National University of Computer & Emerging Sciences, Karachi
Spring-2022 CS-Department
Quiz 1
February 24, 2022 Timing: 9:30 AM – 10:00 AM

Course Code: CS 1004	**Course Name: Object Oriented Programming**
Instructor Name: **Farah Sadia**	
Student Roll No:	**Section No:**

Time: 30 minutes. **Max Marks**: 20 points

Question No. 1:

1. Why constructor name is similar to the class name?

Constructor plays a very important role. They are the first thing which gets called whenever any instantiation or object creation happens. ... To cut short with the explanation, constructors are named same as the class name so that the compiler knows before hand which method to call when an object is created.

2. What is the output of following code and explain?

```
class MyClass{
public:
        MyClass(MyClass &obj){
                cout<<"Copy Constructor"<<endl;
        }
};
int main(){
        MyClass obj;
        return 0;
}
```

Answer: There is a compiler error i.e. no default constructor available for this class in this program. Note that if we create an object of a class, it calls default constructor, which is not available in the class.

We know that if we write any kind of constructor or copy constructor in the class, compiler will not provide its default constructor. So, we have to write default constructor i.e. empty parameterized constructor in the class. E.g. below class is ok.

```
class MyClass{

public:

        MyClass(){}// empty constructor

        MyClass(const MyClass &obj)//Copy constructor
        {
                printf("Copy Constructor");
        }
};
```

Question No. 2:

Design a class named **Box** whose dimensions are integers and private to the class. The dimensions are labelled: **length L, breadth B,** and **height H**. The **default constructor** of the class should initialize **L, B,** and **H to 0**. The parameterized constructor **Box(int length, int breadth, int height)** should initialize **Box's L, B** and **H** to **length, breadth and height**. Create **two objects box1** and **box2** and initialize them with parameterized constructor. The copy constructor **Box box3 (box1)** should set L,B and H, respectively.

Apart from the above, the class should have functions:

1. int getLength() - Return box's length
2. int getBreadth() - Return box's breadth
3. int getHeight() - Return box's height
4. long long CalculateVolume() - Return the volume of the box
5. Compare box2 and box3 and display the largest box dimension on a single line separated by spaces.
6. Comparison conditions are:

   box2.L < box3.L

   box2.B < box3.B && box2.L == box3.L

   box2.H < box3.H && box2.B == box3.B && box2.L == box3.L

```
#include<iostream>
using namespace std;
class Box
{
  private:
  //l,b,h are integers representing the dimensions of the box
  int length, breadth, height;
  public:
  // Constructors:
  // Box();
  Box()
  {
    length = 0;
    breadth = 0;
    height = 0;
  }
  // Box(int,int,int);
  Box(int l, int b, int h)
  {
    length = l;
    breadth = b;
    height = h;
  }
  // Box(Box);
  Box(const Box &B)
  {
    length = B.length;
    breadth = B.breadth;
    height = B.height;
  }
  // int getLength(); // Return box's length
  int getLength()
  {
    return length;
```

```
    }
    // int getBreadth (); // Return box's breadth
    int getBreadth()
    {
       return breadth;
    }
    // int getHeight ();  //Return box's height
    int getHeight()
    {
       return height;
    }
    // long long CalculateVolume(); // Return the volume of the box
    long long CalculateVolume()
    {
       return (long long)(breadth) * length * height;
    }
    //Overload operator < as specified
    //bool operator<(Box& b)
    bool compare(Box &B)
    {
       if (length < B.length)
       {
          return true;
       }
       else if (length == B.length)
       {
          if (breadth < B.breadth)
          {
             return true;
          }
          else if (breadth == B.breadth)
          {
             if (height < B.height)
             {
             return true;
             }
          }
       }

       return false;
    }
    void display(){
            cout<<"Largest box dimentions are : "<<length<<"\t"<<height<<"\t"<<breath<<endl;
            }
};

int main()
{

}
```