

Class : 11Register
Number**SECOND REVISION EXAMINATION - 2024**

Time Allowed : 3.00 Hours]

COMPUTER SCIENCE

[Max. Marks : 70

Instructions : (1) Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.

(2) Use Blue or Black ink to write and underline and pencil to draw diagrams.

PART - I

Note : i) Answer All the questions.

15X1 = 15

ii) Choose the most appropriate answer from the given four alternatives and write the the corresponding answer.

- Which shortcut key is used to cut a file or folder?
 - Ctrl + Alt + C
 - Ctrl + Alt + X
 - Ctrl + C
 - Ctrl + X
- 2⁴⁰ is referred as:
 - Kilo
 - Tera
 - Peta
 - Zetta
- What is the smallest size of data represented in a CD?
 - Blocks
 - Sectors
 - Pits
 - Tracks
- Operating System provides how many levels of securities to the user?
 - 2
 - 3
 - 4
 - 1
- Which is Volatile memory?
 - ROM
 - PROM
 - RAM
 - EPROM
- The member function defined within the class behaves like:
 - Outline functions
 - Inline functions
 - Data functions
 - Non inline functions
- Which of the following operator is extraction operator in C++?
 - >>
 - <<
 - <>
 - ^
- Which of the following is the exit control loop?
 - for
 - while
 - do...while
 - if...else
- If two strings are equal, then strcmp() function returns which value?
 - 0
 - 1
 - +1
 - =
- By default, a string ends with which character?
 - \0
 - \t
 - \n
 - \b
- A Constructor that accepts no parameter is called as :
 - Parameterized Constructor
 - Copy Constructor
 - Default Constructor
 - Non - Parameterized Constructor
- Which is the first Tamil Programming language?
 - Thamizpori
 - Ezhil
 - Kamban
 - Vani
- Distributing unwanted E - mail to others is called:
 - Scam
 - Spam
 - Fraud
 - Spoofing
- Inheritance is a process of creating new class from:
 - Base class
 - Abstract
 - Derived class
 - Function
- Which of the following is the identifiable entity with some characteristics and behaviour?
 - Class
 - Object
 - Structure
 - Member

PART - II

II. Answer any six questions. Question No. 24 is compulsory.

6x2=12

- Write the functions of Control Unit.
- Perform Binary addition for the following: 1510 + 2010
- What is a GUI?
- What is meant by a Token? Name the token available in C++.
- Define a Loop Invariant.
- What is Polymorphism?

KK/11/C.S/1

22. What is Inheritance?
 23. Write short note on cracking.
 24. for (int m = 1 ; m < 9 ; m + =2) cout << m;
 i) How many times the above loop will be executed?
 ii) Write the output of the above snippet.

PART – III

III. Answer any six questions. Question No. 33 is compulsory.

6 × 3 = 18

25. What are the Characteristics of a Computer?
 26. Write down the classification of Microprocessors based on the Instruction set.
 27. Write the two ways to create a New Folder.
 28. What are the advantages and disadvantages of Time - sharing Operating System?
 29. Write about Strcmp () Function.
 30. Write short notes on Class access Specifiers of C++
 31. Write about Encryption and Decryption.
 32. Write a short note on Tamil Virtual Academy.
 33. Convert the following Octal Numbers into Binary Numbers.
 i) 6137 ii) 245 iii) 472

PART – IV

IV. Answer all the questions.

5 × 5 = 25

34. (a) Discuss the various Generations of Computers.
 (OR)
 (b) Write the uses of Operating System.
 35. (a) Explain the types of Errors in C++.
 (OR)
 (b) Explain the for loop in C++ with its syntax and a suitable example.
 36. (a) What are the key difference between if - else and Switch statements in C++?
 (OR)
 (b) Explain Scope rules of variables in C++ with example.
 37. (a) Explain the different types of Inheritance.
 (OR)
 (b) What are the rules for Operating Overloading.
 38. (a) Explain the different types of Cyber Attacks.
 (OR)
 (b) Write the output for the following C++ program.
 Assume the values for age as 30, height as 170.2 and weight as 54.

```
#include using namespace std;
struct student
{int age ; float height, weight ;
}obj;
int main ()
{
Cout << "\n Enter the age: " << obj. age;
Cout << "\n Enter the height:" << obj.height;
Cout << "\n Enter the weight:" << obj.weight;
Cout << "\n Details are :";
Cout << "\n Age:" <<< obj.age;
Cout << "\n Height:" <<< obj.height;
Cout << "\n Weight : " <<< obj. weight;
returns 0;
}
```

KK/11/C.S/2

**MOUNT CARMEL MISSION MATRIC HIGHER SECONDARY SCHOOL – KALLAKURICHI
SECOND REVISION EXAM – 2024 [ANSWER KEY]**

**CLASS: XI
SUB: COMPUTER SCIENCE**

**MARKS: 70
TIME: 3 : 00 Hrs**

PART – I

I. CHOOSE THE CORRECT ANSWER:

15 X 1 = 15

- | | |
|------------------------|----------------------------|
| 1. d) Ctrl + X | 11. c) default constructor |
| 2. b) Tera | 12. b) Ezhil |
| 3. c) Pits | 13. b) spam |
| 4. b) 3 | 14. a) Base class |
| 5. c) RAM | 15. b) object |
| 6. b) Inline functions | |
| 7. a) >> | |
| 8. c) do while | |
| 9. a) 0 | |
| 10. a) \0 | |

PART – II

II. ANSWER ANY SIX QUESTIONS. Q.No: 24 IS COMPULSORY:

6 X 2 = 12

16. Write the functions of Control Unit.

Ans: The control unit controls the flow of data between the CPU, memory and I/O devices. It also controls the entire operation of a computer.

17. Perform Binary addition for the following:

$$15_{10} + 20_{10}$$

Ans:

$\begin{array}{r} 2 \mid 15 \\ \hline 2 \mid 7 \quad - 1 \\ \hline 2 \mid 3 \quad - 1 \\ \hline 1 \quad - 1 \end{array}$	$\begin{array}{r} 2 \mid 20 \\ \hline 2 \mid 10 \quad - 0 \\ \hline 2 \mid 5 \quad - 0 \\ \hline 2 \mid 2 \quad - 1 \\ \hline 1 \quad - 0 \end{array}$
--------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------

$$(15)_{10} = (1111)_2$$

$$(20)_{10} = (10100)_2$$

1 1

→ Carry

$$\begin{array}{r} (15)_{10} = \quad 1 \quad 1 \quad 1 \quad 1 \\ (20)_{10} = \underline{1 \quad 0 \quad 1 \quad 0 \quad 0} (+) \\ \underline{1 \quad 0 \quad 0 \quad 0 \quad 1 \quad 1} \end{array}$$

$$(15)_{10} + (20)_{10} = (1111)_2 + (10100)_2 = (100011)_2$$

Note:

Binary Addition Table

Addition	Result	Carry
0 + 0 =	0	0
0 + 1 =	1	0
1 + 0 =	1	0
1 + 1 =	0	1

18. What is a GUI?

Ans: The GUI is a window based system with a pointing device to direct I/O, choose from menus, make selections and a keyboard to enter text. Its vibrant colours attract the user very easily.

19. What is meant by a Token? Name the token available in C++.

Ans: The smallest individual unit in a program is known as a Token or a Lexical Unit. C++ has the following tokens:

1. Keywords
2. Identifiers
3. Literals
4. Operators
5. Punctuators

20. Define a Loop Invariant.

Ans: In iteration, the loop body is repeatedly executed as long as the loop condition is true. Each time the loop body is executed, the variables are updated. However, there is also a property of the variables which remains unchanged by the execution of the loop body. This unchanging property is called the loop invariant. Loop Invariant is the key to construct and to reason about iterative algorithms.

21. What is Polymorphism?

Ans: Polymorphism is the ability of a message or function to be displayed in more than one form. Polymorphism is achieved by overloading.

22. What is Inheritance?

Ans: Inheritance is a process of creating new classes called derived classes, from the existing or base classes. Inheritance allows us to inherit all the code (except declared as private) of one class to another class. The class to be inherited is called base class or parent class and the class which inherits the other class is called derived class or child class.

23. Write short note on cracking.

Ans: - Cracking means trying to get into computer systems in order to steal, corrupt, or illegitimately view data.
 - Software cracking is the most often used type of cracking which is nothing but removing the encoded copy protection.
 - password cracking: This is mainly used to crack the passwords. Password cracking can be performed either by using an automated program or can be manually realized.

24. for (int m = 1; m < 9; m + = 2)

cout<<m;

i) How many times the above loop will be executed?

ii) Write the output of the above snippet.

Ans:

- i) 4 times the loop will be executed
- ii) output is 1 3 5 7

PART – III**III. Answer any six questions. Q.No: 33 IS COMPULSORY:****6 X 3 = 18****25. What are the characteristics of a computer?**

Ans: i. High speed

ii. Store Huge data

iii. A computer can be programmed.

iv. A computer can be connected to different input and output devices \.

v. A computer can be connected in a network or to internet.

26. Write down the classification of Microprocessors based on the instruction set.

Ans: The two types of microprocessors based on their instruction sets.

i. Reduced Instruction Set Computers (RISC)

Examples: Intel P6, Pentium IV, AMD K6, and K7

ii. Complex Instruction Set Computers (CISC)

Examples: Intel 386 & 486, Pentium, Pentium II and III

27. Write the two ways to create a New Folder.

Ans: The two methods to a new folder:

Method I:

Step 1: Open **Computer Icon**.

Step 2: Open any drive where you want to create a new folder. (For example select D:)

Step 3: Click on **File** → **New** → **Folder**

Step 4: A new folder is created with the default name "New folder"

Step 5: Type in the folder name and press Enter key.

Method II:

To create a folder in the desktop:

Step 1: In the Desktop, **Right click** → **New** → **Folder**

Step 2: A Folder appears with the default name "New Folder" and it will be highlighted.

Step 3: Type the name you want and press Enter Key.

Step 4: The name of the folder will change.

28. What are the advantages and disadvantages of Time – sharing Operating System?

Ans: Advantages:

- It allows execution of multiple tasks or processes concurrently.
- All the current processes will have their CPU time.
- Switches between the tasks rapidly thus completing other processes even if a process takes long time to complete.

Disadvantages:

- Switching between the tasks becomes sometimes sophisticated.
- May lead to network and security problems.

29. Write about strcmp() function.

Ans: strcmp():

Purpose: To compare two strings.

General form: strcmp(string 1, string 2)

The strcmp() function takes two arguments: string1 and string2. It compares the contents of string1 and string2 lexicographically and returns

- Positive value (1) : if the first difference character in string1 is greater than the corresponding character in string2. (ASCII values are compared)
- Negative value (-1) : if the first differing character in string1 is less than the corresponding character in string2.
- Zero (0) : if string1 and string2 are equal.

Examples:

<pre>char str1[] = "Hello"; char str2[] = "HELLO"; cout<<strcmp(str1,str2);</pre>	<pre>char str1[] = "HELLO"; char str2[] = "Hello"; cout<<strcmp(str1,str2);</pre>	<pre>char str1[] = "HELLO"; char str2[] = "HELLO"; cout<<strcmp(str1,str2);</pre>
Output: 1	Output: -1	Output: 0

30. Write short notes on Class access specifier of C++.**Ans: - The Public Members:**

A public member is accessible from anywhere outside the class but within a program. You can set and get the value of public data members even without using any member function. The Public Members.

- The Private Members:

A private member cannot be accessed from outside the class. Only the class member functions can access private members. By default all the members of a class would be private.

- The Protected Members:

A protected member is very similar to a private member but it provides one additional benefit that they can be accessed in child classes which are called derived classes (inherited classes).

31. Write about Encryption and Decryption.

Ans: - Encryption and decryption are processes that ensure confidentiality that only authorized persons can access the information. Encryption and decryption are done by cryptography.

- Encryption is the process of translating the plain text data (plaintext) into random and mangled data (called cipher-text).

- Decryption is the reverse process of converting the cipher-text back to plaintext.

32. Write a short note on Tamil Virtual Academy.

Ans: With the objectives of spreading Tamil to the entire world through internet, Tamil Virtual University was established on 17th February 2001 by the Govt. of Tamilnadu. Now, this organization functioning with the name "Tamil Virtual Academy". This organization offers different courses regarding Tamil language, Culture, heritage etc., from kindergarten to under graduation level.

Website: <http://www.tamilvu.org/index.php>

33. Convert the following Octal Numbers into Binary Numbers.

i) 6137 ii) 245 iii) 472

Ans:

i) 6137

6 1 3 7
 ↓ ↓ ↓ ↓
 110 001 011 111

$$(6137)_8 = (110001011111)_2$$

ii) 245

2 4 5
 ↓ ↓ ↓
 010 100 101

$$(245)_8 = (010100101)_2$$

iii) 472

4 7 2
 ↓ ↓ ↓
 100 111 010

$$(472)_8 = (100111010)_2$$

Decimal	Binary	Octal	Hexadecimal
0	0000	000	0000
1	0001	001	0001
2	0010	002	0002
3	0011	003	0003
4	0100	004	0004
5	0101	005	0005
6	0110	006	0006
7	0111	007	0007
8	1000	010	0008
9	1001	011	0009
10	1010	012	A
11	1011	013	B
12	1100	014	C
13	1101	015	D
14	1110	016	E
15	1111	017	F




PART – IV



IV. ANSWER ALL THE QUESTIONS:

5 X 5 = 25

34. a) Discuss the various Generations of Computers.

Ans:

S.no	Generation	Period	Main Component used	Merits / Demerits
1	First Generation	1940 – 1956	Vacuum tubes 	<ul style="list-style-type: none"> - Big in size - Consumed more power - Malfunction due to overheat - Machine Language was used
First Generation Computers - ENIAC , EDVAC , UNIVAC 1 ENIAC weighed about 27 tons, size 8 feet × 100 feet × 3 feet and consumed around 150 watts of power				
S.no	Generation	Period	Main Component Used	Merits / Demerits
2	Second Generation	1956-1964	Transistors 	<ul style="list-style-type: none"> - Smaller compared to First Generation - Generated Less Heat - Consumed less power compared to first generation - Punched cards were used - First operating system was developed - Batch Processing and Multiprogramming Operating System - Machine language as well as Assembly language was used.
Second Generation Computers IBM 1401, IBM 1620, UNIVAC 1108				
3	Third Generation	1964 -1971	Integrated Circuits (IC) 	<ul style="list-style-type: none"> - Computers were smaller, faster and more reliable - Consumed less power - High Level Languages were used
Third Generation Computers IBM 360 series, Honeywell 6000 series				
4	Fourth Generation	1971-1980	Microprocessor Very Large Scale Integrated Circuits (VLSI) 	<ul style="list-style-type: none"> - Smaller and Faster - Microcomputer series such as IBM and APPLE were developed - Portable Computers were introduced.

S.no	Generation	Period	Main Component used	Merits / Demerits
5	Fifth Generation	1980 – till date	Ultra Large Scale Integration (ULSI) 	<ul style="list-style-type: none"> - Parallel Processing - Super conductors - Computers size was drastically reduced. - Can recognize Images and Graphics - Introduction of Artificial Intelligence and Expert Systems - Able to solve high complex problems including decision making and logical reasoning
6	Sixth Generation	In future		<ul style="list-style-type: none"> - Parallel and Distributed computing - Computers have become smarter, faster and smaller - Development of robotics - Natural Language Processing - Development of Voice Recognition Software

[OR]

b) Write the uses of Operating System.

Ans: The following are few uses of Operating System

The main use of Operating System is

- To ensure that a computer can be used to extract what the user wants it do.
- Easy interaction between the users and computers.
- Starting computer operation automatically when power is turned on (Booting).
- Controlling Input and Output Devices
- Manage the utilization of main memory.
- Providing security to user programs.

35. a) Explain the types of Errors in C++.

Ans:

Types of Error	Description
Syntax Error	Syntax errors occur when grammatical rules of C++ are violated. Example: cout “Hello World”; Will throw an error because << is missing in the statement. Correct statement: cout<< “Hello World”
Semantic Error	When a program has not produced the desired results, We call it as logical Error or Semantic Error. //Example: Program to find square of 15 #include <iostream.h> using namespace std; int main() { int n = 5; cout<< “Square of 15 is”<< 15+15;

	<pre>return 0; }</pre> <p>Output: Square of 15 is 30 The above program gets compiled without errors and gives output. But the output is 30 instead of 225 since 15 is added twice instead of multiplication. Such errors are called logical errors.</p>
Run-time error	<p>A run time error occurs during the execution of a program. It occurs because of some illegal operation that takes place.</p> <p>For example: If a program tries to open a file which does not exist, it results in a run-time error.</p>

[OR]

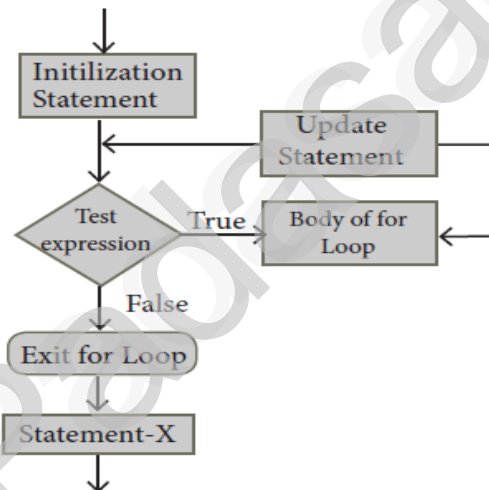
b) Explain the for loop in C++ with its syntax and a suitable example.

Ans: for loop: The for loop is an entry - controlled loop and is the easiest looping statement which allows code to be executed repeatedly. It contains three different statements (initialization, condition or test-expression and update expression(s)) separated by semicolons.

The general syntax is:

```
for (initialization(s); test-expression; update expression(s))
{
    Statement 1;
    Statement 2;
    .....
}
Statement-x;
```

The Flow Chart is:



Example: C++ program to display numbers from 0 to 9 using for loop

```
#include <iostream>
using namespace std;
int main ()
{
int i;
for(i = 0; i < 10; i ++ )
    cout << "value of i : " << i << endl;
return 0;
}
```

Output

value of i : 0
value of i : 1
value of i : 2

value of i : 3
value of i : 4
value of i : 5
value of i : 6
value of i : 7
value of i : 8
value of i : 9

36. a) What are the key difference between if-else and switch statements in C++?

Ans:

Key Differences Between if-else and switch

S.No	if-else	Switch
<u>1</u>	Expression inside if statement decide whether to execute the if block or under else block.	expression inside switch statement decide which case to execute.
<u>2</u>	An if-else statement uses multiple statements for multiple choices	switch statement uses single expression for multiple choices.
<u>3</u>	If-else statement checks for equality as well as for logical expression.	switch checks only for equality.
<u>4</u>	The if statement evaluates integer, character, pointer or floating-point type or Boolean type.	switch statement evaluates only character or a integer data type.
<u>5</u>	If the condition is false the else block statements will be executed	If the condition is false then the default statements are executed.

[OR]

b) Explain Scope rules of variables in C++ with example.**Ans:** Scope refers to the accessibility of a variable.

There are four types of scopes in C++.

They are: **1) Local scope 2) Function scope 3) File scope 4) Class scope****1) Local scope:**

- A local variable is defined within a block. A block of code begins and ends with curly braces { }.

- The scope of a local variable is the block in which it is defined.
- A local variable cannot be accessed from outside the block of its declaration.
- A local variable is created upon entry into its block and destroyed upon exit.

Example:

```
int main( )
{ int a, b; } // variables a and b are local variables to main( )
```

2) Function scope:

- The scope of variables declared within a function is extended to the function block, and all sub-blocks therein.

- The life time of a function scope variable, is the life time of the function block. The scope of formal parameters is function scope.

Example: The scope of formal parameters is function scope.

```
int sum(int x, int y); // x and y has function scope.
```

3) File scope:

A variable declared above all blocks and functions (including main ()) has the scope of a file.

- The life time of a file scope variable is the life time of a program.
- The file scope variable is also called as global variable.

Example:

```
#include <iostream>
using namespace std;
int x, y; // x and y are global variables
void main( ) { }
```

4) Class scope:

- Data members declared in a class has the class scope.
- Data members declared in a class can be accessed by all member functions of the class.

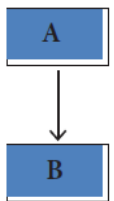
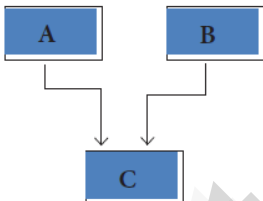
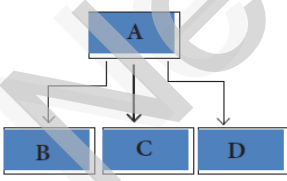
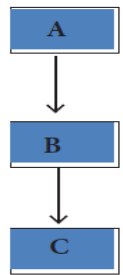
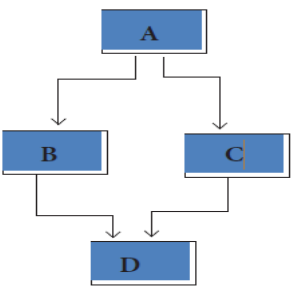
Example:

```
class example
{
int x,y;
void print( ); // x and y can be accessed by print( ) and sum( )
void sum( );
};
```

37. a) Explain the different types of Inheritances.**Ans:** Inheritance is the process of creating new classes called derived classed, from the existing or base classes.

There are different types of inheritance, namely

- Single inheritance
- Multiple inheritance
- Multilevel inheritance
- Hybrid inheritance
- Hierarchical inheritance

<p>i. Single Inheritance: When a derived class inherits only from one base class, it is known as single inheritance</p>	 <p style="text-align: center;">Single Inheritance</p>
<p>ii. Multiple Inheritance: When a derived class inherits from multiple base classes it is known as multiple inheritance</p>	 <p style="text-align: center;">Multiple Inheritance</p>
<p>iii. Hierarchical Inheritance: When more than one derived classes are created from a single base class, it is known as Hierarchical inheritance</p>	 <p style="text-align: center;">Hierarchical Inheritance</p>
<p>iv. Multilevel Inheritance: The transitive nature of inheritance is reflected by this form of inheritance. When a class is derived from a class which is a derived class – then it is referred to as multilevel inheritance</p>	 <p style="text-align: center;">Multilevel Inheritance</p>
<p>v. Hybrid Inheritance: When there is a combination of more than one type of inheritance, it is known as hybrid inheritance. Hence, it may be a combination of Multilevel and Multiple inheritance or Hierarchical and Multilevel inheritance or Hierarchical, Multilevel and Multiple inheritance</p>	 <p style="text-align: center;">Hybrid Inheritance</p>

[OR]

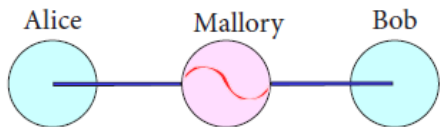
b) What are the rules for Operator Overloading?

Ans:

1. Precedence and Associativity of an operator cannot be changed.
2. No new operators can be created, only existing operators can be overloaded.
3. Cannot redefine the meaning of an operator's procedure. You cannot change how integers are added. Only additional functions can be given to an operator
4. Overloaded operators cannot have default arguments.
5. When binary operators are overloaded, the left hand object must be an object of the relevant class.

38. a) Explain the different types of Cyber Attacks.

Ans:

Cyber Attacks	Description
Malware	Malware is a type of software designed through which the criminals gain illegal access
Pharming	Pharming is a scamming practice in which malicious code is installed on a personal computer or server, misdirecting users to fraudulent web sites without their knowledge or permission. Pharming has been called " phishing without a trap ".
Phishing	Phishing is a type of computer crime used to attack, steal user data, including login name, password and credit card numbers. It occurs when an attacker targets a victim into opening an e-mail or an instant text message. The attacker uses phishing to distribute malicious links or attachments that can perform a variety of functions, including the extraction of sensitive login credentials from victims.
Man In The Middle (MITM)	<p>Man-in-the-middle attack (MITM; also Janus attack) is an attack where the attacker secretly relays and possibly alters the communication between two parties who believe they are directly communicating with each other.</p> <p>Example: Suppose Alice wishes to communicate with Bob. Meanwhile, Mallory wishes to intercept the conversation to overhear and optionally to deliver a false message to Bob.</p> 

[OR]

b) Write the Output for the following C++ program.

Assume the values for age as 30, height as 170.2 and weight as 54.

```
#include <iostream>
using namespace std;
struct student
{
    int age;
    float height, weight;
}obj;
int main()
{
    cout<< "\n Enter the age:";
```

```
cin>>obj.age;
cout<< "\n Enter the height:";
cin>>obj.height;
cout<< "\n Enter the weight:";
cin>>obj.weight;
cout<< "\n Details are:";
cout<< "\n Age:"<<obj.age;
cout<< "\n Height:"<<obj.height;
cout<< "\n Weight:"<<obj.weight;
return 0;
}
```

Ans:

OUTPUT:

```
Enter the age: 30
Enter the height: 170.2
Enter the weight: 54
Details are:
Age: 30
Height: 170.2
Weight: 54
```

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