Week 4: Lab Work

Task 1:

Aim: To understand *reference* in C#

1.1 Use code from previous lab. Your Circle.cs should look like this

```
class Circle
{
      private  String  name;
       private double radius = 0.0;
        public Circle(String n, double r)
       {
                name = n;
                radius = r;
        }
       public String Name () {return name; }
       public double Radius() { return radius; }
       public double Area()
       {
          return Math.PI * radius * radius;
        }
       public bool Is_Greater_Than(Circle other)
        {
                 if (this.Radius() > other.Radius())
                {
                        return true;
                 }
                else
                 {
                        return false;
                 }
       }
}
```

1.2 Now add the following code to Program.cs (only code inside the main function)

```
class Program
{
   static void Main(string[] args)
   {
      Circle c1;
      Circle c2;
      c1 = new Circle ("Circle1", 5);
      c2 = c1;
      if (c1 == c2)
```

```
        {
            Console.WriteLine("c1 and c2 are equal");
        }
        else
        {
            Console.WriteLine("c1 and c2 are not equal");
        }
        Console.ReadLine();
    }
}
```

You should get output: **c1 and c2 are equal.** Understand the code.

1.3 Now comment-out all the code in Main function and add the following

```
Circle c1;
Circle c2;

c1 = new Circle("Circle1", 5);
c2 = new Circle("Circle1", 5);

if (c1 == c2)
{
    Console.WriteLine("C1 and c2 are equal");
}
else
{
    Console.WriteLine("c1 and c2 are not equal");
}
Console.ReadLine();
```

Your output should be: **c1 and c2 are not equal.** **Why are two objects not equal here but were equal in 1.2(above)???**

Task 2:
Aim: To understand call by reference

2.1 Create new project and add folling to your Program.cs

```
class Program
 {
    static void Set_Int ( ref  int target, int value)
     {
         Console.WriteLine ("Setting target to {0}", value);
```

```
            target = value;
        }

    static void Main (string[] args)
    {
        int myInt = 10;
        Console.WriteLine ("The value of myInt is {0}", myInt);
        Console.WriteLine ("Calling Set_Int to set myInt to 100");

        Set_Int ( ref myInt, 100);

        Console.WriteLine ("Back from Set_Int");
        Console.WriteLine ("The value of myInt is {0}", myInt);
        Console.ReadLine();
  }
}
```

Run program. You should get some output. Note that.

2.2 Now remove both "**ref**" keyword from the code and run the program again. Did you notice any difference in output? **Why is that?**

2.3 Try and understand codes in Slides 29-33 from the lecture slides (Week 4).

2.4 Out parameters

Class Program

```
{
        static void Set_Int (out int target, int value)
        {
                Console.WriteLine ("Reading target =", target);
                Console.WriteLine ("Setting target to {0}", value);
                target = value;
        }

  static void Main (string [] args)
  {
        int myInt = 10;
        Console.WriteLine ("The value of myInt is {0}", myInt);
        Console.WriteLine ("Calling Set_Int to set myInt to 100");
        Set_Int (out myInt, 100);
        Console.WriteLine ("Back from Set_Int");
        Console.WriteLine ("The value of myInt is {0}", myInt);
        Console.ReadLine ();
  }
}
```

Run above code. What is the output and **why?**

2.5 Go thorough slides 45 to 55. Any question ask the lecturer.

Task 3: Create a method that returns multiple values. Hint: using out parameter

Task 4: Remember "Email problem" from previous lab. Have you started working on that?