AMERICAN INTERNATIONAL UNIVERSITY BANGLADESH
FACULTY IF SCIENCE AND TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE
C++ PROBLEMS

Inheritence:

Problem 1:

Create the 3 classes which will have the following members:

class moving_van:

protected: float payload, weight, cost

public:

i. Create constructor to initialize the values
ii. float efficiency() : this function will return the efficiency of the van.
Efficiency=payload/(payload+weight)

class driver:

protected: float hourly_pay, weight

public:

i. Create constructor to initialize the values
ii. float cost_of_driver (int hour): this function will return the cost of the driver.

class driven_truck: this class will derive the previous classes

public:

i. float cost_of_driven_truck (int hour): this function will return the total cost of the driven truck including driver.
ii. float total_weight(): this function will return the total weight of the truck

Write the main function to test your code.

Problem 2:

Create the 4 classes which will have the following members:

class person:

private: char name[30]

protected: int age

public:

i. Create setvalues function to initialize the values
ii. void show_person() : outputs the name of the person

class Student: derive the person class
protected: float cgpa
public:

i. Create setvalues function to initialize the values
ii. void show_Student() : shows cgpa of the student

class Faculty: derive the person class
protected: int salary_per_hour
public:

i. Create setvalues function to initialize the values
ii. void show_Faculty() : shows salary per hour of the student

Class TA: derives the faculty and student class
protected: int hour_per_day
public:

i. Create setvalues function to initialize the values
ii. int salary(): calculate salary per month of TA.
iii. void show_TA() : shows all the information of the TA

Write the main function to test your code.

Problem 3:

Create three classes: **Base**, **Derived1** and **Derived2**. Both **Derived1** and **Derived2** classes are child class of the **Base** class.
Now, write constructor and destructor functions for all three classes and print different messages for the functions.
Now, from main function just create three objects of three classes. Observe the output of your program and you have to explain the output when we approach you.

Problem 4:

Create a base class called **building** that stores the number of floors a building has, the number of rooms and its total square footage.

Create a derived class called **house** that inherits the building and also stores the number of bedrooms and the number of bathrooms.
Next, create another derived class called **office** which also inherits the building class and stores the number of fire extinguishers and number of telephones.
Now, write constructors for all the classes in a way that the constructors initialize the variables of the classes. Also create different show functions to give output of all the information of the respective classes.
In main function create objects of the derived classes and also show all the information of those objects.

Abstract Class and virtual Function:

Problem 5:

Create the following classes:
Area: private: dimension1, dimension2 (two integer variables)
Public:

i) constructor to initialize the values
ii) get functions to return the private variables
iii) Another function called getarea(), make this function a pure virtual function

Triangle: child class of Area class
Public:

i) Constructor to initialize the values of base class

Override the getarea() function to find the area of the triangle. Now write main function to test your code and call the getarea() function through base class pointer.