NIOS PYQ's SOLUTIONS

PREVIOUS YEARS' QUESTIONS & ANSWERS

APRIL-2025

Your Path to Success

SECTION - A

1. A tag is a special word enclosed within

(A) [ ]

(B) ( )

(C) < >

(D) { }

Answer - (C) < >

2. Which view allows you to organize and manage the sequence of slides?

(A) Slide show

(B) Notes view

(C) Slide sorter view

(D) Outline view

Answer - (C) Slide sorter view

3. Identify the recommended image format for webpages.

(A) .pdf

(B) .doc

(C) .ppt

(D) None of these

Answer - **(**D) None of these

4. The library in C++ provides support for

(A) Mathematical Functions

(B) Character Functions

(C) String Functions

(D) All Of The Above

Answer - (D) All of the above

4. Which of the following is an example for structural tag in HTML?

(A) <html>

(B) <head>

(C) <title>

(D) All of these

Answer - (D) All of these

6. Align in HTML is

(A) A Tag

(B) A Command

(C) An Attribute

(D) None Of The Above

Answer - (C) An Attribute

7. Find the output produced by the following program segment (assume all header functions are included) :

```
void main( )
{
int x=965;
int *y=&x;
cout <<*y;
}
```

(A) 965

(B) *965

(C) *x

(D) *y

Answer – (A) 965

8. Size attribute is used to specify the

(A) Size Of The Image In HTML

(B) Width Of The Image In HTML

(C) Height Of The Image In HTML

(D) No Such Attribute For The Image In HTML

Answer – (D) No such attribute for the image in HTML

9. Which of the following is an attribute of the <BODY> tag?

(A) Background img

(B) Bgcolour

(C) Title

(D) Text

Answer – (D) Text

10. Which view is used to print multiple slides on a single page as thumbnails?

(A) Normal view

(B) Slide sorter view

(C) Handouts view

(D) Notes view

Answer – (C) Handouts view

11. Which toolbar contains commands for font style and size in OpenOffice Writer?

(A) Formatting toolbar

(C) Drawing toolbar

(B) Standard toolbar

(D) Properties toolbar

Answer – (A) Formatting toolbar

12. What is the function of the docking toolbars in OpenOffice Calc?

(A) To create new workbooks

(B) To display the current worksheet

(C) To provide quick access to various tools and functions

(D) To save documents automatically

Answer – (C) To provide quick access to various tools and functions

13. Name the protocol that is the foundation of the Internet.

Answer – TCP (Transmission Control) /IP (Internet Protocol)

14. Fill in the blank :

The octal equivalent of (258)10 is _____.

Answer - $(258)_{10} = 402_8$

15. What will be the output produced by the below given program if the value of the variable x is 24?

```
#include<iostream.h>
int main() {
int x, y = 5;
cin >> x;
cout <<"Sum:"<<x + y<<endl;
```

```
cout <<"Difference:"<<x– y<<endl;
cout <<"Product:"<<x * y<<endl;
cout <<"Quotient:"<<x / y<<endl;
return 0;
}
```

Answer - Output (x = 24):

- Sum = 24 + 5 = 29
- Difference = 24 − 5 = 19
- Product = 24 × 5 = 120
- Quotient = 24 ÷ 5 = 4 (integer division)

16. Fill in the blank :

The decimal equivalent of (BDF)16 is _____ .

Answer - 3039_{10}

17. Name the tag that is used to add items in an ordered list in HTML.

Answer -

18. What is the header file for the function log (x)?

Answer - math.h

19. What is the ASCII value of 'D'?

Answer - ASCII value of 'D' = 68

20. What is video conferencing?

Answer - Video conferencing is a technology that allows people at different locations to communicate face-to-face using audio and video over the Internet.

21. Consider the below given program. What output will be produced if the value for the variable grade is entered as 'B'?

```
#include<iostream.h>
void main()
```

```
char grade;
cin>>grade;
switch (grade) {
case 'A':
cout<<"Excellent";
case 'B':
cout<<"Good";
case 'C':
cout<<"Fair";
default:
cout<<"Invalid";
}
```

Answer – Output : GoodFairInvalid (No break statements, so fall-through occurs)

22. What will be the output produced by the below given code?

```
#include<iostream.h>
void main()
{
int i, s = 1;
int i = 8, sum = 0;
while (i > 0);
{
sum +=i;
i = i– 2;
}
cout <<sum;
}
```

Answer – Output : 20

23. What will be the output produced by the below given code?

```
#include<iostream.h>
void main()
{
struct Student {
```

```
int roll_no;
string name;
float marks;
int age;
};
Student s = {101, "Gabriel", 85.5,17};
cout <<"Age:"<<s.age;
}
```

Answer - Output: Age:17

24. What is the output produced by below given program (assume all header files are included)?

```
#include<iostream.h>
void fun1(int); //Statement1
void main()
{
int a = 15;
fun1(a);
cout <<"a = "<<a;
}
void fun1(int& b)
{
b =b*b;
}
```

Answer - Output : a = 225

25. Fill in the blanks :

(a) A file is a collection of ____ related records.

(b) Files can be opened using the ____ function.

Answer - (a) logically

(b) open()

26. State whether the following statements are True or False :

(a) Pointers allow dynamic memory allocation in C++.

(b) Object pointers can be used to access both public and private members of an object.

Answer - (a) True

(b) False

27. Fill in the blanks :

(a) ____ refers to the position of the data with respect to the boundary of the cell.

(b) ____ means arranging data in ascending or descending order.

Answer - (a) Alignment

(b) Sorting

SECTION B

28. What is a ring topology?

Answer - Ring topology is a network structure in which all computers are connected in a closed loop. Each device is connected to exactly two other devices. Data travels in one direction and passes through each node until it reaches its destination.

Or

What do you mean by hub?

Answer - A hub is a networking device used to connect multiple computers in a network. It receives data from one computer and broadcasts it to all other connected devices without filtering or checking the destination.

29. What do you mean by char data type?

Answer - Char data type in C++ is used to store a single character such as letters, numbers or symbols. It occupies one byte of memory and stores characters in the form of ASCII values.

Or

Define RDBMS.

Answer - RDBMS stands for Relational Database Management System. It stores data in the form of tables consisting of rows and columns. It allows users to create, update, retrieve and manage data using SQL commands.

30. Write SQL queries for the following based on the below given BRAND table :

BRAND			
BRAND_ID	BRAND_NAME	STOCK	TYPE
B001	SAMSUNG	1250	DOMESTIC
B002	LG	1400	COMMERCIAL
B003	GODREJ	980	DOMESTIC
B004	SAMSUNG	882	COMMERCIAL
B005	GODREJ	1001	DOMESTIC

(a) Insert the record B006, GODREJ, 503, COMMERCIAL in table BRAND.

(b) Display the details of the DOMESTIC TYPE brands.

Answer -

(a) Insert the record B006, GODREJ, 503, COMMERCIAL :

INSERT INTO BRAND VALUES ('B006','GODREJ',503,'COMMERCIAL');

(b) Display the details of DOMESTIC type brands :

SELECT * FROM BRAND WHERE TYPE='DOMESTIC';

31. What do you mean by copying text in OpenOffice Writer?

Answer - Copying text in OpenOffice Writer means duplicating selected text and placing it at another location without deleting it from the original place. This can be done using Copy and Paste options or keyboard shortcuts.

**32. How do <P> and
 tags differ in functionality?**

Answer - <P> tag is used to create a new paragraph and automatically adds space before and after the text.
 tag inserts a single line break without adding extra space or starting a new paragraph.

33.

```
#include<iostream.h>
#include<string.h>
struct Employee {
char name[50]
float salary;
};
void main()
{
____ //statement1
____ //statement2
cout<<Emp1.name;
cout<<Emp1.salary;
}
```

Complete the above code for the following :

Statement 1 : Create two objects Emp11 and Emp12 of type Employee.

Statement 2 : Input the value for the member salary of the Structure Variable Emp11.

Answer -

```
Employee Emp11, Emp12; // Statement 1

cin >> Emp11.salary; // Statement 2
```

34. Write SQL queries to create the below given BRAND table :

BRAND		
BRAND_ID	VARCHAR(6)	PRIMARY KEY
BRAND_NAME	VARCHAR(15)	
STOCK	INT(5)	
TYPE	VARCHAR(15)	

Answer - SQL queries :

```
CREATE TABLE BRAND (

BRAND_ID VARCHAR(6) PRIMARY KEY,

BRAND_NAME VARCHAR(15),

STOCK INT(5),

TYPE VARCHAR(15)

);
```

Or

Define candidate key with an example

Answer - A candidate key is an attribute or a combination of attributes that uniquely identifies each record in a database table. A table may have more than one candidate key. For example, in a STUDENT table, Roll_Number can uniquely identify every student record.

35. Define the following terms (any two) :

(a) .(dot) operator

(b) Member functions

(c) Constructor

(d) Members

Answer -

(a) Dot (.) operator : Dot operator is used to access the data members and member functions of a class or structure using its object. It helps in referring to specific variables or functions of an object.

(b) Member functions : Member functions are the functions defined inside a class. They are used to operate on the data members of the class and define the behavior of the objects.

(c) Constructor : A constructor is a special member function of a class that is automatically called when an object is created. It is mainly used to initialize the data members of the class.

(d) Members : Members are the variables and functions declared inside a class or structure. They represent the properties and behaviors of an object.

36. Write an HTML code to create a webpage with—

(a) a heading "Computer Science Exam" of size 6;

(b) "Today is my computer science exam, hope it will go easy and I will get good marks" to be displayed in bold;

(c) the background colour of the webpage to be in green.

Answer -

```
<html>
<body bgcolor="green">
<h6>Computer Science Exam</h6>
<b>Today is my computer science exam, hope it will go easy and I will get good marks</b>
</body>
</html>
```

37. Define the following terms (any three) :

(a) Relation

(b) Attribute

(c) Update command

(d) MySQL

(e) DCL

Answer -

(a) Relation : Relation is a table in a relational database. It consists of rows and columns, where each row represents a record and each column represents an attribute. Data in a relation is stored in an organized tabular form.

(b) Attribute : An attribute is a column in a database table. It represents a property or characteristic of an entity. For example, Roll_Number, Name and Marks are attributes of a STUDENT table.

(c) Update command : Update command is an SQL command used to modify existing records in a database table. It is generally used with a WHERE condition to change specific records.

(d) MySQL : MySQL is an open-source Relational Database Management System (RDBMS). It is used to store, manage and retrieve data from databases using SQL commands efficiently.

(e) DCL : DCL stands for Data Control Language. It is used to control access to data in a database. Commands like GRANT and REVOKE are examples of DCL commands.

38. Answer the questions from (a) to (d) based on the below given code (assume all header files are included) :

```
class Employee {
int EmpID;
char EmpName[30];
float Salary;
protected:
void CalculateBonus();
public:
Employee();
void EnterDetails();
void ShowDetails();
};
class Department {
long DeptID;
char DeptName[30];
```

```
protected:
char Manager[30];
public:
Department();
void EnterDeptDetails();
void ShowDeptDetails();
};
class Project : public Employee, private Department {
long ProjectID;
char ProjectName[50];
char StartDate[10], EndDate[10];
public:
Project();
void StartProject();
void ShowProjectDetails();
};
```

(a) Write the names of member functions, which are accessible from objects of class Project.

(b) Write the names of all the data members, which are used in the StartProject() function of class Project.

(c) Write the names of all the members, which are accessible from objects of class Department.

(d) Which type of inheritance is illustrated in the above C++ code?

Answer - (a) Member Employee()**functions accessible from objects of class Project :**

From Employee class (public) :

- EnterDetails()
- ShowDetails()

From Project class (public):

- Project()
- StartProject()
- ShowProjectDetails()

(b) Data members used in the StartProject() function of class Project:

- ProjectID
- ProjectName

- StartDate
- EndDate

(c) Members accessible from objects of class Department:

- Department()
- EnterDeptDetails()
- ShowDeptDetails()

(d) Multiple inheritance

Or

Define hierarchical inheritance. Display the structure of hierarchical inheritance by taking an example or with the help of suitable syntax.

Answer - Hierarchical inheritance is a type of inheritance in object-oriented programming in which more than one derived (child) class inherits from a single base (parent) class. In this structure, the parent class contains common data members and member functions, which are shared by all the child classes. Each derived class can also have its own unique data members and functions.

Example / Syntax :

```
class A {
   // base class
};
class B : public A {
   // derived class
};
class C : public A {
   // derived class
};
```

39. Write a program to create an array of N elements. Using selection sort, sort the elements of the array in ascending order and print the new array.

Answer - Program using Selection Sort (Ascending Order) :

```
#include<iostream.h>
void main()
{
int n, a[20], i, j, min, temp;
```

```
cin >> n;
for(i = 0; i < n; i++)
cin >> a[i];
for(i = 0; i < n-1; i++)
{
min = i;
for(j = i+1; j < n; j++)
{
if(a[j] < a[min])
min = j;
}
temp = a[i];
a[i] = a[min];
a[min] = temp;
}
for(i = 0; i < n; i++)
cout << a[i] << " ";
}
```

Or

Write a C++ program that accepts two numbers (X, Y) from the user and passes to a function, the function will perform $\sqrt{x^2 + y^2}$, i.e., square root of X* X*+Y* Y to the main program which will display the output to the user.

Answer - C++ Program to calculate $\sqrt{(x^2 + y^2)}$:

```
#include<iostream.h>
#include<math.h>
float calculate(int x, int y)
{
return sqrt(x*x + y*y);
}
void main()
{
int x, y;
cin >> x >> y;
```

```
cout << calculate(x, y);
}
```

This program accepts two numbers **X** and **Y** from the user, passes them to a function, calculates $\sqrt{(x^2 + y^2)}$, and displays the result in the main program.

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PREVIOUS YEARS' QUESTIONS & ANSWERS

OCTOBER-2025

Your Path to Success

SECTION -A

1. In HTML, which of the following is the default value of TYPE attribute of tag?

(A) Circle

(B) Square

(C) Disc

(D) Star

Ans - (C) Disc

2. Which of the following is the shortcut key to exit Writer?

(A) Ctrl+E

(B) Ctrl+X

(C) Ctrl+T

(D) Ctrl+Q

Ans - (D) Ctrl+Q

3. In HTML, which of the following tag is used to insert a blank line on a web page?

(A) <HR>

**(B)
**

(C) <BLANK LINE>

(D) <LINE>

Ans - (B)

4. Which of the following statements will position the file read pointer named FPointer in the beginning of the file.

(A) FPointer.seekg (0, ios :: beg)

(B) FPointer.seekg (ios:: beg, 0)

(C) seekg.Fpointer (0, ios :: beg)

(D) seekg. Fpointer (ios:: beg, 0)

Ans - (A) FPointer.seekg (0, ios :: beg)

5. In HTML, which of the following is NOT an attribute of tag?

(A) FACE

(B) SIZE

(C) COLOR

(D) TEXT

Ans - (D) TEXT

**6. Statement 1: There is no difference between <P> and
 tags.**

Statement 2: A tag can have more than one attributes.

(A) Statement 1 is correct but Statement 2 is incorrect.

(B) Statement 2 is correct but Statement 1 is incorrect.

(C) Both Statement 1 and Statement 2 are correct.

(D) Both Statement 1 and Statement 2 are incorrect.

Ans - (B) Statement 2 is correct but Statement 1 is incorrect.

7. Ajit has created an integer array in C++ named myArray of size 10. The statement cout<<myArray [5]; will display:

(A) The sixth element of the array, myArray.

(B) The fifth element of the array, myArray.

(C) All elements of the array, myArray.

(D) Will result in an error.

Ans - (A) The sixth element of the array, myArray.

8. Which of the following causes a direct effect of ICT on environment?

(A) Disposal of e-waste

(B) Weak eyesight

(C) Unemployment

(D) Social Media Addiction

Ans - (A) Disposal of e waste

9. Which of the following attribute of tag is used to specify the location and file name of the image to be inserted on the web page?

(A) FILENAME

(B) SOURCE

(C) SRC

(D) LOCATION

Ans - (C) SRC

10. What will be the output of the following expression if num1 =1, num2 =5 and num3 =2: num1num3<=num2&& num2=num35

(A) 0

(B) 1

(C) Error

(D) 2

Ans - (B) 1

11. In OpenOffice Writer, the vertical blinking line in the work area is known as

(A) Ruler

(B) Animation

(C) Scroll Bar

(D) Cursor

Ans - (D) Cursor

12. Which of the following is the correct statement to create an integer pointer named myAge?

(A) int myAge*;

(B) int myAge [*];

(C) int *myAge;

(D) * int myAge;

Ans - (C) int *myAge;

13. Expand HTTPS.

Ans - Hypertext Transfer Protocol Secure

14. Convert $(109)_{10}$ to hexadecimal.

Ans - $(6D)_{16}$

15. Assume the following structure definition:

C++

```
struct EXAM
{
int marks;
char grade;
};
```

If E is the pointer instance of the given structure, write a C++ statement to display the value of marks using E.

Ans - cout << E->marks;

16. Convert $(89)_{10}$ to binary.

Ans - $(1011001)_2$

17. Write any two container elements.

Ans - Two common examples of container elements in HTML are: <BODY> and <TABLE>

18. Name the other header files that shall be required for successful compilation of the following C++ program.

C++

```
#include<iostream.h>
void main()
{
```

```
char Message []= "Meeting at 9";

length = strlen (message);

if (length > 10)

cout<<Message;

else

cout<< sqrt(length);

}
```

Ans - <string.h> for strlen and <math.h> for sqrt

19. Draw NOR gate and write its logical equation.

Ans - Logical Equation : NOR gate is a **universal gate**. It is a combination of an **OR gate** followed by a **NOT gate**. Therefore, the logical equation of a NOR gate is: $Y = \overline{A + B}$

NOR

Gate	Notation	Truth table

INPUT		OUTPUT
A	B	A NOR B
0	0	1
0	1	0
1	0	0
1	1	0

NOR — $\overline{A + B}$

20. Define microblogging.

Ans - A form of blogging where users send short, frequent messages (e.g., Twitter, max 140 characters).

21. Write a C++ statement to display the size in bytes of a float variable weight.

Ans - cout << sizeof(weight);

22. Write the output of the following code. Assume all the required header files are already included.

C++

```
void main()

{

int p=1, q;
```

```
q=10;

do

{

p=p*5;

q=q+p;

cout<<p--<<"**"<<q<<endl;

}while( p<10);

}
```

Ans - Output of the code (p=1, q=10; loop p=p*5, q=q+p, cout p-- etc).

Output =>

5**15
20**35

23. Write the following code using switch..case statement. Do not change the logic.

```
if(x=='a')

cout<<"APPLE";

else if (x=='b')

cout<<"BERRY";

else

cout<<"FRUITY  FRUITS";
```

Ans -

```
switch(x)
{
   case 'a':
      cout << "APPLE";
      break;
   case 'b':
      cout << "BERRY";
```

```
        break;

    default:
        cout << "FRUITY FRUITS";
}
```

24. Consider the following statement:

enum METALS {Iron, Copper =25, silver, Gold, Platinum}.

What will be the value of Silver?

Ans - Silver = 26

25. What is the use of Rehearse Timing Feature in OpenOffice Impress? Which option is selected to use this feature?

Ans - The Rehearse Timing feature is used to record the time spent on each slide during a presentation. It helps the presenter practice and set the timing for an automatic slide show.

Option to use this feature :ss

Slide Show → Rehearse Timings

26. Give any two advantages of Object Oriented Programming.

Ans - Any two advantages of Object Oriented Programming (OOP) are :

1. **Code Reusability –** Existing code can be reused using inheritance, which saves time and effort.
2. **Data Security –** Data is protected through encapsulation, preventing unauthorized access.

27. Roohi has created the following spreadsheet in OpenOffice Calc, to store data of students. She wants to view data for a particular course. Which feature should she use? Also write steps to view data on for the course JEE Mains.

	A	B	C	D	E
1					
2	Sr No	Student_Id	Name	Course	
3	1	J002	Ashrit	JEE Mains	
4	2	N091	Smita	NEET UG	
5	3	C001	Guneet	CUET	
6	4	J112	Rajju	JEE Adv	
7	5	J165	Murugan	JEE Mains	
8	6	N872	Om	NEET PG	
9	7	C231	Shanti	CUET	
10					

Ans - Roohi should use the Filter (or AutoFilter) feature to view data for a specific course.

steps to view data on for the course JEE Mains :

- **Select Data Range:** Select the columns or the specific data range upon which the filtering is to be performed.
- **Apply AutoFilter:** Go to the menu bar and select Data → Filter → AutoFilter. This action adds a filter icon to the column headers, indicating that the filter is now applied
- **Select Criteria:** Click the filter arrow in the "Course" column header.
- **View Filtered Data:** From the submenu, select "JEE Mains". The worksheet will then display only the records associated with that specific course.

SECTION -B

28. Give any two advantages of grid computing.

Ans - Advantages of grid computing :

- **Resource Sharing :** It allows multiple computers to work together to solve complex problems, making better use of available resources.
- **Increased Power :** By combining the power of many computers, it can perform massive tasks much faster than a single computer could.

OR

Give one difference between IaaS and PaaS, Also give one example of each.

Ans - Difference Between Iaas And Paas In A Table Format:

Feature	IaaS (Infrastructure as a Service)	PaaS (Platform as a Service)
Basic Concept	Provides raw infrastructure like virtual servers, storage, and networking.	Provides a complete platform (hardware + software tools) to build and run apps.
Control	Gives users more control over the operating system and installed software.	Manages the OS and hardware automatically, allowing users to focus only on coding.
Example	Amazon Web Services (AWS) EC2	Google App Engine

29. Differentiate between DDL and DML.

Ans -

- **DDL (Data Definition Language) :** It is used to define or change the structure of the database (like creating tables or changing table designs). Examples: CREATE, ALTER.
- **DML (Data Manipulation Language) :** It is used to manage or manipulate the data stored inside the tables (like adding, updating, or deleting records). Examples: INSERT, UPDATE, DELETE.

OR

What is the difference between logical and physical record? Give example to support your answer.

Ans -

Feature	Logical Record	Physical Record
Definition	It is the data as seen or understood by the user or an application program.	It is the data as it is actually stored on the storage device (like a disk or tape) by the computer.
Perspective	It represents the conceptual view of the data.	It represents the technical or hardware-level view of the data.
Structure	It focuses on what the data represents (e.g., a complete "Student Profile" with name, roll number, and marks).	It focuses on how the bytes and blocks are organized on the drive. (e.g., how the bytes of that student profile are arranged on a hard drive sector).

30. Observe the table - VOLUNTEERS given below and write the queries (i) and (ii) that follow :

R_ID	Name	DOB	City	OCCUPATION
102	Joyce	14/09/2000	Noida	Service
110	Rekha	19/10/2001	Gurugram	Business
114	Amit	24/05/1999	Delhi	Farming
120	Irfaan	4/4/2002	Mumbai	Actor
121	Sonu	01/12/2002	Mumbai	Service

(i) To add a new field Income (of datatype integer) in the table VOLUNTEERS.

(ii) To display the names of each city only once.

Ans -

(i) ALTER TABLE VOLUNTEERS ADD Income INTEGER;

(ii) SELECT DISTINCT City FROM VOLUNTEERS;

31. What do you understand by following components of Mail Merge feature in a word processor?

(a) Data Source

(b) Merged Document

Ans -

(a) Data Source: This is a database or a file that stores the personalized information of recipients, such as their names, addresses, and other details, usually organized in a tabular format.

(b) Merged Document: This is the final document generated by combining the main text document with the information taken from the data source, resulting in personalized copies for each recipient.

32. Which tag is used to format headings on a web page? How many levels of headings can we have?

Ans - To format headings on a web page, the <H> tag (specifically <H1> through <H6>) is used. There are **6 distinct levels** of headings available, which are used to create a clear document hierarchy and structure.

33. Consider the following class definition.

```
class MEMBERS
{
int M_Id;
char Name [30];
```

```
int Age;
char Category[10];
public:
MEMBERS ()
{
M_Id=1234;
strcpy (Name, "Member";
Age=0;
strcpy(Category, "Permanent") ;
}
void EnterData ()
{
cin>>M_Id>>Age;
gets (Name) ;
if (Age>=40)
strcpy(Category, "Permanent");
else
strcpy (Category, "Temporary");
}
void DisplayData()
{
cout << M_Id << Name << Age << Category;
        }
};
```

_____ # Statement 1

_____ # Statement 2

Complete the above code by filling in the missing statements:

Statement 1: To create an object of class MEMBERS;

Statement 2: To invoke the EnterData() through the object created in Statement 1.

Ans -

Statement 1

MEMBERS M;

// Statement 2

M.EnterData();

Explanation :

- **Statement 1:** MEMBERS M; → Creates an object M of class MEMBERS.
- **Statement 2:** M.EnterData(); → Calls the EnterData() member function using the object M.

34. What is the use of following devices in a network?

(a) Modem

(b) Gateway

Ans -

(a) Modem : A modem is a communication device used to provide internet connectivity. It works by performing modulation (converting digital data to analog) and demodulation (converting analog back to digital) so computers can interact over telephone lines.

(b) Gateway : A network gateway is an internetworking system used to connect two networks that use different base protocols. It acts as a protocol converter or translator, operating at the network layer of the OSI model.

OR

Define the following:

(a) Spam

(b) Firewall

Ans -

(a) Spam: Spamming is a method of flooding the internet with copies of the same message. Most spam consists of unwanted commercial advertisements sent as emails, often called "electronic junk mails".

(b) Firewall: A firewall is a hardware device or software application installed at the borderline of a secured network. Its purpose is to examine and control incoming and outgoing network communications to provide protection from outside attacks.

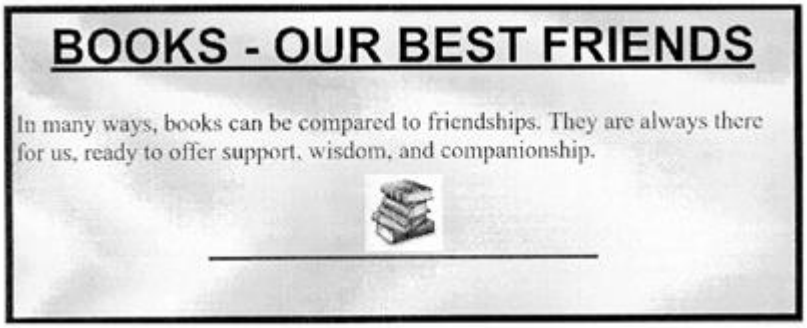
35. What is the difference between = and == operators. Give example in support of your answer.

Ans - Difference between = and == operators :

Operator	Type	Purpose	Example
=	Assignment Operator	Used to assign a value to a variable.	x = 5; (The value 5 is stored in variable x)

Operator	Type	Purpose	Example
==	Relational Operator	Used to compare two values to check if they are equal.	if (x == 5) (Checks if x is equal to 5)

36. Design the following web page with the specifications given below:



(i) The background colour of the page is pink and the text colour is blue.

(ii)The heading has the font style as "Arial", colour as black and size as 14. It should be underlined and in the centre of the page.

(iii)The font size of the paragraph is 10.

(iv)The name of the image file is mybook.jpg. The length and breadth of the image is 150 pixels.

(v) The solid line in the centre is of 6 pixels, is of red colour and covers 80% of the page

Ans -

```
<html>
<head>
   <title>Books - Our Best Friends</title>
</head>

<body bgcolor="pink" text="blue">
   <h1 align="center">
      <font face="Arial" size="14" color="black">
         <u>BOOKS - OUR BEST FRIENDS</u>
      </font>
   </h1>
   <font size="10">
```

```
        In many ways, books can be compared to friendships.
        They are always there for us, ready to offer support,
        wisdom, and companionship.
    </font>
    <br><br>
    <center>
        <img src="mybook.jpg" height="150" width="150">
        <br><br>
        <hr color="red" size="6" width="80%">
    </center>
</body>
</html>
```

(i) Background is set to pink and text colour to blue using bgcolor and text attributes in the <body> tag.

(ii) The heading is wrapped in tags, uses Arial font, black colour, size 14, and is underlined with the <u> tag.

(iii) Paragraph font size is set to 10pt.

(iv) Image mybook.jpg is inserted with 150 pixels for both length and breadth.

(v) A horizontal line <hr> is created with a size of 6 pixels, red colour, and 80% width.

37. Define the following: (any three)

(i) DBMS

(ii) Redundancy of data

(iii) Database Schema

(iv) Primary Key

(v) Degree

Ans -

(i) DBMS : A DBMS is software designed to store, retrieve, define, and manage data in a database. It acts as an interface between the database and the end-users or application programs, ensuring that data is consistently organized and easily accessible.

(ii) Redundancy of data : Redundancy of data refers to the unnecessary repetition of data within a database, which can lead to inconsistency and wasted space.

(iii) Database Schema : It refers to the organization of data or skeleton structure that represents the logical flow of the entire database.

(iv) Primary Key : The group of one or more columns used to uniquely identify each row of a relation is called its Primary Key. For example, in a students table AdmissionNumber can be the primary key. A table cannot have more than one primary key.

(v) Degree : Degree refers to the total number of columns (attributes) present in a database table.

38. Consider the following class definition and answer the questions that follow:

```
class software
{
char Name [20];
char type [10];
protected:
int cost;
public:
software();
~software();
void ENTER();
void DISPLAY ();
class Developer: protected Software
char name[30];
protected:
char country [10];
public:
developer();
```

~developer();

void Indata();

void Outdata ();

class Sale: public Software

float sale_amount;

public:

sale();

~sale();

void Show();

(i) Which type of inheritance is depicted in the given code?

(ii) Name the data member(s) that can accessed from function Indata ().

(iii) Name the member function(s) which can be accessed from the objects ofclass sale.

(iv) What is the size in bytes of class Developer?

Ans -

(i) Hierarchical Inheritance (Both Developer and Sale inherit from the base class Software.)

(ii) name, country, and cost

Reason : Indata() is a member function of class Developer. It can access its own data members (name, country) and the protected data member inherited from the base class (cost). It cannot access the private members (Name, type) of the base class.

(iii) Show(), ENTER(), and DISPLAY()

(iv) To calculate the size, we sum the bytes of the data members (assuming standard 32-bit compiler sizes: char = 1 byte, int = 4 bytes):

- **From Software (inherited) :** Name[20] (20 bytes) + type[10] (10 bytes) + cost (4 bytes) = 34 bytes.
- **From Developer (own):** name[30] (30 bytes) + country[10] (10 bytes) = 40 bytes.
- **Total size :** 34 + 40 = 74 bytes.

OR

Explain abstract classes and virtual base classes. Support your answer with suitable examples.

Ans -

1. Abstract Class : An abstract class is a class that contains at least one pure virtual function. An object of an abstract class cannot be created. It is used as a base class for other classes.

Example:

```
class Shape
{
public:
    virtual void Draw() = 0;   // Pure virtual function
};
class Circle : public Shape
{
public:
    void Draw()
    {
        cout << "Drawing Circle";
    }
};
```

2. Virtual Base Class : A virtual base class is used to avoid multiple copies of the base class in multiple inheritance (Diamond Problem).

Example :

```
class A
{
public:
    int x;
};
class B : virtual public A { };

class C : virtual public A { };

class D : public B, public C { };
```

39. Write a function that takes an array and its size as argument and displays the largest and smallest element in the array.

Ans -

```
void LargestSmallest(int A[], int N)
{
    int largest = A[0], smallest = A[0];

    for(int i = 1; i < N; i++)
    {
        if(A[i] > largest)
            largest = A[i];

        if(A[i] < smallest)
            smallest = A[i];
    }
    cout << "Largest = " << largest << endl;
    cout << "Smallest = " << smallest;
}
```

OR

Write a user defined function, named Latest Brands() to read the data of the binary file 'brands.dat' and display only those records whose rating is more than 7.

Ans -

```
class Brands
{
public:
    char BrandName[30];
    int Rating;
    void Display()
    {
        cout << BrandName << " " << Rating << endl;
    }
};
void LatestBrands()
{
    ifstream fin("brands.dat", ios::binary);
    Brands B;
    while(fin.read((char*)&B,  sizeof(B)))
    {
```

```
        if(B.Rating > 7)
            B.Display();
    }
    fin.close();
}
```

Thank you!

We hope you found this material helpful. We wish you the very best for your examination.

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