

## EXPERIMENT NUMBER – Practical 4.1

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**BRANCH – CSE**  
**SUB – C++ LAB**

### AIM OF EXPERIMENT –

Question 1: Design a class named Time with Hours, Minutes, and Seconds as its data members declared in private section of the class. Define the following constructors for the class:

- a. zero default constructors that initialize the hours, minutes and seconds data members to 2, 10, 35.
- b. copy constructors

### FLOWCHART/ ALGORITHM

1. START
2. DECLARE THE CLASS  
DECLARE THE DATA MEMBER  
  
DEFINE THE CONSTRUCTOR  
DEFINE THE MEMBER FUNCTION TO DISPLAY
3. EXIT FROM CLASS DEFINATION.
4. ENTER INTO MAIN FUNCTION. CREATE OBJECT  
  
CALL THE MEMBER FUNCTION TO DISPLAY.
5. EXIT

## PROGRAM CODE

```
main.cpp
1 #include <iostream>
2 using namespace std;
3 class Time
4 {
5     int hour;
6     int minute;
7     int second;
8     public:
9     Time(int h=0, int m=0, int s=0)
10    {
11        cout<<"DEFAULT CONSTRUCTOR CALLED!!!"<<endl;
12        hour = 2;
13        minute = 10;
14        second = 35;
15    }
16    Time(Time &obj)
17    {
18        cout<<"COPY CONSTRUCTOR CALLED!!!"<<endl;
19        hour = obj.hour;
20        minute = obj.minute;
21        second = obj.second;
22    }
23    void display_time()
24    {
25        cout<<"The time is --> "<<hour<<":"<<minute<<":"<<second<<endl;
26    }
27 };
28 int main()
29 {
30     Time T1;
31     T1.display_time();
32     Time T2 = T1;
33     T2.display_time();
34     return 0;
35 }
36
```

## ERRORS ENCOUNTERED DURING PROGRAM'S EXECUTION

(Kindly jot down the compile time errors encountered)

### Forget the Semicolon

```
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2 using namespace std;
3 class Time
4 {
5     int hour;
6     int minute;
7     int second;
8 public:
9     Time(int h=0, int m=0, int s=0)
10    {
11        cout<<"DEFAULT CONSTRUCTOR CALLED!!!"<<endl;
12        hour = 2;
13        minute = 10;
14        second = 35;
15    }
16    Time(Time &obj)
17    {
18        cout<<"COPY CONSTRUCTOR CALLED!!!"<<endl;
19        hour = obj.hour;
```

input stderr

Compilation failed due to following error(s).

```
main.cpp: In constructor 'Time:Time(int, int, int)':
main.cpp:15:2: error: expected ';' before '}' token
    }
    ^
```

### PROGRAMS' EXPLANATION (in brief)

In the given program, I have used the concept of constructor. Constructor is a special member function which is used to initialize the data member of the object. Its name is same as the name of

constructor. It is automatically invoked when the object is created.

In the program, I have used default constructor to initialize my object and then I have shown the use of copy constructor that takes reference parameter to initialize the object.

## OUTPUT OF PROGRAM

```
input
DEFAULT CONSTRUCTOR CALLED!!!
The time is --> 2:10:35
COPY CONSTRUCTOR CALLED!!!
The time is --> 2:10:35

...Program finished with exit code 0
Press ENTER to exit console.
```

## LEARNING OUTCOMES

### EVALUATION COLUMN (To be filled by concerned faculty only)

| Sr. No. | Parameters   | Maximum Marks | Marks Obtained |
|---------|--|---------------|----------------|
| 1.      | Worksheet Completion including writing learning objective/ Outcome | 10            |                |
| 2.      | Post Lab Quiz Result   | 5             |                |
| 3.      | Student engagement in Simulation/Performance/ Pre Lab Questions    | 5             |                |
| 4.      | Total Marks  | 20            |                |

- Identify situations where computational methods would be useful.
- Approach the programming tasks using techniques learnt and write pseudo-code.
- Choose the right data representation formats based on the requirements of the problem.
- Use the comparisons and limitations of the various programming constructs and choose the right one for the task.



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