केन्द्रीय विद्यालय संगठन

KENDRIYA VIDYALAYA SANGATHAN

STUDY MATERIAL

(Informatics Practices)
Class – XII

2011-12

KENDRIYA VIDYALAYA SANGATHAN
GUWAHATI REGION

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TIPS TO STUDENTS

1. Prepare those questions first, which you feel easy for you.
2. Important terms of a topic must be memorized.
3. Practice the solutions in writing rather than just reading.
4. Practice on similar type question at a time.

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SYLLABUS: INFORMATICS PRACTICES (065)

Unit	Topic	Marks
1	NETWORKING AND OPEN STANDARDS	10
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4	IT APPLICATIONS	05

UNIT 1: NETWORKING AND OPEN STANDARDS

Computer Networking: Networking - a brief overview, Basic concept of domain name, MAC, and IP Address, Identifying computers and users over a network (Domain Name, MAC 'Media Access Control' and IP address), domain name resolution, Network Topologies, Types of network - LAN, MAN, WAN, PAN; 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 Network security - denial of service, intrusion problems, snooping

Open Source Concepts:

Open Source Software (OSS), common FOSS/FLOSS examples (e.g. Gnu/Linux, Firefox, OpenOffice), common open standards (open document format Ogg Vorbis)
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 sample guidelines of GUI Programming, and Appendix B for Swing Control Methods & Properties) Basic concept of Access specifier for classes, Members and methods Basic concept of Inheritance: need, Method Overloading and Overriding, Abstract Class and Interfaces, use of interfaces. Commonly used libraries: String class and methods: toString(), concat(), length(), toLowerCase(), toUpperCase(), trim(), substring() Math object: 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 REVOKE, **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, adding a Constraint, enabling Constraints, Viewing Constraints, Viewing the Columns Associated with Constraints; ALTER TABLE for deleting a column, ALTER TABLE for modifying data types of a column **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) 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

UNIT 1: NETWORKING AND OPEN STANDARDS

Network:- A network is a collection of interlinked computers by means of a communication system.

Need For Networking

1. load sharing
2. Data transformation
3. Reliability
4. Cost factor
5. Sharing of resources
6. Flexible working environment

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) (MAC Address):-** A network interface unit is interpreter that helps in establishing the communication between the server and the client.
4. **IP Address:-** Every machine on a TCP bar IP Network has a unique identifying no. called an IP Address.
5. **Domain Name:-**It is a way to identify and locate the computers connected to the internet. It must be unique.

Network Topologies

Network topologies describe the ways in which the elements of a network are mapped. They describe the physical and logical arrangement of the network nodes. Let us look at the advantages the different network topologies offer and get to know their shortfalls.

1. Bus Topology: - it is a series of node which all connected to a backbone.

Advantages of Bus Topology

a. It is easy to handle and implement.

b. It is best suited for small networks.

Disadvantages of Bus Topology

a) The cable length is limited. This limits the number of stations that can be connected.
b) This network topology can perform well only for a limited number of nodes.

2. Ring Topology:- A Ring network is circular in shape and every node will have one node on either side of it.

Advantage of Ring Topology

a) The data being transmitted between two nodes passes through all the intermediate nodes.

b) A central server is not required for the management of this topology.

Disadvantages of Ring Topology

a) The failure of a single node of the network can cause the entire network to fail.
b) The movement or changes made to network nodes affects the performance of the entire network.

3. Mesh Topology: - Mesh topology is a group of nodes which are all connected to each other and many types of connections are possible in a mesh topology.

Advantage of Mesh Topology

a) The arrangement of the network nodes is such that it is possible to transmit data from one node to many other nodes at the same time.

Disadvantage of Mesh Topology

b) The arrangement wherein every network node is connected to every other node of the network, many of the connections serve no major purpose. This leads to the redundancy of many of the network connections.

4. Star Topology:- A Star topology is based on a central node which acts as a hub.

Advantages of Star Topology.

a) Due to its centralized nature, the topology offers simplicity of operation.
b) It also achieves an isolation of each device in the network.

Disadvantage of Star Topology

The network operation depends on the functioning of the central hub. Hence, the failure of the central hub leads to the failure of the entire network.

5. **Tree Topology:-** In a tree topology, stations are attached to a shared transmission medium.

Advantages of Tree Topology:

a) Easy to extend
b) Fault isolation

Disadvantage of Tree Topology:

a) Dependent on the root.

Types of Networks

1. **Personal area network:-** A personal area network (PAN) is a computer network used for communication among computer and different information technological devices close to one person. Some examples of devices that are used in a PAN are personal computers, printers, fax machines, telephones, PDAs, scanners, and even video game consoles. A PAN may include wired and wireless connections between devices. The reach of a PAN typically extends to 10 meters
2. **Local area network: -**A local area network (LAN) is a network that connects computers and devices in a limited geographical area such as home, school, computer laboratory, office building, or closely positioned group of buildings. Each computer or device on the network is a node.
3. **Wide area network**:- A wide area network (WAN) is a computer network that covers a large geographic area such as a city, country, or spans even intercontinental distances, using a communications channel that combines many types of media such as telephone lines, cables, and air waves. A WAN often uses transmission facilities provided by common carriers, such as telephone companies. WAN technologies generally function at the lower three layers of the OSI reference model: the physical layer, the data link layer, and the network layer

functions of network devices:- Separating (connecting) networks or expanding network
e.g. repeaters, hubs, bridges, routers, brouters, switches, gateways, Remote access

Bridges:- it is isolate network traffic and computers. It is Used to to examine incoming packet source and destination addresses.

Switches:- Switches operate at the Data Link layer (layer 2) of the OSI model.Switches resemble bridges and can be considered as multiport bridges.

Routers:- Routers work at the OSI layer 3 (network layer).They use the “logical address” of packets and routing tables to determine the best path for data delivery.

Modems:- Allow computers to communicate over a telephone line. Sending end: MODulate the computer’s digital signal into analog signal and transmits. Receiving end: DEModulate the analog signal back into digital form

OPEN SOURCE CONCEPTS

1. Free software

Free Software means the software is freely accessible and can be freely used, changed, Improved, copied and distributed by all who wish to do so. And no payments are needed to be made for free software.
Free Software is a matter of liberty, not price. To understand the concept , you should think of "free" as in free speech," not as in free beer." More precisely. it refers to four kinds of freedom, for the users of the software:
The freedom to run the program, for any propose to (freedom 0). Etc. A program is free software if users have all of this freedom"

2. Open Source Software

Open Source Software, can be freely used but it doesn't have to be free of charge.
Open source s/w may receive payments concerning support, further development
"Open source s/w is officially defined by the open source definition at opensource.org/doc/definition_plain.html."

3. OPEN SOURCE/FREE SOFTWARE

This section is going to talk some such s/w. Let us begin with Linux**.**

a) Linux

Linux is the name of popular Computer Operating System**.** In underlying source code is available to all and anyone can freely openly use it

b) Mozilla

It is free, cross-platform, Internet software suite tah include:
1. A web browser
2. An email client
3. AN HTML editor
4. IRC client. Netscape Communication Corporation initiated Mozilla's development

c) Apache Server

It as an open source web server for many platforms such as BSD, Linux, Unix, Microsoft windows etc.

d) MySQL

Pronounced "my ess cue el" (each letter separately) and not "my SEE kwill." is a multithreaded, Multi-user, relational database server.

e) PostgreSQL

Pronounced "post gress cue ell." PostgreSQL is an open source database system that began as an enhancement to the POSTGRES research prototype DBMS. Where POSTGRES used the PostQuel query language, PostgreSQL uses a subset of SQL.

f) Pango

Pango is a library for lying out and rendering of text, with an emphasis on internationalization. Pango can be used anywhere that text layout is needed, though most of the work on Pango so far has been done in the context of the GTK+ widget toolkit. Pango forms the core of text and font handling for GTK+-2.x.

g) OpenOffice

OpenOffice.org (OO.o or OOo), commonly known as OpenOffice, is an open sourcesoftware application suite available for a number of different computer operating systems. It is distributed as free software and written using its own GUI toolkit. ...

h) Tomcat

Tomcat is an application server that executes Java servlets and renders Java Server Page

i) PHP

PHP: Hypertext Preprocessor (the name is a recursive acronym) is a widely used, general-purpose scripting language that was originally designed

j). Python

Python is a general-purpose high-level programming language whose design philosophy emphasizes code readability. Python aims to "[combine] remarkable power with very clear syntax", and its standard library is large and comprehensive.

4. TYPE OF STANDARDS

A technical standards or simply a standards basically a refers to an established set of rules or requirement,

The technical standards can be broadly categorised into:

1. Proprietary standards and 2. Open standards.

1. Proprietary standards

Proprietary standards are owned by a single company or a group of vendors. Standards like Microsoft office formats (E.G . . . Doc, .docx, .ppt etc) Media format (e.g. .wma,.wmvetc) Apple Media formats (such as .mov) are proprietary standards as they are the property of their respective owners.

2. Open standards

"An open standard is a standard that is publicly available and has various rights to use associated with it, and may also have various properties of how it was designed (e.g. open process)."

Principal of open standards are being listed below in the words of Bruce

Perens

- Availability
- Maximize End-User Choice.
- No Royalty.

5. COMMON OPEN STANDARDS FORMATS

(i) Plain text(ASCII)

(ii) Hyper Text Markup Language(HTML)

(iii) Tex,LaTex and device Independent Format(DVI)

(iv) DVI.

(v) Open Document Format for Office Application(ODF)

(vi) Joint Photographic Expert Group(JPEG)

(vii) PNG(Portable Network Graphics)

(viii) Scalable Vector Graphics(SVG)

(ix) Ogg Vorbis(OGG)

(x) Free Lossless Audio Codes(FLAC)

Open Document Format (ODF)

The Open Document Format (ODF) is an open source standard for office documents (text, spreadsheets, presentations etc.). It is used eg by OpenOffice or StarOffice and other similar open source tools.

6. INDIAN LANGUAGE COMPUTING

Indian Language Computing refers to ability to interact in diverse Indian Language on electric system

- **ISCII**

Indian Standard Code for Information Interchange **(**ISCII**)** is a coding scheme for representing various writing systems of India. It encodes the main Indic...

- **UNICODE**

ANS. According to Unicode Consortium – Unicode provides a unique number for every character, No matter what the platform, No matter what the program, No matter what the language.

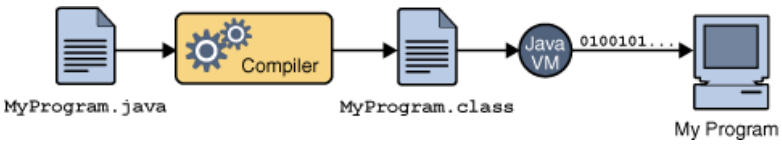
- **Fonts**

"A font refers to a set of displayable text characters having specific style and size**".**

UNIT –II : PROGRAMMING

Important Terms & Definitions

1. Integrated Development Environment (IDE): It is a software tool to help programmer to edit, compile, interpret and debug the program in the same environment. i.e Eclipse, NetBeans, VB etc.
2. OOP: Object Oriented Programming, emphasis on objects and the interaction between objects. An object is a self-contained entity that describes not only certain data but the procedures to manipulate that data.
3. Class: A class in OOP is a template for objects. In other words, a class is a specification of the data and the functions to be encapsulated with data.
4. Object: Objects in the real world can be represented by objects in the program. Each object contains data and code to manipulate data.
5. JVM: Java Virtual Machine (JVM) is a program which behaves as interpreter and translates byte code into machine language as they go called just in time compilation.
6. RAD: Rapid Application Development is software programming technique that allows quick development of software application.
7. Source Code: The core program or text which is written in a language like C,C++ or Java is called source code.
8. Object Code: The program which only is understood by the computer in the form of machine instructions or binary instructions called object code. In Java JVM is used to generate object code in the form of byte code.
9. Byte code: A byte code is long instruction that the Java compiler generates and Java interpreter executes. When the compiler compiles a .java file, it produces a series of byte codes and stores them in a .class file. The Java interpreter (JVM) can execute the byte codes stored in the .class file.



10. GUI: A graphical user interface (GUI) presents a pictorial interface to a program. GUI allows the user to spend less time trying to remember which keystroke sequences do what and spend more time using the program in a productive manner.

11. <u>Primitive Data Types:</u>

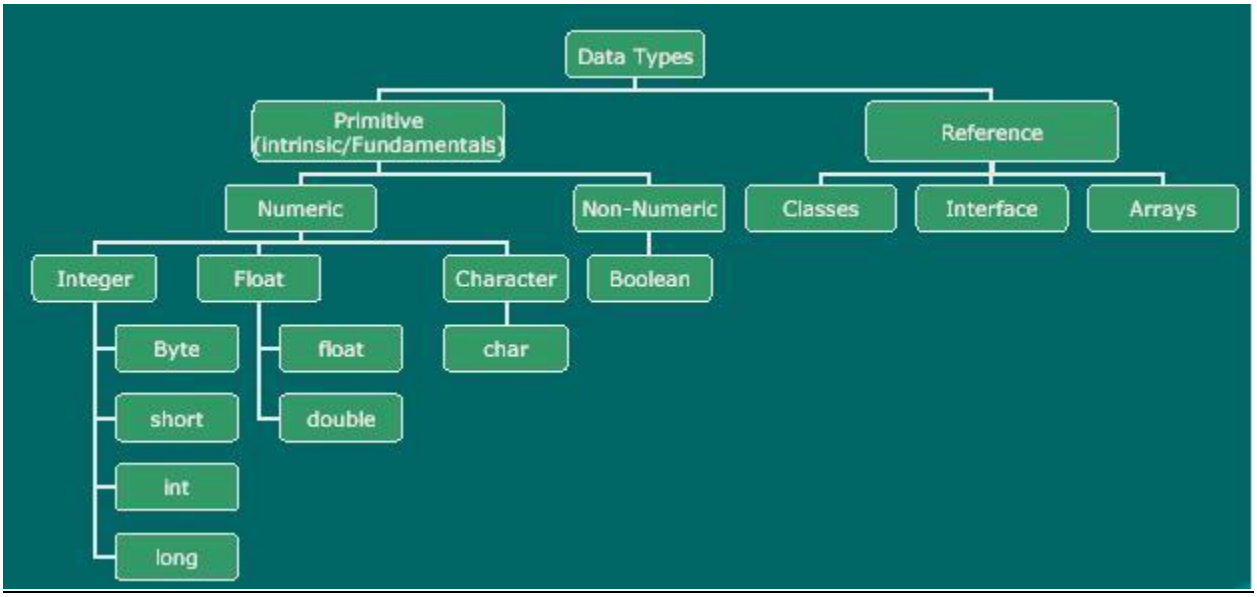
The Java programming language is statically-typed, which means that all variables must first be declared before they can be used.
A primitive type is predefined by the language and is named by a reserved keyword. Primitive values do not share state with other primitive values. The eight primitive data types supported by the Java programming language are:

- byte: The byte data type is an 8-bit signed two's complement integer. It has a minimum value

of -128 and a maximum value of 127 (inclusive).

- short: The short data type is a 16-bit signed two's complement integer. It has a minimum value of -32,768 and a maximum value of 32,767 (inclusive).
- int: The int data type is a 32-bit signed two's complement integer. It has a minimum value of -2,147,483,648 and a maximum value of 2,147,483,647 (inclusive).
- long: The long data type is a 64-bit signed two's complement integer. It has a minimum value of -9,223,372,036,854,775,808 and a maximum value of 9,223,372,036,854,775,807 (inclusive).
- float: The float data type is a single-precision 32-bit IEEE 754 floating point.
- double: The double data type is a double-precision 64-bit IEEE 754 floating point.
- boolean: The boolean data type has only two possible values: true and false. Use this data type for simple flags that track true/false conditions.
- char: The char data type is a single 16-bit Unicode character. It has a minimum value of '\u0000' (or 0) and a maximum value of '\uffff' (or 65,535 inclusive).

12. Reference Data Types : These are constructed by using primitive data These are constructed by using primitive data types, as per user need. Reference data types types, as per user need. Reference data types store the memory address of an object. Class, store the memory address of an object. Class,Interface and Array are the example of Interface and Array are the example of Reference Data types.



13. Literals: A literal is the source code representation of a fixed value;

As shown below, it's possible to assign a literal to a variable of a primitive type:

```
boolean result = true;
char capitalC = 'C';
byte b = 100;
short s = 10000;
```

```
int i = 100000;
```

14. Operators: Operators are special symbols that perform specific operations on one, two, or three operands, and then return a result.

Operators	Precedence
postfix	expr++ expr--
unary	++expr --expr +expr -expr ~ !
multiplicative	* / %
additive	+ -
shift	<< >> >>>
relational	< > <= >= instanceof
equality	== !=
bitwise AND	&
bitwise exclusive OR	^
bitwise inclusive OR	|
logical AND	&&
logical OR	||
ternary	? :
assignment	= += -= *= /= %= &= ^= |= <<= >>= >>>=

15. Control Flow Statements: The statements inside your source files are generally executed from top to bottom, in the order that they appear. Control flow statements, however, break up the flow of execution by employing decision making, looping, and branching, enabling your program to conditionally execute particular blocks of code.

    Decision-making statements (if-then, if-then-else, switch), the looping statements (for, while, do-while), and the branching statements (break, continue, return) supported by the Java programming language.

16. Swing GUI: The classes that are used to create the GUI components are part of the Swing GUI components from package javax.swing.

17. Escape Sequence: When a backslash is encountered in a string of characters, the next character is combined with the backslash to form an escape sequence. Escape sequences are normally used to control printed or displayed output. For example, \a, \b, \n, \t, etc.
18. Type Conversion of strings: There is a standard class named Integer that contains several subroutines and variables related to the int data type. In particular, if str is any expression of type string, then Integer.parseInt (str) is a function call that attempts to convert the value of str into a value of type int. for example, the value of Integer.parseInt (“10”) is the int value 10. If the parameter to Integer.parseInt does not represent a legal int value, then an error occurs.

19. parseByte(String S): It converts a String argument to an 8 bits integer value. Class Byte is part of the package java.long. For example, if a jTextField entry has value as 10 then to convert into a byte data type variable bVal, the command is:

    byte bVal = Byte.parseByte(jTextField1.getText());

Swing Components	Uses
JFrame	A JFrame is superclass which provides the basic attributes and behaviors of a windows(like other window)
JLabel	An area where uneditable text or icons can be displayed
JTextField	An area in which the user inputs data from the keyboard. The area can also display information.
JButton	An area that triggers an event when clicked
JCheckBox	A GUI components that is either selected or not selected.
JComboBox	A drop-down list of items from which the user can make a selection by clicking an item in the list or by typing into the box,if permitted.
JList	An area where a list of items is displayed from which the user can make a selection by clicking once on any element in the list.Double clicking an element in the list generates an action event. Multiple elements can be selected.
JPanel	A container I which components can be placed

20. parseShort (String S): It converts a String argument to a 16 bits integer value. Class Short is a part of the package java.long. For example, if a jTextField entry has value as 1110 and to convert into a short data type variable sVal, the command is

short sVal = Short.parseSort(jTextField1.getText());

21. parseFloat (String S): It converts a String argument to a 32 bits single precision floating-point value. Class Float is part of the package java.long. For example, if a jTextField entry has value as 120.44 and to convert into a floating-point type variable fVal, the command is:

    float fVal = Float.parseFloat(jTextField1.getText());

22. parseDouble (String S): It converts a String argument to a 64 bits single precision double floating-point value. Class Double is part of the package java.long. For example, if a jTextField entry has value as 8979677.23 and to convert into a double precision data type variable dVal, the command is:

    double dVal = Double.parseDouble(jTextField1.getText());

23. parseLong (String S): It converts a String argument to a 64 bit integer value. Class Long is part of the package java.long. For example, if a jTextField entry has value as 58987654 and to convert into a long data type variable lVal, the command is:

    long Val = Long.parseLong (jTextfield1.getText ());

24. How are protected members different from public and private members of a class?

Ans: Protected members can be directly accessed by all the classes in the same package, as that of the class in which the member is and sub classes of other package. Whereas private members can not be accessed outside the class, even in subclasses of the class and public members can be directly accessed by all other classes.

25. Define an abstract class and abstract method.

Ans: An Abstract Class is the one that simply represents a concept and whose objects can't be created. It is created through the use of keyword abstract.

Abstract methods are methods with no method statements. Subclasses must provide the method statements for the inherited abstract methods e.g. in the following code class. Shape is abstract class and method display( ) is abstract modified.

26. Math functions: The class Math contains methods for performing basic numeric operations such as the elementary exponential, logarithm, square root, power, rounding, maximum, minimum and trigonometric functions. For example, sin(), cos(), log(), pow(), sqrt(), abs(), ceil(), floor(), max(), min(), round(), random(), etc. All Math functions used with the Math class object.

MATH FUNCTIONS	DESCRIPTIONS	EXAMPLE
sin()	Returns the trigonometric sine of an angle.	sin(double a)
cos()	Returns the trigonometric cosine of an angle.	cos(double a)
log()	Returns the natural logarithm (base e) of a double value.	log(double a
pow()	This function returns you the number raised to the power of a first given value by another one.	pow(double a, double b)
sqrt()	Returns a double value that is the square root of the parameter.	math.sqrt(100)
abs()	Returns the absolute value of a number. Whereas the number can be int, float, double or long.	math.abs(-100)
ceil()	Returns the next whole number up that is an integer.	math.ceil(1.1)
floor()	Returns the largest (closest to positive infinity) double value that is not greater than the argument and is equal to a mathematical integer.	math.floor(-99.1)
max()	Returns the maximum value from the two given value.	math.max(-1,-10)
min()	Returns the minimum value from the two given value.	math.min(1,1)

round()	Rounds to the nearest integer. So, if the value is more than half way towards the higher integer, the value is rounded up to the next integer.	math.round(1.01)
random()	Returns a random number between 0.0 and 1.0	math.random()*100
concat()	Converts the uppercase character into the lowercase character and returns converted lowercase character.	String1.concat(string2) ;
length()	Count and return the number of characters contained in the string object.	String str= "Informatics Practices";
substring()	Return a part or substring of the String used to invoke the method. The first argument represents the starting location of the substring.	String s= "abcdefghi"; System.out.println(s.substring(5)); System.out.println(s.substring(5,8));
toLowerCase( )	Converts the uppercase character into the uppercase character and returns converted lowercase character.	String s= "AbcdefghiJ"; System.out.println (s.toLowerCase());
toUpperCase( )	Converts the lowercase character into the uppercase character and returns converted uppercase character.	String s="AAAAAbbbb"; System.out.println(s.toUpperCase());
trim()	Returns a String after removing extra speces from any leading or trailing part of the string.	String mess1 = '" My Personal Bio-Data ";

27. Swing Control Methods and Properties: These are the Swing Controls available with NetBeans IDe and their concern methods and properties are given below.

Swing Controls	Methods	Properties
jButton	• getText() • setText()	• Background • Enabled • Font • Foreground • Text • Label
jLabel	• getText()	• Background

	• setText()	• Enabled • Font • Foreground • Text
jTextField	• getText() • isEditable() • isEnabled() • setText()	• Background • Editable • Enabled • Font • Foreground • Text
jRadioButton	• getText() • setText() • isSelected() • setSelected()	• Background • Button Group • Enabled • Font • Foreground • Label • Selected
jCheckBox	• getText() • setText() • isSelected() • setSelected()	• Button Group • Font • Foreground • Label • Selected • Text
jButtonGroup		• Add
jComboBox	•getSelectedItem() •getSelectedIndex() • setModel()	• Background • ButtonGroup • Editable • Enabled • Font • Foreground • Model •SelectedIndex • SelectedItem • Text
jList	• getSelectedValue()	• Background • Enabled • Font • Foreground • Model • SelectedIndex • SelectedItem • SelectionMode • Text
jTable	• addRow() • getModel()	• model
JoptionPane	• showMessageDialog()	• getRowCount() • removeRow() • addRow()

28. Constructors: A class contains constructors that are invoked to create objects from the class blueprint. Constructor declarations look like method declarations—except that they use the name of the class and have no return type.

Some Important Questions with Answers

Q. What is event driven programming?
Ans:- This programming style responds to the user events and is driven by the occurrence of user-events.

Q. What are containers? Give examples.
Ans: - Containers are those controls inside them e.g., frame (JFrame), Panel (JPanel), label (JLabel) etc. are containers.

Q. Name the character set supported by Java.
Ans: - Unicode.

Q. What is an identifier?
Ans:- Identifiers are fundamental building block of a program and are used as the general terminology for the names given to different parts of the program viz. variables, objects, classes, functions, arrays etc.

Q. What is the result of the types of the logical expressions given below?
(i) (3<5) || (6=5) || (3! =3)
(ii)(5! =10) && ((3=2+1)|| (4<2+5))
(iii)!(5==2+3) && !(5+2 !=7-5)?

Ans:-
(i) true || false || false
=true
(ii) true && (true || true)
=true && true = true
(ii) ! true && ! true
= false && false = false

Q. What is casting? When do we need it?
Ans:- Casting is a conversion, which uses the cast operator to specify the type name in parenthesis and is placed in front of the value to be converted. For example:

```
Result = (float) total / count ;
```

They are helpful in situations where we temporarily need to treat a value as another type.

Q. What is the purpose of break statement in a loop?
Ans:- In a loop, the break statement terminates the loop when it gets executed.

Q. How is the if…else if combination more general than a switch statement?
Ans:- The switch statement must be by a single integer control variable, and each case section must correspond to a single constant value for the variable. The if…else if combination allows any kind of condition after each if.

Q. What is a container component?
Ans:- A container is a special type of component that can hold other components.Some Swing Containers are jPanel, jFrame, jApplet, jWindow, jDialog and jInternalFrame. The components contained in a container are called child component.

1. Identify the possible error(s) in the following code fragment: Underline error(s) and correct the code.

```
f=1;
for(int a=40; (>30); a--)
f*=a;

s=0;
for(int a=1; a<40/a++)
s+=a;
```

Ans: Error in the first and second for loop line ,and the corrected code should be as follows:

```
for ( int a =40 ; (a >30); a - - )
for ( int a =1 ; (a <40); a ++ )
```

Q1 Find the output of the following code:
(a)

```
 int I =1;
while(I<5) {
System.out.print( I+ " " );
I=1*2;
}
```

(b)

```
int total=0,sum=0;
for(int I=0;I>=10;I++)
sum += I;
System.out.println(total);
```

Ans: a) 1 2 4 b) 0

Q2 Find the output of the following code:
(a)

```
int I =0;
while(I<10) {
      if( I % 2 ) = = 0)
{
x = x+ I:
```

```
System.out.print(x + " " );
}I++:
}
```

(b)

```
int I =0;
for(I=1;I<=20;I++){
System.out.print(i + " " );
I =I+2:
}
```

Ans: a) 0 2 6 12 20 b) 1 4 7 10 13 16 19

Q3 What will be the output of the following segment?

```
int I =0,x = 0:
do{
    if (I% 5 = = 0){
x ++:
System.out.print(x + " " );
}
++i:
}
while(I<20);
System.out.print("\n + x );
```

Ans:- 1 2 3 4
4

Q4 What will be the output of the following segment?

```
int I =0,x = 0;
for (I=0;I<5;++I)
for (I=0;j<i;j++) {
x += (I+j-1);
System.out.print(i + " " );
}
System.out.print("\n +x );
}
```

Ans:- 0 1 3 5 8 12 15 19 24 30
30

Q5 What will be the output of the following segment?

```
int I =0,x = 0;
for (I=1;I<10;I* = 2){
x ++:
System.out.print( x + " " );
```

```
        }
        System.out.print( "\n" + x);
```

Ans: 1 2 3 4
4

1. Rewrite the following fragment using switch:

```
if ( ch == 'E')
    eastern ++;
if ( ch == 'W')
    western ++;
if (ch =='N')
    northern++;
if (ch == 'S')
    southern++;
else
    unknown++;
```

Ans:
```
switch(ch) {
    case 'E'        : eastern ++; break;
    case 'W'        : western ++; break;
    case 'N'        : northern ++; break;
    case 'S'        : southern ++; break;
    default         : unknown++;
    }
```

2. **Given the code fragment:**

```
i = 2;
do { System.out.println(i);
    i+=2;
    }while(i<51);
    jOptionPane.showMessageDialog(null, "Thank you");
```

Rewrite the above code using a while loop.

Ans:
```
i = 2;
while(i<51) { System.out.println(i);
    i+=2;
    }
    jOptionPane.showMessageDialog(null, "Thank you");
```

3. **Rewrite following while loop into a for loop**

```
int stripes = 0;
while ( stripes <=13) {
            if ( stripes % 2 == 2)
            { System.out.println("Colours code Red");
```

```
            }
            else { System.out.println("Colours code Blue");
            }
        System.out.println("New Stripe");
        stripes = stripes + 1;
        }
```

Ans:
```
for ( int stripes =0; stripes <=13; stripes++)
    { if stripes % 2 == 2)
            { System.out.println("Colours code Red");
            }
            else  { System.out.println("Colours code Blue");
                    }
            System.out.println("New Stripe");
    }
```

4. Predict the output of the following code fragments.

(a)
```
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);
```

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

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

(d)
```
int j=1, s=0;
while(j<10) {
        System.out.println(J+ "+");
        s = s +j;
        j = j + j % 3;
} System.out.println("="  + s);
```

Ans: a) x = 15, b) No output c) 6 d) 1+2+4+5+7+8= 27

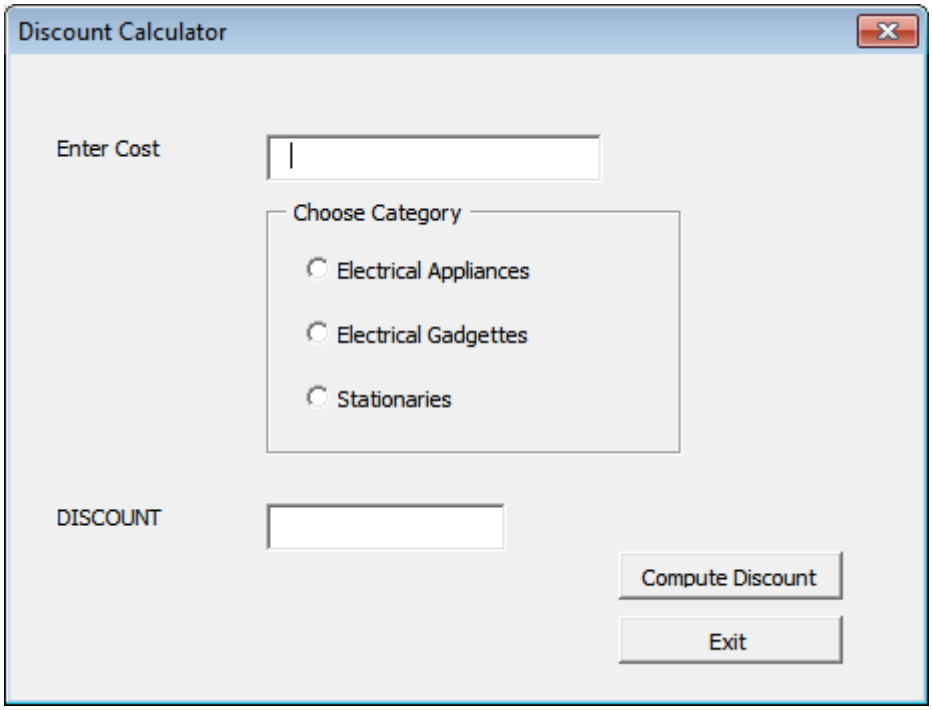
Q1.Create a Java Desktop Applicant to find the Discount of an item on the basis of Category of item[Electrical Appliance/Electronic Gadget /Stationery]. The Categories will be implemented in JRadioButton controls. The discount will be calculated as follows:

Cost	Discount (%)
<= 1000	5
otherwise	10

The extra Discount will be calculated as follows:

Category	Discount (%)
Electrical Appliance	3
Electrical Gadget	2
Sttionery	1

Calculate the total discount as: discount on cost+ discount on category
Calculate the discount amount as: cost*discount
Using a JButton's (Compute Discount) click event handler, display the discount in a JTextField control. Also implement the following settings for IDE:



Control	Property Name	Property Value
JFrame	Title	Discount calculator
JLabel1	Text	Enter cost
JLabel2	Text	Dsicount:
JPanel	Title Border	Choose Category
ButtonGroup1	[None]	[None]
JRadioButton1	Text	Electrical Appliance
	ButtonGroup	buttonGroup1

JRadioButton2	Text buttonGroup	Stationery buttonGroup1
JTextField1	Text Variable Name	[None] txtCost
JTextField2	Text Variable Name Editable	[None] txtDisc False
JButton1	Text Variable Name	Compute Discount BtnDisc
JButton2	Text Variable Name	Exit btnExit

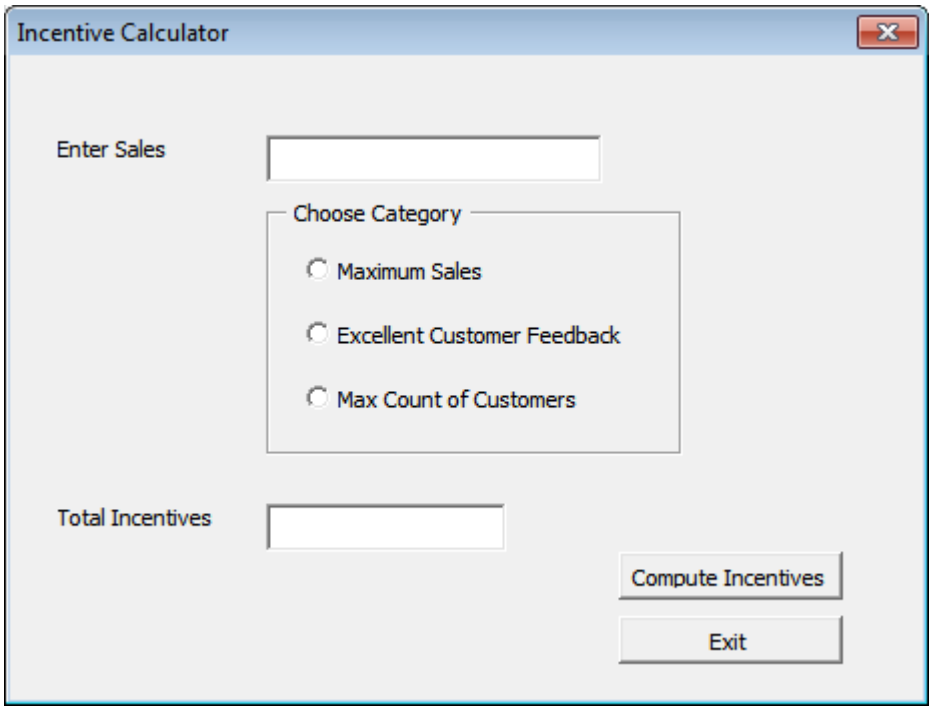
```
private void btnDiscActionPerformed (java.awt.ActionEvent evt) {
        int cost = 0;
        double discount =0;
        cost=Integer.parseInt(txtCost.getText());
        if(cost<=1000){
        discount= 0.05;
        }
        else{
                discount=.10;
        }
        if  (jRadioButton1.isSelected ( )) {
                discount = discount + 0.03;
        } else if ( jRadioButton2.isSelected( )) {
                discount = discount +0.02;
        else {
                discount = discount + 0.1;
        }
        txtDisc.setText( " " + Math.round (cost*.discount));
}

private void btnExitActionPerformed (java.awt.ActionEvent evt) {
System.exit ( 0 );
}
```

Q2. 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) {

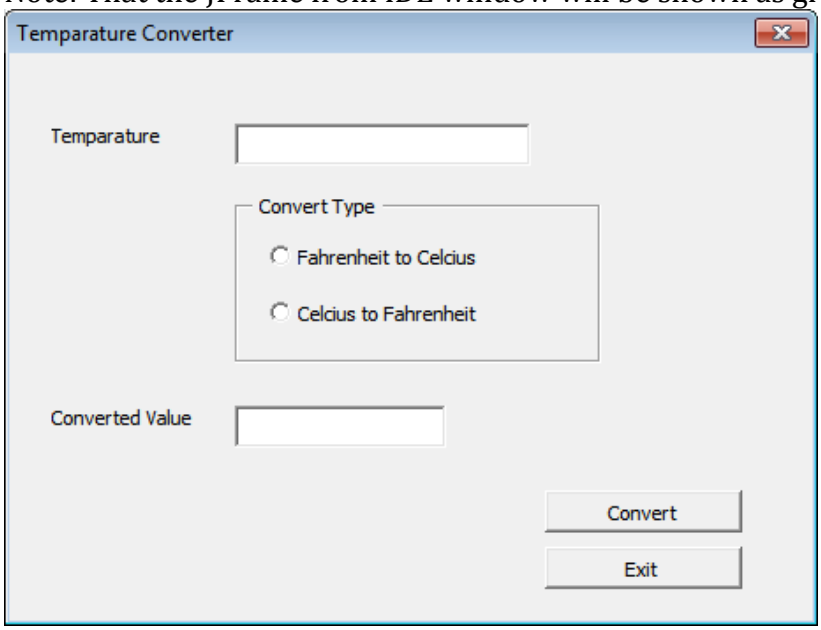
```
int sales = 0;
if (! txtSales.getText( ).trim( ).equals( “”)){
sales-Integer.parseInt(txtSales.getText( ).trim ( ));
}
double incentive = 0.0;
if (jCheckBox1.isSelected ( )) {
        incentive = incentive + 0.1;
}
if (jCheckBox2.isSelected ( )) {
        incentive = incentive + 0.8;
}
if (jCheckBox3.isSelected ( )) {
        incentive = incentive + 0.05;
}
txtInc.setText ( “ “ + Math.round(sales * incentive));
```

}

Q3. Create a Java Desktop Application to convert a given temperature Farenheit to Celsius and vice versa using switch case statements. For an incorrect choice or input,an appropriate error message should be displayed.

(Hints: C= 5/9 (F-32) and F = 1.8 (C+32))
Using a JButton’s (Convert) click event handler, display the corresponding temperature value in aJTextField control. Assume the nomenclature of the swing components of your own.

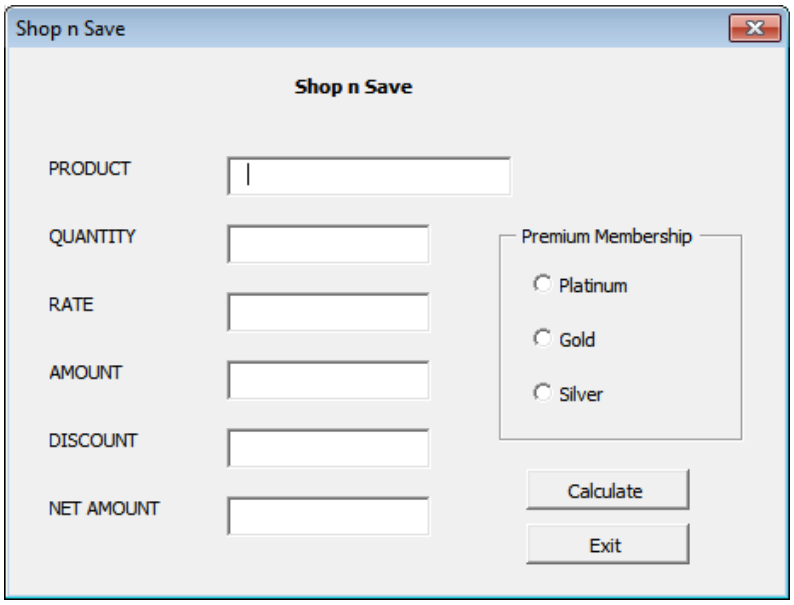
Note: That the JFrame from IDE window will be shown as given :



Ans:-
```
private void btnConActionPerformed (java.awt.ActionEvent evt) {
        int ch = 0;
        if ( jRadioButton1.isSelected()) {
                ch = 1;
        }
        if ( jRadioButton2.isSelected()) {
                ch = 2;
        }
        int F,C;
        double C1=0,F1=0;
        switch(ch)
        {
                case 1: F= Integer.parseInt (txtTemp.getText());
                        C1=5.0 /9* (F-32);
                        txtCon.setText("" + Math.round(C1));
                        break;
                case 1: F= Integer.parseInt (txtTemp.getText());
                        F1 = 1.8 *C +32;
                        txtCon.setText("" + Math.round(F1));
                        break;
                default :
                        txtCon.setText("Invalid Choice !!!");
                }
}
```

4.Read the following case study and answer the question that follows:

Object type	Object Name	Description
Text Field	Product TF QtyTF RateTF AmountTF DiscountTF NetTF	To enter the name of the product To enter quantity sold To enter rate per unit To display total amount as quantity* rate To display the discount amount based on membership type To display net amount as - discount
Radio Buttuns	PlatinumrRB GoldRB SilverRB	To specify membership type
Button Group	MembershipBG	Button Group for membership radio buttons
Button	CalcBTN ExitBTN	To calculate the amount, discount and net amount To close the application



(a) Write the code to disable the text fields AmountTF, DiscountTF and NetTF.

(b) Write the code for calcBTN to calculate the amount, discount and net amount as per the given descriptions and conditions.

(c) Write the code to remove the decimal part from the text field NetTF so that the net amount contains only the integer portion in Rupees. Where (in which event handler) would you place this code to have its impact?

(d) Write the code for ExitBTN to close the application, but before the application is closed it should check the net amount and if the net amount > 10,000 the membership of the customer should be upgraded and displayed. For example, if the customer already has Silver membership it

should be upgraded to Gold (similarly from Gold to Platinum) and he should be informed of the same using a message box.

Ans:

(a)
```
AmountTF.setEnabled ( false);
DiscountTF.setEnabled( false);
NetTF.setEnabled ( false);
```

(b)
```
private void calBTNActionperformed (.....)   {
        double  amt = 0, disc = 0, netamt = 0;
        int qty = Integer.parseInt(Qty.getText( ));
        double rate = Double.parseDouble (RateTF.getText( ));
        amt = qty * rate;
        if ( PlatinumRB.isSelected( ))
                disc = amt * 0.10;
        else if ( GoldRB.isSelected( ))
                disc = amt * 0.05;
        else
                disc = amt * 0.03;
        netamt = amt – disc;
        AmountTF.setText( " "+ amt);
        DiscountTF.setText( " " + disc);
        NetTF.setText ( " " + netamt);
}
```

(c)
```
double neamt = Double.parseDouble (NetTF.getText( ) );
int net = ( net) Math.floor ( netamt);
NetTF.setText(" " + net);
```

(d)
```
Private void ExitBTNActionPerformed (.....)  {
        int net = Integre.parseInt(NetTF.getText(  ) );
        if ( net > 10000) {
                if ( GoldRB.isSelected ( ) ) {
                        PlatinumRB.setSelected (true);
                        JoptionPane.showMessageDialog ( null , "Congratulations.U have been
                                                upgraded to platinum membership");
                }
                else if (SilverRB.isSelected ( ) ) {
                        GoldRB.setSelected(true);
                        JOptionPane. showMessageDialog ( null , "Congratulations.U have been
                                                upgraded to gold membership");
                }
        }
        System.exit ( 0);
}
```

Concepts of Inheritance

Basic Concepts and Important Terms

1. Inheritance: Inheritance is the capability of one class to inherit properties from an existing class. Inheritance supports reusability of code and is able to simulate the transitive nature of real life objects.

2. Derived/Sub and Base/Super classes

A class from which another class is inheriting its properties is called base class and the class inheriting properties is know as a sub class and derived class.

2. Single (1:1)

   → when a class inherits from a single base class.

3. Hierarchical (1:M)

   →when several classes inherit from the same class.

4. Multilevel (1:1:1)

   →When a subclass is the base class of another class.

5. Method overriding: If Base class has a method with same signature as in sub class the method of subclass overshadows the method of base class , it is called Method overriding.

6. Method Overloading: Two methods with same name but different signatures are there in the same scope of program.

7. Abstract Class: The class that is used as only base class, no object of this class is used in the program.

8. Dialog Type:

   There are four built-in dialog styles:

   1) Message dialog→ JOption.ShowMessageDialog() displays the message dialog
   2) Input dialog→ JOption.ShowInputDialog() displays the input dialog
   3) Confirm dialog→ JOption.ShowConfirmDialog() displays the confirm dialog
   4) Option dialog→ JOption.ShowOptionDialog() displays the option dialog

Database Connectivity to MySQL

1. Classes used for Database Connectivity
   - Driver Manager Class,
   - Connection Class,
   - Statement Class,
   - Resultset Class)

2. Preriquisites For connecting to MySQL from Java

MySQL provides connectivity for client applications 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 Result set
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"

5. Resultset Methods

A result set (represented by a ResultSet object) refers to a logical set 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:-

- next() :moves the cursor forward on row.
- first() :moves the cursor to the first row in the ResultSet Object.
- Last() :moves the cursor to the last row in the ResultSet object.
- relative(in rows) :moves the cursor relative to its current position.
- Absolute(int rno) :positions the cursor on the rno-th row of the ResultSet object.
- getRow :Retrieves the current row number the cursor is pointing at.

That is if cursor is at first row the getRow() will return 1.

UNIT-3: RELATIONAL DATABASE MANAGEMENT SYSTEM

Structure Query Language
A non-procedural UGL used for querying upon relational database

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:
A row of a relation

Attribute:
A column of relation

Degree:
Number of attributes

Cardinality:
Number of tuples

View:
Virtual table that does not really exist in its own right

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.

- **Transaction :**
  Logical units of work (LOW) that must be succeed or fail in its entirety. An atomic operation, not divided into smaller operation.

- **Transaction execution**
  A user of transaction in terms of work carried out by it.

- **Transaction handling issue:**
  More than one transaction executed at the same time in following two ways
  - Serially
  - Concurrently

- **Transaction properties: (ACID)**

  - **Atomicity:** Either all operations of transaction (ALL OR NONE) execution or none.
  - **Consistency:** it implies that database was/is in a consistent state before/after the start/end of transaction.
  - **Isolation:** Each transaction is independent i.e. each transaction is unaware of other.
  - **Durability:** After successful completion the changes made by it to the database persist even if there is system failure.

Differentiate between Candidate Key and Alternate Key in context of RDBMS

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 a Primary key is called an Alternate Key.

***Differentiate between Candidate Key and Primary Key in context of RDBMS*.**

Ans:

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.

Primary Key is a designated attribute or a group of attributes whose values can uniquely identify the tuples in the relation.

Integrity Constraints

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

Type Of Constraints

1. Column Constraint
2. Table Constraint

Accessing Database in MySql :

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

CREATING TABLE IN MYSQL

Through Create table command we can define any table.
CREATE TABLE <tablename>
(<columnname> <datatype>[(<Size>)],……..);
CREATE TABLE Student(SRollNo integer, Sname char(20));

INSERTING DATA INTO TABLE

The rows are added to relations using INSERT command.
INSERT INTO <tablename>[<columnname>]
VALUES (<value>, <value>…);
INSERT INTO student (Sid, Sname)
VALUES (100,'ABC');

SELECT COMMAND:

It lets us make queries on the database.
SELECT * FROM tablename WHERE condition;
SELECT * FROM student WHERE Sid=100;

Eliminating Redundant Data

DISTINCT keyword eliminates redundant data
SELECT DISTINCT Sid FROM Student;

Selecting from all the rows-ALL Keyword
SELECt ALL Sid FROM Student;

Viewing structure of table:
DESCRIBE/DESC <tablename>;
DESCRIBE student;
Using column aliases:
SELECT <column name> AS [columnalias][,…]
FROM <tablename>;
SELECT rollno, name AS "studentname"
FROM student;

Condition based on a range:
Keyword BETWEEN used for making range checks in queries.
SELECT rollno, name FROM student WHERE rollno BETWEEN 10 AND 20;

Condition based on a list:
Keyword IN used for selecting values from a list of values.
SELECT rollno, name FROM student WHERE rollno IN (10, 20, 60);

Condition based on a pattern matches:
Keyword LIKE used for making character comparison using strings
1. percent(%) matches any substring
2. underscore(_) matches any character

SELECT rollno, name FROM student WHERE name LIKE '%ri';

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 student
WHERE marks>50
ORDER BY name;

<u>MySQL functions:</u>
A function is a special type of predefined command set that performs some operation and returns a single value.
1. String functions :(Lower / LCASE( ), Upper/UCASE( ), Concate( ), Instr( ), Length( ), RTrim( ), LTrim( ), Substr( ))
2. Numeric function :(Round( ), Truncate( ), Mod( ), Sign( ))

3.Date functions:(Curdate( ), Date( ), Month( ), year( ), DayName( ), DayofMonth( ), DayofWeek( ), DayofYear( ), Now( ), SysDate( ))

Creating tables with SQL Constraint :
CREATE TABLE command is used to CREATE tables
CREATE TABLE tablename
(columnname datatype size, …);

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 (Srollno integer NOT NULL, …);

CREATE TABLE student (Srollno integer UNIQUE, …);

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

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

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

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

Inserting data into table:
INSERT INTO command is used to insert data into table

INSERT INTO tablename VALUES (value1,….);

INSERT INTO student VALUES (1,'Ram',12);

Modifying data in tables:
Existing data in tables can be changed with UPDATE command.

UPDATE student SET Sclass=11 WHERE Sname='Ram';

Deleting data from tables:
Tuples in a table can be deleted using DELETE command.

DELETE FROM student WHERE Srollno>10;

Consider the following tables item and Customer. Write SQL Commands for the statement (i) to (iv) and give outputs for SQL queries (v) to (viii).

Table: ITEM

I_ID	ItemName	Manufacture	Price
PC01	Personal Computer	ABC	35000
LC05	Laptop	ABC	55000
PC03	Personal Computer	XYZ	32000
PC06	Personal Computer	COMP	37000
LC03	Laptop	PQR	57000

Table: CUSTOMER

C_ID	CustomerName	City	l_ID
01	MRS REKHA	Delhi	LC03
06	MANSH	Mumbai	PC03
12	RAJEEV	Delhi	PC06
15	YAJNESH	Delhi	LC03
16	VIJAY	Banglore	PC01

(i) To display the details of those customers whose city is Delhi.
(ii) To display the details of item whose price is in the range of 35000 to 55000 (both values included)
(iii) To display the customer name, city from table Customer, and itemname and price from table Item, with their corresponding matching I_ID.
(iv) To increase the price of all items by 1000 in the table Item.
(v) SELECT DISTINCT City FROM Customer;
(vi) SELECT ItemName, MAX(Price), Count(*)
FROM Item GROUP BY ItemName;
(vii) SELECT CustomerName, Manufacturer
FROM Item, Customer
WHERE Item.Item_Id=Customer.Item_Id
(viii) SELECT ItemName, Price* 100
FROM Item WHERE Manufacture= 'ABC';

Answer:

(i) SELECT * FROM CUSTOMER
WHERE City = 'Delhi';

(ii) SELECT * FROM ITEM
WHERE PRICE BETWEEN 35000 TO 55000;

(iii) SELECT CustomerName, City, ItemName, Price
FROM CUSTOMER, ITEM

WHERE CUSTOMER.I_ID = ITEM.I_ID;

(iv)
```
UPDATE ITEM
SET Price = Price + 1000 ;
```

(v)
Delhi
Mumbai
Banglore

(vi)

Personal computer	37000	3
Laptop	57000	2

(vii)

MRS REKHA	PQR
MANSH	XYZ
RAJEEV	COMP
YAJNESH	PQR
VIJAY	ABC

(viii)

Personal computer	3500000
Laptop	5500000

Consider the following tables Product and Clint. Write SQL commands for the statement (i) to (iv) and give outputs for SQL queries (v) to (viii)

Table: PRODUCT

P_ ID	ProductName	Manufacturer	Price
TP01	Talcum Powder	LAK	40
FW05	Face Wash	ABC	45
BS01	Bath Soap	ABC	55
SH06	Shampoo	XYZ	120
FW12	Face Wash	XYZ	95

Table:CLINT

C_ID	ClientName	City	P_ID
01	Cosmetic Shop	Delhi	FW05
06	Total Health	Mumbai	BS01
12	Live Life	Delhi	SH06
15	Pretty Woman	Delhi	FW12
16	Dreams	Banglore	TP01

(i) To display the details of those Clients whose City is Delhi.
(ii) To display the details of Products Whose Price is in the range of 50 to 100(Both values included).
(iii) To display the ClientName, City from table Client, and ProductName and Price from table Product, with their corresponding matching P-ID.
(iv) To increase the Price of all Products by 10.

(v) SELECT DISTINCT City FROM Client"

(vi) SELECT Manufacturer, MAX(Price), Min(Price), Count(*)
FROM Product GROUP BY Manufacturer;

(vii) SELECT ClientName, ManufacturerName
FROM Product, Client
WHERE Client.Prod-ID=Product.P_ID;

(viii) SELECT ProductName, Price * 4
FROM Product;

Answer:

(i) SELECT *
FROM CLIENT
WHERE City="Delhi";

(ii) SELECT *
FROM PRODUCT
WHERE Price between 50 to 100;

(iii) SELECT ClientName, City, ProductName, Price
FROM CLIENT, PRODUCT
WHERE CLIENT.P_ID=Product.P_ID;

(iv) Update PRODUCT
SET Price=Price+10

(v) Delhi
Mumbai
Bangalore

(vi)

LAK	40	40	1
ABC	55	45	2
XYZ	120	95	2

(vii)

Cosmetic Shop	Face Wash
Total Health	Bath Soap
Live Life	Shampoo
Pretty Woman	Face Wash
Dreams	Talcum Powder

(viii)

Talcum Powder	160
Face Wash	180
Bath Soap	220
Shampoo	480
Face Wash	380

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

TABLE: SENDER

SenderID	SenderName	SenderAddress	SenderCity
ND01	R Jain	2, ABC Appts	New Delhi
MU02	H Sinha	12, Newton	Mumbai
MU15	S Jha	27/A, Park Street	Mumbai
ND50	T Prasad	122-K, SDA	New Delhi

TABLE: RECIPIENT

RecID	SenderID	RecName	RecAddress	RecCity
KO05	ND01	R Bajpayee	5, Central Avenue	Kolkata
ND08	MU02	S Mahajan	116, A Vihar	New Delhi
MU19	ND01	H Singh	2A, Andheri East	Mumbai
MU32	MU15	P k Swamy	B5, C S Terminus	Mumbai
ND48	ND50	S Tripathi	13, B1 D, Mayur Vihar	New Delhi

(i) To display the names of all Senders from Mumbai
(ii) To display the RecID, SenderName, SenderAddress, RecName, RecAddress for every Recipient
(iii) To display Recipient details in ascending order of RecName
(iv) To display number of Recipients from each city
(v) SELECT DISTINCT SenderCity FROM Sender;
(vi) SELECT A.SenderName, B.RecName
FROM Sender A, Recipient b
WHERE A.SenderID=B.SenderID AND B.RecCity= 'Mumbai';
(vii) SELECT RecName, RecAddress
FROM Recipient
WHERE RecCity NOT IN ('Mumbai', 'Kolkata');
(viii) SELECT RecID, RecName
FROM Recipient
WHERE SenderID= 'MU02' or SenderID= 'ND50';

Answer:
(i) SELECT SenderName FROM Sender WHERE SenderCity= "Mumbai";

(ii) SELECT RecID, SenderName, SenderAddress, RecName, RecAddress
FROM Sender, Recipient WHERE Sender.SenderID= Recipient.SenderID;

(iii) SELECT * FROM Recipient ORDER BY RecName Asc;

(iv) SELECT RecCity, count (*) FROM Recipient GROUP BY RecCity;

(v) New Delhi
Mumbai

(vi) R Jain H Singh
S Jha P K Swamy

(vii) S Mahajan 116, A Vihar
S Tripathi 13, B1 D, Mayur Vihar

(viii) ND08 S Mahajan
ND45 S Tripathi

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

TABLE: CONSIGNOR

CnorID	CnorName	CnorAddress	City
ND01	R Singhal	24, ABC Enclave	New Delhi
ND02	Amit Kumar	123, Palm Avenue	New Delhi
MU15	R Kohli	5/A, South Street	Mumbai
MU50	S Kaur	27-K, Westend	Mumbai

TABLE: CONSIGNEE

CneeID	CnorID	CneeName	CneeAddress	City
MU05	ND01	Rahul Kishore	5, Park Avenue	Mumbai
ND08	ND02	P Dhingra	16/J, Moore Enclave	New Delhi
KO19	MU15	A P Roy	2A, Central Avenue	Kolkata
MU32	ND02	S Mittal	P 245, AB Colony	Mumbai
ND48	MU50	B P Jain	13, Block D, A Vihar	New Delhi

(i) To display the names of all Consignors from Mumbai.

(ii) To display the CneeID, CnorName, Cnoraddress, CneeName, CneeAddress for every Consignee.

(iii) To display Consignee details in ascending order of CneeName.

(iv) To display numbers of Consignors from each city.

(v) SELECT DISTINCT City FROM Consignee;

(vi) SELECT A.CnorName, B.CneeName
FROM Consignor A, Consignee B
WHERE A.CnorID=B.CnorID AND B.CneeCity= 'Mumbai';

(vii) SELECT CneeName, CneeAddress
FROM Consignee
WHERE CneeCity NOT IN ('Mumbai', 'Kolkata');

(viii) SELECT CneeID, CneeName
FROM Consignee
WHERE CnorId= 'MU15' OR CnorId= 'ND01';

Answer:
(i) SELECT CnorName
FROM CONSIGNOR
WHERE City= "Mumbai";
(ii) SELECT CneeID, CnorName, CnorAddress, CneeName, CneeAddress
FROM CONSIGNOR, CONSIGNEE
WHERE CONSIGNOR. CnorID= CONSIGNEE.CNorID

(iii) SELECT *
FROM CONSIGNEE
ORDER BY CneeName ASC;

(iv) SELECT CneeCity, Count (CneeCity))
FROM CONSIGNEE
GROUP BY CneeCity

(v) There is no column by the name **City** in the table CONSIGNEE. However, if we change the column from City to **CneeCity**, the query result as:

CneeCity
Mumbai
New Delhi
Kolkata

(vi) R. Singhl Rahul kishore
Amit Kumar S Mittal

(vii) P Dhingra 16/J Moore Enclave
BP Jain 13, Block D, A Vihar

(viii) MU05 Rahul kishore
KO19 A P Roy

Unit 4
IT Applications

E-GOVERNANCE:

It refers to application of electronic means in governance with an aim of fulfilling the requirements of common man at affordable costs and in fastest possible time.

E-BUSINESS:

It refers to any form of transaction (exchange) that uses an electronic medium to facilitate the transaction.

E-LEARNING:

It is a flexible term used to describe a means of teaching through technology such as a network, browser, CDROM or DVD multimedia platform. .

Some E-learning websites are:

www.moodle.org, w3schools.com

GUI AND ITS IMPORTANCE

GUI (Graphical User Interface) that uses a graphical interface to interact with the user also it is a collection of elements called objects.

- **Front End:**
  It is the end that interacts with the user and collects inputs from the user.
- **Back End:**
  It is the end that is not visible but that processes the user requests as received by the front –end.

FRONT-END INTERFACE

Front end and **back end** are generalized terms that refer to the initial and the end stages of a process. The front end is responsible for collecting input in various forms from the user and processing it to conform to a specification the back end can use. The front end is an interface between the user and the back end.

Design of a GUI Front-end

- Visibility of system status
- Match between system and the real world
- User control and freedom
- Consistency and standards
- Error prevention
- Recognition rather than recall
- Flexibility and efficiency of use
- Aesthetic and minimalist design

- Help users recognize,diagnose,and recover from errors
- Help and documentation
-

❖ **Contents and Features of Front-end**

The graphical objects that facilitate with users are also known as User-Interface Objects

Features of Front-end:

Display features

- Functionality features
- Display Features of Fronts End
- Conventional use of Icon
- Use of Conventionality Reserved Words
- Provides Visual Feedback(Also Responsiveness features)
- Rare Use of Audible Feedback
- Use Controls Correctly in Conventional way

Functionality features

- Provided Keyboard Support(Performance features)
- Effective Usage of Modal and Modeless Windows(Performance features)
- Takes Validates and its types
- Required fields
- Formatting
- Logical

Security features

BACKEND DATABASE

A database is collection of interrelated data and a database system is basically computers based recordkeeping system.

FRONT_END AND DATABASE CONNECTIVITY

Database connectivity refers to a programming interface that lets a front-end access a database on a backend, via some means.

The benefits of database connectivity include

- Almost any database can be accessed from within application code if its connectivity
- Drivers is available
- Distribution of apply logic in terms of front-end and backend leads to betters performance

INFORMATICS PRACTICES
Class-XII
Design

TIME : 3 hours **MM : 70**

Type of Questions	Marks of Per Question	Total Number of Questions	Total Marks
SA I	1	16	16
SA II	2	18	36
LA	6	3	18
Total		37	70

INFORMATICS PRACTICES
Class-XII

TIME : 3 hours **MM : 70**

Topic / Unit	SA (1 mark)	SA (2 marks)	LA (6 marks)	Total
Networking and Open Standards	4(4)	3(6)	-	7(10)
Programming	7(7)	6(12)	1(16)	14(25)
Relational Database Management System	4(4)	7(14)	2(12)	13(30)
IT Applications	1(1)	2(4)	-	3(5)
Total	16(16)	18(36)	3(18)	37(70)

Sample Question Paper
INFORMATICS PRACTICES Class-XII

TIME : 3 hours **MM : 70**

1 (a) Tara Nathani wants to upload and download files from/to a remote intenet server, write the name of the relevant communication protocol, which will let her do the same.

(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?

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

(d) Which of the following is not a characteristic of Open Source Software?

- Its source code is available for modification
- It is owned by a company or an individual
- It can be downloaded from internet

(e) Jai Khanna is confused between the terms Domain Name and URL. Explain the difference with the help of appropriate examples of each.

(f) Define any two threats to Network Security.

(g) Differentiate between Star and Bus Topology of networks.

2 (a) While working in Netbeans, Rajmeeta included a Listbox in the form. Now she wants the list of her friends' names to be displayed in it. Which property of Listbox control should she use to do this?

(b) What is the purpose of default clause in a switch statement?

(c) Which HTML tag inserts a horizontal straight line on a web page?

(d) How is <P> tag different from
 tag in HTML?

(e) How many times will each of the following loops execute? Which one of these is an entry control loop and which one is an exit control loop?

Loop1:	**Loop2:**
int sum = 0, i = 5; do { sum += i;i++;} while (i<5);	int sum = 0, i = 5; while (i<5) {sum += i;i++;}

(f) Write a function in java that takes two numbers two numbers as input from textfields and displays their sum.

(g) How are tags used in XML different from tags in HTML? Write 2 points.

3 (a) If a database "Employee" exists, which MySql command helps you to start working in that database?

(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?

(c) Pooja, a students 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:

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?

(e) Distinguish between a Primary key and Candidate key with the help of suitable ex- ample of each.

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

LastName Batra Sehgal Bhatia Sharma Mehta

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

a) SELECT lastname FROM Directory WHERE lastname like "_a%";

b) 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?

4 (a) Define a class with reference to object oriented programming.

(b) What will be the content of jTextField1 after executing the following code:

int Num = 6; Num = Num + 1; if (Num > 5)

jTextField1.setText(Integer.toString(Num)); else jTextField1.setText(Integer.toString(Num+5));

(c) What will be the contents of jTextArea1 after executing the following statement:
jTextArea1.setText("Object\nOriented\tProgramming");

(d) Rewrite the following program code using switch statement:

```
if (d == 1)
day = "Monday"; else if (d == 2) day = "Tuesday"; else if (d == 3)
day = "Wednesday";
else
day = "-";
```

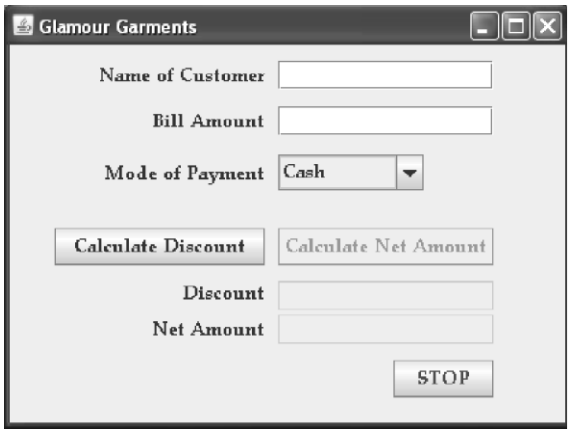
(e) The following code has some error(s). Rewrite the correct code underlining all the cor- rections made:

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

(f) What will be the contents of jTextField1 and jTextField2 after executing the following code:

```
String s = "ABC Micro Systems"; jTextField1.setText(s.length()+" ");
jTextField2.setText(s.toLowerCase());
```

(g) 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.

(i) Write the code to make the textfields for Discount (named txtDisc) and Net Amount (named txtNetAmt) uneditable.

(ii) Write code to do the following:

a. When "Calculate Discount" button is clicked the discount should be calculated as per the given criteria and it should be displayed in the discount textfield. "Calculate Net Amount" button (named btnCalcNetAmt) should also be enabled.

b. When "Calculate Net Amount" button is clicked the net amount should be calculated and it should be displayed in the net amount textfield.

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

(b) Write the output of the following SQL queries:

a) SELECT ROUND(6.5675, 2);

b) SELECT TRUNCATE(5.3456, 1);

c) SELECT DAYOFMONTH('2009-08-25');

d) SELECT MID('Class 12', 2,3);

(c) Consider the table TEACHER given below. Write commands in SQL for (1) to (4) and output for (5) to (8)

TEACHER

ID	Name	Department	Hiredate	Category	Gender	Salary
1	Tanya Nanda	SocialStudies	1994-03-17	TGT	F	25000
2	Saurabh Sharma	Art	1990-02-12	PRT	M	20000
3	Nandita Arora	English	1980-05-16	PGT	F	30000
4	James Jacob	English	1989-10-16	TGT	M	25000
5	Jaspreet Kaur	Hindi	1990-08-01	PRT	F	22000
6	Disha Sehgal	Math	1980-03-17	PRT	F	21000
7	Siddharth Kapoor	Science	1994-09-02	TGT	M	27000
8	Sonali Mukherjee	Math	1980-11-17	TGT	F	24500

i. To display all information about teachers of PGT category.

ii. To list the names of female teachers of Hindi department.

iii. To list names, departments and date of hiring of all the teachers in ascending order of date of joining

iv. To count the number of teachers in English department.

v. SELECT MAX(Hiredate) FROM Teacher;

vi. SELECT DISTINCT(category) FROM teacher;

vii. SELECT COUNT(*) FROM TEACHER WHERE Category = "PGT"

viii. SELECT AVG(Salary) FROM TEACHER group by Gender;

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

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

(b) In a database there are two tables 'Customer' and 'Bill' as shown below:

Customer

CustomerID	CustomerName	CustAddress	CustPhone
1	Akhilesh Narang	C4,Janak Puri,Delhi	9811078987
2	Purnima Williams	B1,Ashok Vihar,Delhi	9678678711
3	Sumedha Madaan	33, South Ext.,Delhi	6767655412

Bill

BillNo	CustID	Bill_Amt
1	2	12000
2	1	15000
3	2	13000
4	3	13000
5	2	14000

(i) How many rows and how many columns will be there in the Cartesian product of these two tables?

(ii) Which column in the 'Bill' table is the foreign key?

(c) 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 customer.

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

(iii) Select SetNo, SetName from Handsets, customer where SetNo = SetCode and CustAddress = 'Delhi';

7 (a) How does e-business improve customer satisfaction- Write one point.

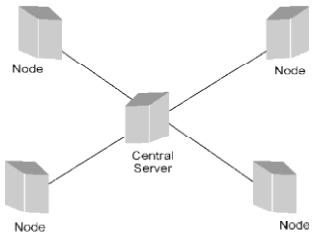
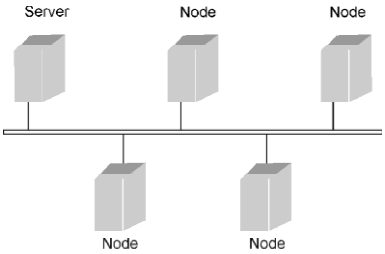
(b) How has our society benefited from e-governance? Write 2 points.

(c) Vijayan works for the Customs Department. He wishes to create controls on a form for the following functions. Choose appropriate controls from Text box, Label, Option button, Check box, List box, Combo box, Command button and write in the third column.

SNo	Control used to:	Control
1	Enter last name	
2	Enter Gender	
3	Choose City from a list of cities	
4	Submit Form	

Sample Question Paper - I
MARKING SCHEME INFORMATICS PRACTICES
Class XII

Time: 3 hours **M.M.: 70**

1(a)	FTP.	
	(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)	It is owned by a company or an individual	
	(1 Mark 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. **STAR**  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. **BUS**  	

	(2 marks for correct difference)	
2(a)	Model.	
	(1 mark)	
(b)	Default clause is used to handle the case when no match of any case in the switch statement is found.	
	(1 mark for correct answer)	
(c)	<HR> tag.	
	(1 mark for correct answer)	
(d)	<P> tag inserts a blank line and starts a new paragraph whereas tag forces text to a new line like the <P> tag, but without inserting a blank line.	
	(1 mark for correct difference)	
(e)	Loop1 will execute once and Loop2 will execute 0 times. Loop1 is exit control loop and Loop2 is entry control loop.	
	(½ mark for each correct no. of times of loop execution) ***(½ mark each for correctly identifying the type of loop)***	

(f)	Int a=Integer.parseInt(jTextField1.getText());
	int b=Integer.parseInt(jTextField2.getText());
	int c;
	c=a+b;
	jTextField3.setText(""+c);	

	(½ mark for getting the input) ***(1 mark for calculating sum)*** ***(½ mark for displaying in text field)***	
(g)	XML tags: • New tags can be created using • XML tags cannot be empty tags. HTML tags: • New tags cannot be created using • HTML tags can be empty tags.	
	(1 mark for each correct difference)	
3(a)	Use employee	
	(1 mark for correct answer)	
(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)	a) **Last Name:** Batra b) **Last Name:** Sehgal	
	(1 mark for each correct answer)	
(g)	Degree = 5. Cardinality = 17	
	(1 mark for each part)	

4(a)	A class is an abstract user-defined data type that is used as a blueprint to define the objects of that class.	
	(1 mark for correct definition)	
(b)	7	
	(***1 mark for correct answer)***	
(c)	Object Oriented Programming ***(1 mark for contents to be printed)*** ***(½ mark each for writing the effect of '\n' and ' \t')***	
(d)	switch(d) { case 1: day = "Monday"; break; case 2: day = "Tuesday"; break; case 3: day = "Wednesday"; break; default: day = "-";}	
	(2 marks for correct answer)	

(e)	int i=2, j=5;
	while (j>i)
	{ jTextField1.setText("j is greater");
	j--;
	++i;
	}
	jOptionPane.showMessageDialog(this,"Hello");	

	(½ mark each for identifying and correcting 4 errors)	
(f)	jTextField1: 17 jTextField2: abc micro systems	
	(1 Mark for 17) (***1 Mark for abc micro systems)***	
(g) (i)	txtDisc.setEditable(false); txtNetAmt.setEditable(false);	
	(1 mark each for both parts)	
(ii) (a)	float BillAmt, NetAmt, Disc; String ModeofPayment;	

	BillAmt = Float.parseFloat(txtBillAmt.getText()); ModeofPayment = (String)
	cmbMode.getSelectedItem(); if (ModeofPayment.equals("Cash"))
	Disc = BillAmt*8/100;
	else if (ModeofPayment.equals("Cheque")) Disc = BillAmt*7/100;
	else Disc = 0;
	if (BillAmt > 15000)
	Disc = Disc + BillAmt*10/100; btnCalcNetAmt.setEnabled(true);
	txtDisc.setText(Disc+"");	

	(½ Mark for variable declaration with appropriate data types) ***(½ Mark for extracting Bill Amount correctly from the text box)*** ***(½ Mark for extracting Mode of Payment correctly from Combo Box)*** ***(½ Mark for calculating correct Discount based on Mode of Payment)*** ***(½ Mark for calculating Discount based on Bill Amount and displaying it)*** ***(½ Mark for Enabling btnCalNetAmt)***	
(b)	float BillAmt, NetAmt, Disc; BillAmt = Float.parseFloat(txtBillAmt.getText()); Disc = Float.parseFloat(txtDisc.getText()); NetAmt = BillAmt - Disc; txtNetAmt.setText(NetAmt+"");	
	(½ Mark for calculating Net Amount) ***(½ Mark for Displaying 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 DDL)***	
(b)	a) 6.57 b) 5.3 c)25 d) las	
	(½ Mark each for each correct answer)	

(c)	i. SELECT * FROM teacher WHERE category = 'PGT'; ii. SELECT name FROM teacher WHERE Gender = 'F' AND Department = 'Hindi'; iii. SELECT name, department, hiredate FROM teacher ORDER BY hiredate; iv. SELECT count(*)FROM teacher WHERE department = 'English'; v. 1994-09-02 vi. TGT PRT PGT vii. 1 viii. 24500 24000	
	(1 Mark each for each correct query) ***(½ Mark each for each correct output)***	
6(a)	CREATE TABLE Menu (itemcode varchar(5) primary key, itemname varchar(20), category varchar(20), price decimal(5,2));	
	(½ Mark for CREATE TABLE Menu) ***(½ Mark for appropriately putting Primary Key constraint)*** ***(½ Mark for correct data types)*** ***(½ Mark for correct syntax of the query)***	
(b)	(i) 15 rows and 7 columns (ii) CustID	
	(½ Mark each for stating number of rows and columns) ***(1 mark for choosing the correct foreign key)***	
(c)	(i) SELECT CustNo, CustAddress, SetName FROM Customer, Handsets Where SetNo = SetCode; (ii) SELECT Customer.* FROM Customer, HandSets WHERE SetNo = SetCode and setname like "Nokia%";	

<table>
<tr><td></td><td>(iii) setno setname
N2 Nokia 3G
B1 BlackBerry</td><td></td></tr>
<tr><td></td><td>(i)
(1 mark for correct use of SELECT and FROM)
(1 mark for correct use of WHERE clause)

(ii)
(1 mark for correct use of SELECT and FROM)
(1 mark for correct use of WHERE clause)

(iii)
(1 mark for each correct line of output)</td><td></td></tr>
<tr><td>7(a)</td><td>• Goods sold through e-business are generally cheaper as cost incurred in e- business is less compared to setting up a traditional business.
• Customers can receive highly customizable service.
• Even Remote area customers are reached in e-business.
• Sellers have better understanding of their customers' needs as customers communicate through e-mails.</td><td></td></tr>
<tr><td></td><td>(1 Mark for any correct point)</td><td></td></tr>
<tr><td>(b)</td><td>1. A lot of productive time of government servants and general public is saved.
2. Transparency has increased and therefore cheating cases have been reduced.</td><td></td></tr>
<tr><td></td><td>(1 Mark each for any 2 correct points)</td><td></td></tr>
<tr><td>(c)</td><td><table><tr><td>SNo</td><td>Control used to:</td><td>Control</td></tr><tr><td>1</td><td>Enter last name</td><td>Text Field</td></tr><tr><td>2</td><td>Enter Gender</td><td>Option Button</td></tr><tr><td>3</td><td>Choose City from a list of cities</td><td>List Box or Combo Box</td></tr><tr><td>4</td><td>Submit Form</td><td>Button (Command)</td></tr></table></td><td></td></tr>
<tr><td></td><td>(½ Mark each for each correct answer)</td><td></td></tr>
</table>

CBSE AISSCE 2011 Marking Scheme for Informatics Practices

(Sub Code: 065 Paper Code: 90 Outside Delhi)

General Instructions:

- All answers provided in the marking scheme are SUGGESTIVE.
- Examiners are requested to accept all possible alternative correct answers.
- Semicolon termination and case sensitivity to be ignored in MySQL statements.
- Both single quotes and double quotes are acceptable in MySQL commands.
- All equivalent MySQL commands for a given query must be accepted.

(a)	Mr Kant Sengupta wants to prevent unauthorized access to/from his company's local area network. Write the name of a system (software/hardware), which he should install to do the same	1
Ans	Firewall or Intrusion Detection System	
	(1 mark for correct answer)	
(b)	Seven Brothers Fashion Inc. is a fashion company with design unit and market unit 130 meters away from each other. The company recently connected their LANs using ethernet cable to share the stock related information. But after joining their LANs they are not able to share the information due to loss of signal in between. Which device out of the following should you suggest to be installed for a smooth communication? (i) Modem (ii) Repeater (iii) UPS	1
Ans	Repeater	
	(1 mark for correct answer)	
(c)	Which of the following is **not** a feature of Networking? (i) Resource Sharing (ii) Reliability (iii) Uninterrupted Power Supply (iv) Reduced cost	1
Ans	Uninterrupted Power Supply	
	(1 mark for correct answer)	
(d)	Name any two Indian scripts included in Unicode	1
Ans	Devnagari , Bengali, Gurmukhi, Gujarati, Kannada, Malayalam, Oriya, Tamil, Arabic,Telugu	
	(½ mark each for naming any two correct Indian scripts)	
(e)	Ms Vidya Chauhan is confused between Proprietary Software and Open Source Software. Mention at least two points of difference to help her understand the same.	2
Ans		

		Proprietary SW • Has to be paid for • Source code not available • Cannot be copied / distributed **Open Source SW** • Free and therefore need not be paid for • Source code available for change • Can be copied and distributed	
		(1 mark each for any two correct points)	
	(f)	Identify the type of Topology from the following (i) In it, each node is connected with the help of a single co-axial cable. (ii) In it, each node is connected with the help of independent cable with the help of a central switching (communication controller).	2
	Ans.	i) Bus Topology ii) Star Topology	
		(1 mark for each correct answer)	
	(g)	Define the following with reference to Threats of Network Security: (i) Worm (ii) Trojan Horse	2
	Ans.	**Worm** • Self-replicating malware without user intervention • Consumes high volume of bandwidth leading to Denial of service (DoS) **Trojan Horse** • Appears to perform a desirable function for the user • Steals information through a 'backdoor' /Records browsing activities without the knowledge of the user • Causes system crash or freeze	
		(1 mark for any 1 point under each definition) **Note: Any relevant explanation** with regards to **Threats to Network Security** also to be considered as **the correct answer.**	
2.	(a)	While working in Netbeans, Mr. Khorana wants to display 'Pass' or 'Needs to Reappear' message depending on the marks entered in jTextField. Help her to choose the more appropriate statement out of 'If statement' and 'Switch statement'.	1
	Ans.	IF statement	
		(1 mark for identifying IF as the correct statement)	
	(b)	How one can make a Text Field un-editable on a Frame?	1
	Ans	`<JTextField>.setEditable(false)`	
		(1 mark for the correct answer)	
	(c)	Which HTML tags are used for making a table and adding rows in HTML document?	1

Ans	<TABLE> </TABLE> tags are used for making a table . <TR> </TR> are used for adding rows in a HTML document.	
	(½ mark each for naming both tags) ***Note: Mentioning only <TABLE> and <TR> also acceptable***	
(d)	How is <OL> tag different from <UL> tag of HTML?	1
Ans.	<OL> stands for ordered list OR This tag is used to display an ordered/numbered list. <UL> stands for unordered list OR This tag is used to display a bulleted list.	
	(1 mark for any one correct difference)	
(e)	What will be the value of P and Q after execution of the following code?	2

	`int P,Q=100;`
	`for (P=10; P<=12; P++)`
	`{`
	`  Q + P ;`
	`}`
	
	`JOptionPane.showMessageDiaog(this, "P:"+P+" Q:"+Q+"");`	

Ans.	P:13 Q:133	
	(1 mark each for correct value of P and Q)	
(f)	Differentiate between XML and HTML.	2
Ans		

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

	(1 mark each for any 2 correct differences)	
(g)	Write Java code that takes the cost of a pencil from jTextField1 and number of pencils from jTextField2 and calculates total amount as cost*number to be displayed in jTextField3 and 20% service tax out of total amount in jTextField4.	2

Ans	`double cost = Double.parseDouble(jTextField1.getText());`
	`int n = Integer.parseInt(jTextField2.getText());`
	`double amount = cost * n;`
	`jTextField3.setText(amount + "");`
	`jTextField4.setText(amount * 0.20+"");`	

	(½ mark for any one correct conversion statement) ***(½ mark for calculation of total amount)***	

	(½ mark for calculation of service tax) *(½ mark for any one correct setText() statement)* **Note : The data type for cost as float/ int is also acceptable**	
(a)	Write MySql command that will be used to open an already existing database "CONTACTS"	1
Ans	`USE CONTACTS ;`	
	(1 mark for correct answer) ***Note : Mentioning only USE command is also acceptable.***	
(b)	The Doc_name Column of a table Hospital is given below: **Doc_name** Avinash Hariharan Vinayak Deepak Sanjeev Based on the information, find the output of the following queries: (i) SELECT doc_name FROM Hospital WHERE doc_name like "%v"; (ii) SELECT doc_name FROM Hospital WHERE doc_name like '%e%';	2
Ans	(i) Sanjeev (ii) Deepak Sanjeev	
	(1 mark for each correct output)	
(c)	A table "Transport" in a database has degree 3 and cardinality 8. What is the number of rows and columns in it?	2
Ans	8 3	
	(1 mark for each correct answer)	
(d)	Differentiate between Alternate key and Candidate key.	1
Ans	**Alternate Key**: A key that can act as a primary key but is not selected as primary key **Candidate Key**: A key that can be set as Primary key is called a candidate key.	
	(1 mark for any correct difference/definition) OR *(1 mark for illustrating with example)*	

(e)	Define a class with reference to Object Oriented Programming.	1
Ans	A class is a logical unit - a user defined data type. It encapsulates and binds the data members and the methods	
	(1 mark for any correct definition)	
(f)	An employee_Id consisting of 5 digits is stored in a string variable strEmpId. Now Mr.Deb wants to store this Id in Integer type of variable InteEmpId. Write Java statement to do this.	1
Ans	`int IntEmpId = Integer.parseInt(strEmpId);`	
	(1 mark for correct answer) ***(Declaration of IntEmpId as 'int' is optional)***	
(g)	Sarthak, a students of class XII, created a table "Class". Grade is one of the columns of this table. To find the details of students whose Grades have not been entered, he wrote the following MySql query, which did not give the desired result: SELECT * FROM Class WHERE Grade ="Null"; Help Sarthak to run the query by removing the errors from the query and write the correct query.	2
Ans	`SELECT * FROM Class WHERE Grade IS NULL;`	
	(2 marks for correct answer)	

(a)	What will be displayed in of jTextField1 after executing the following code?
	`int m = 16;`
	`m = m+1;`
	`if (m<15)`
	`  jTextField.setText (Integer.toString(m));`
	`else`
	`  jTextField1.setText (Integer.toString (m+15));`
		2

Ans	32	
	(2 marks for correct answer)	

(b)	Rewrite the following program code using a Switch statement :
	`if (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";`
		2

Ans	`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";`
	`}`	

	(½ mark for switch) ***(½ mark for Case labels)*** ***(½ mark for break)*** ***(½ mark for default label)***	
(c)	What will be displayed in jTextArea1 after executing the following statement? **`jTextArea1.setText("cbse\nFinal_Exam\tIp") ;`**	1

Ans	`Cbse`
	`Final_Exam<tab>IP`
	OR
	`Cbse`
	`Final_Exam  IP`	

	(1 mark for correct output) ***(½ mark if '\n' and/or ' \t' not taken into account)***	

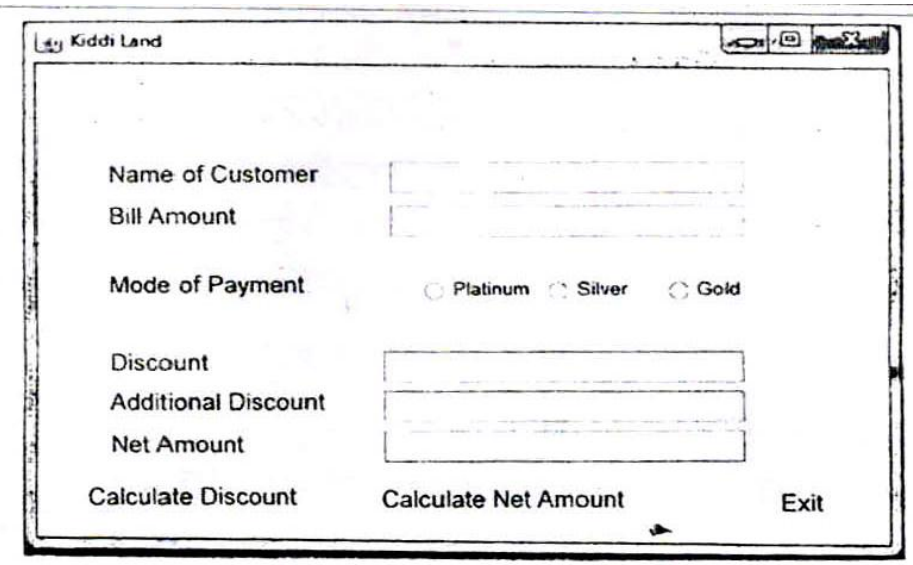
(d)	The following code has some errors(s). Rewrite the correct code underlining all the corrections made:
	`Int k=2 ;sum = 0; //Declaring k and sum as Integer`
	`{`
	`sum = k ;`
	`k + = 2 ;`
	`}`
	`While (k=<20) ;`
	`jTextField1 (Integer.tostring(sum)) ;`
		2

Ans.	`int k = 2 , sum = 0; // int k = 2; int sum = 0;`
	`do`
	`{`
	`sum = k; // could also be written as sum = sum + k;`
	`k + = 2;`
	`} while (k <= 20);`
	`jTextField1.setText(Integer.toString(sum));`	

	(½ mark each for correcting any four errors) OR ***(1 mark for only identifying any four errors – without making any correction)***	
(e)	Given a String object namely 'subject' having value as "123" stored in it. What will be result of the following? `JOptionPane.showMessageDialoge (null, " " + (subject.length ( ) + Integer.parseInt (subject ) ) ) ;`	1
Ans.	**126**	
	(1 mark for correct answer)	

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

	`int Sum = 0, Step = 5;` **`int i;`** **`for (i=0; i <= 5; i++)`** **`{`** **`  Step += 5;`** **`  Sum += Step;`** **`}`** **`jTextAreal.setText("" + Sum);`**	
	(½ mark each for identifying and correcting 4 errors) OR ***(1 mark for only identifying 4 errors– without making any correction)***	
(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. Bansal accepts payment through three types of credit cards
The discount is given according to the following scheme:

Type of Card	Discount
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.

(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.
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

g(i)

```
jTextField4.setText("0");
jTextField5.setText("0");
jTextField4.setEditable(false);
jTextField5.setEditable(false);
```

1

(½ mark for assigning 0 to any one of the textfields)
(½ mark for setting any one as un-editable)

g(ii)	`double discount = 0.0;`
	`double billAmount = Double.parseDouble(jTextField2.getText());`
	`if (jRadioButton1.isSelected()) discount = 0.20;`
	`if (jRadioButton2.isSelected()) discount = 0.15;`
	`if (jRadioButton3.isSelected()) discount = 0.10;`
	
	`jTextField3.setText(billAmount * discount + "");`
	`if (billAmount > 25000)jTextField4.setText(billAmount*0.05+"");`
	`jButton2.setEnabled(true);`
		2

	(1 mark for calculating discount correctly) ***(½ mark for additional discount)*** ***(½ mark for enabling the button)*** ***(Any Object names are acceptable for JRadioButton objects)*** **Note : Use of wrapper class like Integer etc. for converting to string is acceptable**	

g(iii)	`double netAmount = Double.parseDouble(jTextField2.getText()) -`
	`Double.parseDouble(jTextField3.getText()) -`
	`Double.parseDouble(jTextField4.getText());`
	`jTextField5.setText(netAmount + "");`
		2

	(½ mark for getting the value from textfield) ***(1 mark for calculating the net amount)*** ***(½ mark for displaying the net amount)*** **Note : Use of wrapper class like Integer etc. for converting to string is acceptable**	
(a)	What is the purpose of ALTER TABLE command in MySql? How is it different from UPDATE command?	2
Ans	ALTER TABLE command is used to modify the structure of a table. **ALTER TABLE** • It is a DDL command • Changes the underlying table structure • Cannot be rolled back **UPDATE** • It is a DML command • Changes values of tuples in a table • Can be rolled back	
	(1 mark for purpose of ALTER TABLE command) ***(1 mark for any one difference between ALTER TABLE and UPDATE commands)***	
(b)	Table Employee has 4 records and Table Dept has 3 records in it. Mr. Jain wants display all information stored in both of these related tables. He forgot to specify equi-join condition in the query. How many rows will get displayed on execution of this query?	1
Ans.	12	
	(1 mark for correct answer)	
(c)	Consider the EXAM given below. Write commands in MySql for (i) to (iv) and output for (v) to (vii).	

Table : EXAM

No.	Name	Stipend	Subject	Average	Division
1	Karan	400	English	68	FIRST
2	Aman	680	Mathematics	72	FIRST
3	Javed	500	Accounts	67	FIRST
4	Bishakh	200	Informatics	55	SECOND
5	Sugandha	400	History	35	THIRD
6	Suparna	550	Geography	45	THIRD

(i) To list the names of those students, who have obtained Division as FIRST in the ascending order of NAME. 1

Ans.
```
SELECT Name FROM Exam
WHERE  Division = 'FIRST'
ORDER BY Name;
```

(½ mark for SELECT with WHERE clause)
(½ mark for ORDER BY)

Note : Like operator also acceptable

(ii) To display a report listing NAME, SUBJECT and Annual stipend received assuming that the stipend column has monthly stipend. 1

Ans.
```
SELECT NAME, SUBJECT, STIPEND * 12
FROM EXAM;
```

(½ mark for selecting columns)
(½ mark for computing annual stipend)

(iii) To count the number of students, who have either Account or Informatics as Subject. 1

Ans.
```
SELECT COUNT(*)
FROM EXAM
WHERE SUBJECT IN ('Accounts', 'Informatics');
OR
SELECT COUNT(*)
FROM EXAM WHERE SUBJECT = 'Accounts' OR SUBJECT = 'Informatics';
```

(½ mark for using count())
(½ mark for WHERE Clause)
Note : Like operator also acceptable

(iv) To insert a new row in the table EXAM: 1

6 "Mohan", 500, "English", 73,"SECOND";

```
INSERT INTO EXAM VALUES(6, "Mohan", 500, "English", 73, "SECOND");
OR

INSERT INTO EXAM (NO, NAME, STIPEND, SUBJECT, AVERAGE,DIVISION)
VALUES(6, "Mohan", 500, "English", 73, "SECOND");
```

(½ mark for INSERT INTO)
(½ mark for writing VALUES in correct order)

(v)
```
SELECT AVG(Stipend) FROM EXAM
WHERE DIVISION="THIRD";
```
1

Ans 475

(1 mark for correct answer)

(vi)
```
SELECT COUNT (DISTINCT Subject) FROM EXAM.
```
1

Ans 6

(1 mark for correct answer)

(vii)
```
SELECT MIN (Average) FROM EXAM
WHERE Subject = "English";
```
1

68

(1 mark for correct answer)

(a) Write a MySql command for creating a table "BANK" whose structure is given below: 2

Table: BANK

Field Name	Datatype	Size	Constraint
Acct_number	Integer	4	Primary Key
Name	Varchar	3	
BirthDate	Date		
Balance	Integer	8	Not Null

Ans

```
CREATE TABLE BANK
(
      Acct_number INTEGER(4) PRIMARY KEY,
      Name VARCHAR(3),
      BirthDate DATE,
      Balance INTEGER(8) NOT NULL
```

	) ;	
	(1/2 mark for CREATE TABLE) *(1/2 mark for fields with appropriate data types)* *(1/2 mark for PRIMARY KEY constraint)* *(1/2 mark for NOT NULL constraint)*	
(b)	In a database there are two tables "ITEM" and "CUSTOMER" as shown below: Table : **ITEM** **ID** | **ItemName** | **Company** | **Price** 1001 | Moisturiser | XYZ | 40 1002 | Sanitizer | LAC | 35 1003 | Bath Soap | COP | 25 1004 | Shampoo | TAP | 95 1005 | Lens Solutions | COP | 350 **Table : CUSTOMER** **C_ID** | **CustomerName** | **City** | **ID** 01 | Samridhh Ltd | New Delhi | 1002 05 | Big Line Inc | Mumbai | 1005 12 | 97.8 | New Delhi | 1001 15 | Tom N Jerry | Bangalore | 1003 Write the commands in SQL queries for the following:	
(i)	To display the details of Item, whose Price is in the range of 40 and 95 (Both values included).	1

Ans	`SELECT * FROM ITEM WHERE PRICE BETWEEN 40 AND 95;`
	OR
	`SELECT * FROM ITEM WHERE PRICE >= 40 AND PRICE <= 95;`	

	(½ mark for SELECT) *(½ mark for BETWEEN/WHERE Clause)*	
(ii)	To display the CustomerName. City from table Customer, and ItemName and Price from table item, with their corresponding matching ID.	2

Ans.	`SELECT CUSTOMERNAME, CITY, ITEMNAME, PRICE`
	`FROM CUSTOMER CUST, ITEM`
	`WHERE CUST.ID = ITEM.ID;`	

	(1 mark for correct use of SELECT and FROM) *(1 mark for correct use of WHERE clause)* **Note : Use of table aliases is acceptable**	
(iii)	To increase the Price of al the Products by 50.	2

Ans. `UPDATE ITEM SET PRICE = PRICE + 50;`

(1 mark for UPDATE)

(1 mark for SET)

(c) In a Database School there are two tables Employee and Dept as shown below:

Table : Employee

EmpId	Name	Sal	Deptno
T001	Vishakha	34000	10
T001	Mridul	32000	50
T001	Manish	45000	20

Table : Dept

Deptno	DName	LocaionId
10	Lights	HH02
20	Dance	FF02
30	Production	AB01

(i) Identify the foreign key in the table Employee. 1

Ans. Deptno

(1 mark for correct answer)

(ii) What output, will you get, when an equi-Join query is executed to get the NAME from Employee table and corresponding DNAME from Dept table? 1

Ans. Vishakha Lights
Manish Dance

(½ mark for each correct line)

(a) Give one social impact of e-Business. 1

Ans Brings rapid change in
- the social fabric characterized by globalization of markets
- business and government policies

(1 mark for any one correct point)

(b) Write two advantages of e-Learning sites. 1

Ans
- Self paced learning
- Unlimited revisions
- Facilitates electronic delivery of customized learning objects
- Facilitates teacher-student interaction
- Facilitates peer-peer interaction

	(½ mark each for any two correct points)	
(c)	Write three important features of e-Governance. Give URL of one of the commonly used – eGovernance portals.	2
Ans	• 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. **e-Governance portal :** • www.incometaxindia.gov.in • supremecourtofindia.nic.in • passport.gov.in • https://www.irctc.co.in	
	(½ mark each for any three correct features) *(½ mark for any one correct e-Governance portal)*	
(d)	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.	
	Ans `Label`	
	(ii) An input to choose more than one subject from a set of choices.	
	Ans. `ListBox/Check Box`	
	(iii) An input for entering remarks	
	Ans. `TextArea` [Most Appropriate answer] `TextField` [Also acceptable]	
	(iv) An input for accepting Gender.	
	Ans. `RadioButton/ComboBox` [Most Appropriate answer] `TextField` [Also acceptable]	
	(½ mark each for correct answer)	

****

BEST OF LUCK

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