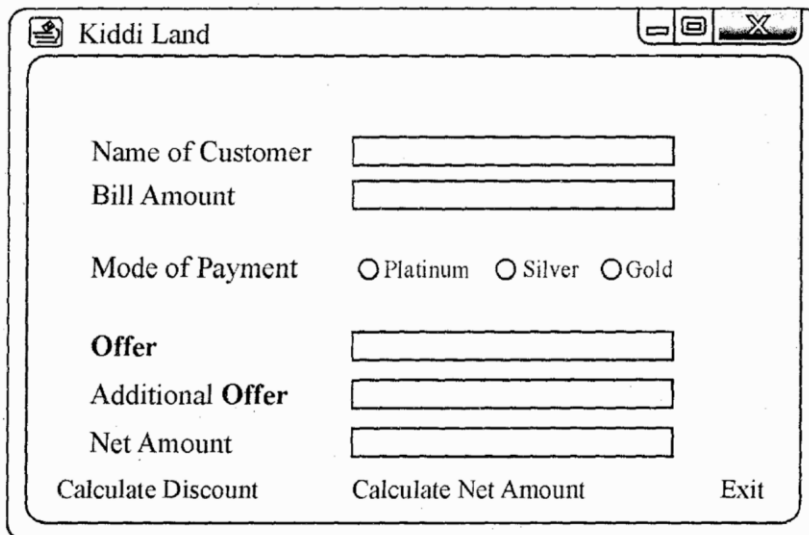
(d) Rewrite the following program code using a for loop: 1
 int i = 1, sum = 0; while
 (i<10)
 {
 sum = sum + i
 i = i +1;
 }

(e) Given a String object namely 'subject' having value as "123" stored in it. What will be result of the following? 1
 JOptionPane.showMessageDialog (null, " " + (subject.length () + Integer.parseInt (subject)));

(f) The following code has some error(s). Rewrite the correct code underlining all the corrections made: 2
 int Sum=0, Step=5 ;
 int I ;
 for (i = 0, i =<5, i++)
 {
 Step+=5,
 Sum+=Step ;
 }
 JTextArea1.showText{" "+Sum) ;

(g) Mr. Radhey Shyam Bansal the owner of the Kiddi Land Enterprises has asked his programmer Ekta to develop the following GUI in Netbeans:

Mr. Ram Kishore, the owner of the Kiddi Land Enterprises has asked his programmer Saumya to develop the following GUI in Netbeans.



Mr. Ram accepts payment through three types of credit cards. The offers is given according to the following scheme:

Type of Card	Offer
--------------	-------

Platinum	20% of amount
Gold	15% of amount
Silver	10% of amount

If the Bill amount is more than Rs, 25,000, then the customer gets an additional discount of 5%. Write Java code for the following:

(i) To assign Additional Discount as 0 (jTextField4) and Net Amount as 0 (jTextField5). Also set them as un-editable. 2

(ii) [When "Calculate Discount" (jButton1) is clicked]
 To calculate discount as per the given criteria and display the same in jTextField3
 To assign Additional Discount (jTextField4) as 5% of amount (jTextField2) as per the above condition. 2
 To enable "Calculate Net Amount" (jButton2) button

(iii) [When "Calculate Net Amount" (jButton2) button is clicked]
 To calculate Net Amount as [TotalCost (jTextField2) - Discount (jTextField3) - Additional Discount (jTextField4)]
 To display the Net Amount in jTextField5 2

5 (a) Explain the purpose of DDL and DML commands used in SQL. Also give two examples of each. 2

(b) Write the output of the following sql commands. 2
 (i) SELECT RIGHT('USS/23/67/09',2);
 (ii) SELECT RTRIM('RDBMS MYSQL ');
 (iii) SELECT MOD(7,3);
 (iv) SELECT LENGTH('WELCOME');

(c) Consider the table SPORTS given below. Write commands in SQL for (i) to (iv) and output for (v) to (viii) 6

Table : SPORTS

StudentNo	Class	Name	Game1	Grade1	Game2	Grade2
10	7	Sammer	Cricket	B	Swimming	A
11	8	Sujit	Tennis	A	Skating	C
12	7	Kamal	Swimming	B	Football	B
13	7	Venna	Tennis	C	Tennis	A
14	9	Archana	Basketball	A	Cricket	A
15	10	Arpit	Cricket	A	Athletics	C

- (i) Display the names of the students who have grade 'A' in either Game1 or Game2 or both.
- (ii) Display the number of students having game 'Cricket'.
- (iii) Display the names of students who have same game for both Game1 and Game2.
- (iv) Display the games taken by the students whose name starts with 'A'.
- (v) SELECT COUNT(*) FROM SPORTS.
- (vi) SELECT DISTINCT Class FROM SPORTS.
- (vii) SELECT MAX(Class) FROM STUDENT;

(vii) SELECT COUNT(*) FROM SPORTS GROUP BY Game1;

6 (a) Write an SQL query to create the table 'Item' with the following structure:

2

Field	Type	Constraint
ItemCode	Varchar(5)	Primary Key
ItemName	Varchar(20)	
Category	Varchar(20)	
Price	Decimal(5,2)	

(b) Consider the tables HANDSETS and CUSTOMER given below:

Handsets

SetCode	SetName	TouchScreen	PhoneCost
N1	Nokia 2G	N	5000
N2	Nokia 3G	Y	8000
B1	BlackBerry	N	14000

Customer

CustNo	SetNo	CustAddress
1	N2	Delhi
2	B1	Mumbai
3	N2	Mumbai
4	N1	Kolkata
5	B1	Delhi

With reference to these tables, Write commands in SQL for (i) and (ii) and output for (iii) below:

(i) Display the CustNo, CustAddress and corresponding SetName for each 2 customer.

(ii) Display the Customer Details for each customer who uses a Nokia 2 handset.

(iii) Select SetNo, SetName 2

from
Handsets,
customer
where
SetNo =
SetCode and
CustAddress
= 'Delhi';

(c) Answer the following questions based on above given two tables (i.e.

Handsets

& Customer)

2

- (i) How many rows and how many columns will be there in the Cartesian product of these two tables?
- (ii) Which column in the 'Customer' table is the foreign key?

- 7. (a) Write two advantages of e-Learning sites. 1
- (b) Write three important features of e-Governance. Give URL of one of the commonly used - eGovernance portals. 2
- (c) Anuja is creating a form for her practical file. Help her to choose most appropriate controls from List Box, Combo Box, TextField, TextArea, Radio Button, Check box, Label and Command button for the following entries from user: 2
 - (i) A message "Enter Marks" in front of a Text Field.
 - (ii) An input to choose more than one subject from a set of choices.
 - (iii) An input for entering remarks (iv) An input for accepting Gender.



Marking Scheme

1. (a) HTTP (or Hyper Text Transfer Protocol) *1 mark for Abbreviation and/or Full Form).*
(b) PAN
1 mark for correct answer.
(c) Telephone Cable, Ethernet Cable, Co-axial Cable, Optical Fiber
(1 Mark for correct answer)
(d) Open standard formats are : (i) .OGG (ii) .JPEG.
(1 make for correct answer).
(e) A URL (Uniform Resource Locator) is the complete address of a document on the web, whereas a domain name specifies the location of document's web server. A domain name is a component of the URL used to access web sites.
For example the web address
http://www.example.net/index.html is
a URL.
In this URL www.example.net is the domain name.
(2 marks for correct explanation of difference with the help of example)
(f) **Denial of Service:** It refers to any threat that prevents the legitimate users from accessing the network resources or processing capabilities.
Snooping: It refers to any threat that results in an unauthorized user obtaining information about a network or the traffic over that network.
(1 mark each for correctly defining any two threats)
(g) **Star Topology:** It is characterized by central switching node (communication controller) and unique path (point to point link) for each host. It is easy to add and remove hosts easily.
Bus Topology: It is characterized by common transmission medium shared by all the connected hosts, managed by dedicated nodes. It offers simultaneous flow of data and control.
(2 marks for correct difference)
2. (a) IF statement
(1 mark for identifying IF as the correct statement) (b)
break statement is used to terminate the loop.
(1 mark for correct answer)
(c) [stands for unordered list] OR [used to display a bulleted list].
 [stands for ordered list] OR [used to display an ordered/numbered list].
(1 mark for anyone correct difference)
(d) <H1> tag is used to display heading with largest font size.
(1 mark for correct answer)
(e) 5 times
(2 marks for correct answer)

(f)

HTML	XML
Defines how webpage is displayed	Defines, stores and retrieves the data
HTML tags are predefined	XML tags are not predefined.
New tags cannot be defined	New tags can be created as per need
HTML tags may not have closing tag	XML tags must have a closing tag.
HTML tags are not case-sensitive.	XML tags are case-sensitive.

(1 mark each for any 2 correct differences)

(g) `float Price = Float.parseFloat(jTextField1.getText ());`
`int Qty=Integer.parseInt(jTextField2.getText()); float`
`Amt= Price* Qty; float Tax= Amt*0.1;`
`jTextField3.setText(""+Amt) ;`
`jTextField4.settext(""+Tax) ;`

(2 marks for correct code)

Note: double/int Data type may also be accepted for price

3. (a) use student;

(1 mark for correct answer)

Note: Mentioning only USE command is also acceptable.

(b) Alter table

(1 mark for correct answer)

(c) Select * from Book where Price IS NULL;

(1 mark for correct answer)

(d) She specified 'NOT NULL' constraint for that column while creating the table. *(1 mark for correct answer)*

(e) Candidate key is a column or a group of columns that is capable of becoming the primary key. A table can have multiple candidate keys but it can have only one primary key.

Example:

A table STUDENT contains the columns AdmNo, RollNo,Name, Address, PhoneNo. In this table AdmNo and RollNo (both are unique for every row in the table) are candidate keys. Out of these any one can be chosen as the primary key of the table.

(1 mark for correct difference &1 mark for suitable example)

(f) (i) **Last Name**

Batra

(ii) **Last Name**

Sehgal

(1 mark for each correct answer)

(g) Degree = 5. Cardinality = 17

(1 mark for each part)

4. (a) 32

(2 marks for correct answer) (b)

switch (code)

```
{  
    case 1: Month = "January";  
    break;
```

```

    case 2: Month = "February";
        break; .
    case 3: Month = "March"; break;
    case 4: Month = "April";
        break;
    default: Month = "No Match";
}

```

(02 marks for correct answer)

(c) cbse
 Final_Exam<tab>IP
 OR
 cbse
 Final_Exam IP

(1 mark for correct output)

(d) int i, sum = 0;
 for (i=1; i<10; i++)
 sum = sum + i ;

(1 mark for correct answer) (e)

126
 (1 mark for correct answer)

(f) int Sum = 0, Step = 5; int
 i;
 for (i=0; i <= 5; i++)
 {
 Step + = 5;
 Sum + = Step;
 }
 jTextArea1.setText (" + Sum);

(2 marks for correcting any four errors or 1 mark for only identifying any four errors - without making any correction)

g (i) jTextField4.setText ("0") ;
 jTextField5.setText ("0") ;
 jTextField4.setEditable(false) ;
 jTextField5. setEditable(false) ;

(½ mark for assigning 0 to each of the textfields)
 (½ mark for setting each textfield as un-editable) total 02 marks

(ii) double discount = 0.0 ; double billAmount =
 Double.parseDouble(jTextField2.getText()); if
 (jRadioButton1.isSelected()) discount = 0.20;
 if (jRadioButton2.isSelected())
 discount = 0.15;
 (jRadioButton3.isSelected()) discount
 = 0 .10;
 jTextField3.setText (billAmount * discount + “ “) ; if
 (billAmount > 25000)
 jTextField4.setText (billAmount*0.05+);
 jButton2.setEnabled(true) ;

(1 mark for calculating discount correctly)
 (½ mark for calculating additional discount correctly)
 (½ mark for enabling the button)
 (Any Object names are acceptable for JRadioButton objects)

(iii) `double netAmount = Double.parseDouble(jTextField2.getText()) - Double.parseDouble(jTextField3.getText()) - Double.parseDouble(jTextField4.getText()); jTextField5.setText(netAmount + " ");`

(2 marks for calculating the net amount)

5 (a) **DDL: Data Definition Language.** DDL commands are used to create, destroy, and to restructure the database objects.

Example: CREATE, ALTER (or any other two correct examples)

DML: Data Manipulation Language. DML commands are used to insert, delete and change data in tables.

Example: SELECT, DELETE (or any other two correct examples)

(½ Mark each for purpose and examples of DDL)

(½ Mark each for purpose and examples of DML)

(b)

i) 9

ii) RDBMS MYSQL

iii) 1 iv) 7

(½ Mark for each correct output)

(c)

(i) Select Name from SPORTS where Grade1='A' OR Grade2='A';

(ii) Select count(*) from SPORTS Where Game1='Cricket' OR Game2='Cricket';

(iii) Select Name from SPORTS where Game1=Game2;

(iv) Select Game1,Game2 from SPORTS where Name LIKE 'A%';

(1 Mark for each correct sql statement)

(v) 6

(vi) 7

8

9

10 (vii)

10

(viii) 2

2

1

1

(½ Mark for each correct output)

6 (a) CREATE TABLE Item

(itemcode varchar(5) primary key,

itemname varchar(20), category

varchar(20),

price decimal(5,2));

(½ Mark for CREATE TABLE Item)

(½ Mark for appropriately putting Primary Key constraint)

(½ Mark for correct data types)

(½ Mark for correct syntax of the query)

(b) (i) SELECT CustNo, CustAddress, SetName

FROM Customer, Handsets

Where SetNo = SetCode;

(1 mark for correct use of SELECT and FROM)

(1 mark for correct use of WHERE clause)

(ii) SELECT Customer.*

FROM Customer, HandSets

WHERE SetNo = SetCode and setname like "Nokia%";

(1 mark for correct use of SELECT and FROM)

(1 mark for correct use of WHERE clause)

(iii)	setno	setname
	N2	Nokia 3G
	B1	BlackBerry

(1 mark for each correct line of output)

(c) (i) 15 rows & 7 column *(1 mark for correct answer)*

(ii) SetNo *(1 mark for correct answer)*

7. (a) Self-paced learning Unlimited

revisions

Facilitates electronic delivery of customized learning objects

Facilitates teacher-student interaction

Facilitates peer-peer interaction

(1 marks for any two points) (b)

Provides citizens access to information about the processes and services.

Facilitates a speedy, transparent, accountable and efficient process for performing government administrative activities.

Uses modern information and telecommunication technologies such as internet, Local area networks to enhance efficiency

A lot of productive time of government servants and general public is saved.

Governance portal: www.incometaxindia.gov.in

supremecourtfindia.nic.in

passport.gov.in

<https://www.irctc.co.in>

(1½ marks for any three features and ½ for any correct portal name)

(c)

(i) Label

(ii) ListBox/Check Box

(iii) TextArea [Most Appropriate answer] TextField [Also acceptable]

(iv) RadioButton

(½ marks for each correct answer)

Previous Year (2014) CBSE Question Paper

Series : OSR/1

Code No. 90/1

Roll No.

--	--	--	--	--	--	--	--

Candidates must write the Code on the title page of the answer-book.

- Please check that this question paper contains 8 printed pages.
- Code number given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
- Please check that this question paper contains 7 questions.
- **Please write down the Serial Number of the question before attempting it.**
- 15 minutes time has been allotted to read this question paper. The question paper will be distributed at 10.15 a.m. From 10.15 a.m. to 10.30 a.m., the students will read the question paper only and will not write any answer on the answer-book during this period.

INFORMATICS PRACTICES

Time allowed : 3 hours]

[Maximum marks : 70

- Instructions :** (i) All questions are compulsory.
(ii) Answer the questions after carefully reading the text.

1. (a) State two advantages of networking computers instead of having standalone computers. **1**
- (b) What was the objective behind developing UNICODE ? **1**
- (c) Expand the following terms : **1**
- (i) WAN
- (ii) OSS
- (d) What is the purpose of switch in a network ? **1**
- (e) Identify the following devices : **2**
- (i) An intelligent device that connects several nodes to form a network and redirects the received information only to intended node(s).
- (ii) A device that regenerates (amplifies) the received signal and re-transmits it to its destination.

- (f) What is the name of the network topology in which each node is connected independently using a switch ? 2
- (g) What is meant by "Denial of Service" with reference to Internet service ? 2

- 2.
- (a) Distinguish between '/' and '%' operators. 1
 - (b) What is a button group ? Which control is generally used with a button group ? 1
 - (c) Which property of ListBox is used to display values in the list ? 1
 - (d) Which tags of HTML are used to 1
 - (i) Change the font in a page
 - (ii) Add a row in a table ?
 - (e) What will be the values of variables sum and sum1 after the execution of the following loops ? 2

Loop A	Loop B
<pre>int v=6, sum=0; while (v>3) { sum+=v; v-=2; }</pre>	<pre>int w=6, sum1=0; do { sum1+=w; w-=2; } while (w>3);</pre>

- (f) What will be displayed in JTextArea1 after the execution of the following loop ? 2

```
for (int I=5; I<=25; I+=5)
JTextArea1.setText (JTextArea1.getText () +
" "+Integer.toString(2*I));
```
- (g) Explain with the help of example(s) the difference between container and empty elements of HTML. 2

- 3.
- (a) Write two examples of DBMS software. 1
 - (b) What happens when Autocommit is set on ? 1
 - (c) What is meant by NULL value in MySQL ? 1
 - (d) Table 'Club' has 4 rows and 3 columns. Table 'Member' has 2 rows and 5 columns. What will be the cardinality of the Cartesian product of them ? 1

- (e) A numeric data field CHANGER contains 25565.7765. Write a commands to round off CHANGER 2
- (i) up to 2 decimal places (i.e., expected result 25565.78)
 - (ii) whole number (i.e., expected result 25566)
- (f) Name methods used to perform the following in NetBeans : 2
- (i) To set component visible at run time
 - (ii) To return the index value of the selected item from the list
- (g) Gopi Krishna is using a table Employee. It has the following columns : 2

Code, Name, Salary, Deptcode

He wants to display maximum salary departmentwise.

He wrote the following command

```
SELECT Deptcode,Max(Salary) FROM Employee;
```

But he did not get the desired result.

Rewrite the above query with necessary changes to help him get the desired output.

4. (a) Define the term 'Inheritance'. 2
- (b) Rewrite the following program code using Switch Case statement : 2
- ```
int choice=Integer.parseInt(jTextField1.getText());
if (choice==1)
 jTextField2.setText("January");
else if (choice==2)
 jTextField2.setText("February");
else if (choice==3)
 jTextField2.setText("March");
else if (choice==4)
 jTextField2.setText("April");
else if (choice==5)
 jTextField2.setText("May");
else
 jTextField2.setText("Only 1 to 5 please");
```

- (c) What will be the value X1 after the execution of the following code ? 1  

```
String X1="Graduate",X2="Post";
X1=X2.concat(X1);
```
- (d) Write Java statement to make a jTextField1 uneditable during execution. 1
- (e) What will be displayed in jTextField1 after the execution of the following code ? 2  

```
int Z=4;
do
{
 jTextField1.setText(Integer.toString(++Z));
 Z=Z+1;
} while (Z<=8);
```
- (f) Give the output of the following java code : 2  

```
String name="Sid Nayar";
int T=name.length(),N;
N=150-T;
jTextField2.setText(Integer.toString(T));
jTextField3.setText(Integer.toString(N));
```
- (g) Abraham is a programmer at Shouryen World School. He created the following GUI in Netbeans. The grade is calculated on the basis of percentage of total marks in five subjects (English, Maths, Physics, Chemistry, Computers). The Grade is calculated using the following criterion :

(Each subject marks is out of 100)

| Percentage         | Grade |
|--------------------|-------|
| $\geq 90$          | A     |
| $\geq 70$ & $< 90$ | B     |
| $\geq 50$ & $< 70$ | C     |
| $\geq 33$ & $< 50$ | D     |
| $< 33$             | F     |

The image shows a Java Swing window titled "Grade Calculator". It has a standard window title bar with "Let's Find Grades" on the left and window control buttons on the right. The main content area is titled "Grade Calculator" and contains the following elements:

- On the left side, a vertical list of subject names: "Name", "English", "Maths", "Physics", "Chemistry", and "Computers". Each name is followed by a rectangular text input field.
- On the right side, a vertical list of output labels: "Total", "%", and "Grade". Each label is followed by a rectangular text input field.
- Below the output fields, there are four buttons stacked vertically: "Calculate Total", "Calculate %", "Calculate Grade", and "Clear".
- At the bottom right, there is an "exit" button.

Help him to write code for the following :

- (i) Write Java code to calculate and display Total (as sum of marks obtained in all the subjects), Percentage (as  $Total/5$ ) and Grade on the basis Percentage of marks and the given criteria on the click of Command Buttons [Calculate Total], [Calculate %] and [Calculate Grade] respectively. 3
  - (ii) Write Java code to clear all Textboxes on the click of [Clear] button. 1
  - (iii) Write Java code to close the application on the click of [exit] button. 1
5. (a) State difference between date functions NOW( ) and SYSDATE( ) of MySql. 2
- (b) Name a function of MySql which is used to remove trailing and leading spaces from a string. 1

- (c) Consider the following table named "SBOP" with details of account holders. Write commands of MySql for (i) to (iv) and output for (v) to (vii).

7

**Table : SBOP**

| Accountno | Name       | Balance  | DateOfopen | Transaction |
|-----------|------------|----------|------------|-------------|
| SB-1      | Mr.Anil    | 15000.00 | 2011-02-24 | 7           |
| SB-2      | Mr.Amit    | 23567.89 |            | 8           |
| SB-3      | Mrs.Sakshi | 45000.00 | 2012-02-04 | 5           |
| SB-4      | Mr.Gopal   | 23812.35 | 2013-09-22 |             |
| SB-5      | Mr.Dennis  | 63459.80 | 2009-11-10 | 15          |

- (i) To display Accountno, Name and DateOfopen of account holders having transactions more than 8.
- (ii) To display all information of account holders whose transaction value is not mentioned.
- (iii) To add another column Address with datatype and size as VARCHAR(25).
- (iv) To display the month day with reference to DateOfopen for all the account holders.
- (v) `SELECT Count (*) FROM SBOP;`
- (vi) `SELECT Name, Balance FROM SBOP`  
`WHERE Name LIKE "%i";`
- (vii) `SELECT ROUND(Balance,-3) FROM SBOP`  
`WHERE Accountno="SB-5";`

6. (a) Write MySQL command to create the table SHOP with given structure and constraint :

2

**Table: SHOP**

| Column_Name | DataType (Size) | Constraint  |
|-------------|-----------------|-------------|
| Fno         | Int (10)        | Primary Key |
| Fname       | Varchar (15)    |             |
| Type        | Char (10)       |             |
| Stock       | Int (3)         |             |
| Price       | Decimal (8, 2)  |             |

- (b) In a Database Multiplexes, there are two tables with the following data. Write MySQL queries for (i) to (iii), which are based on **TicketDetails** and **AgentDetails** :

**Table : TicketDetails**

| Tcode | Name   | Tickets | A_code |
|-------|--------|---------|--------|
| S001  | Meena  | 7       | A01    |
| S002  | Vani   | 5       | A02    |
| S003  | Meena  | 9       | A01    |
| S004  | Karish | 2       | A03    |
| S005  | Suraj  | 1       | A02    |

**Table : AgentDetails**

| Acode | AName      |
|-------|------------|
| A01   | Mr. Robin  |
| A02   | Mr. Ayush  |
| A03   | Mr. Trilok |
| A04   | Mr. John   |

- (i) To display Tcode, Name and Aname of all the records where the number of tickets sold is more than 5. 2
- (ii) To display total number of tickets booked by agent "Mr. Ayush". 2
- (iii) To display Acode, Aname and corresponding Tcode where Aname ends with "k". 2
- (c) With reference to 'TicketDetails' table, which column is the primary key ?  
Which column is the foreign key ? Give reason(s). 2

7. (a) Define e-learning. Give one popularly used website of e-learning. 1
- (b) "Use of e-governance has its social and economic impacts." Justify. 2
- (c) Steeve Antony works for HM Academy. He wants to create controls on a form for the following operations. Choose appropriate controls from Text box, Label, Radio Button, List box, Combo box, Check box and Command button. 2

| S.No | Operation                                         |
|------|---------------------------------------------------|
| 1.   | Enter Name of Employee                            |
| 2.   | Select Department from a list of department names |
| 3.   | Gender out of options M and F                     |
| 4.   | Submit form                                       |