National University of Computer and Emerging Sciences



Lab Exercise 11

For

Object Oriented Programming Lab

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**FAST School of Computing**

# Instructions:

1. Make a word document with the naming convention “SECTION\_ LAB#\_ROLLNO” and put all your source code and snapshots of its output in it. Make sure your word file is formatted properly.
2. Plagiarism is strictly prohibited.
3. Do not discuss solutions with one another.

# Useful links

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| **Question#1** |

Use friend function to write a program for employee salary of Sitara Private Limited.

Make a class and define following data members:

* Name of Employee
* Rank of employee (Basic pay scale)
* Basic pay
* MD (Medical allowance)
* HR (House Rent)
* Gross pay (total pay)

**Task 1:** Define a private Member function of class

* Display ( );

Display complete record of employee including Name of employee, rank, basic pay and gross pay and Next year pay using this pointer.

**Task 2:** Also define following functions

* Read\_record ( ); (friend function)

To take record of employee like Name of employee, Rank, basic pay from user.

* Gross\_pay ( ); (friend function)

Calculate the gross pay of employee using basic pay and allowances.

* Annual\_increment ( ); (Friend function)

In the next year the pay of employee increases 20% of basic pay.

**Task 3:** Create another friend function through which you’ll call Display() defined in Task1.

Note:

* Medical allowance value is 60% of basic pay and House rent have 28.9% of basic pay.
* Write a constructor in which data members should be initialized and display message “Constructor”.
* Use efficient data type (string, int, float etc.)

At the end define destructor and display message “Software Developed by {your\_name}”.

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| **Question#2** |

You are required to implement a **Simplex** transmission mode. In Simplex mode, the communication is unidirectional, as on a one-way street. Only one of the two devices on a link can transmit, the other can only receive. A **possible** solution can be designed as:

Write a class **Channel** having private attributes int frequency, time and date (see **time\_t** data type), string port having public member functions inputDetails(), printDetails().

Write a struct **message** having string mess, int mess\_id.

Write a class **Sender** having private attributes an object of struct message, an object of class Channel and public member function LoadMessage() which inputs the message, channel details and generates a random mess\_id.

Write a class **Receiver** having private attributes an object of struct message, bool received and public member function printMessage() which prints the mess\_id and message.

Now, the problem is that these two classes can not communicate with each other directly. Hence, we use a mutual friend function called **path()** (can only have 2 parameters) which will assign the Sender’s message to Receiver’s message.

Your task is to create a menu driven program having options

1. Load Message (channel details and message will be inputted after this selection)
2. Print Message (the path() will be called and then message will be printed with the details of the channel)
3. Exit

Your main() will have only two objects of class Sender and Receiver and only functions told above, you can only make another friend function if required.

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| **Question#3** |

**Task1:**

Write a class named “Base” having the following integer attributes as:

1. Base1

2. Base2

3. Base3 (private)

Write a default constructor for Base that should initialize all the attributes to 0. Write an overloaded constructor that should initialize all the attributes to the passed integer. Write a display method to display the attributes of Base class.

**Task2:**

Write a class Friend\_Class. Make it a friend of Base class.

Write a method AccessMethod in Friend\_Class class.

Access the members of Base class in this method (public as well as private).

**Task3:**

Write a class Friend2\_Class. Make it a friend of Friend\_Class.

Write a method AccessMethod in this Friend2\_Class class.

Access the members of Friend\_Class in this method and also try to access the members of Base class (check whether you can access its public or private members).

**HAPPY CODING**