Assorted Questions and Concepts – Part 1

Cpt S 321

Washington State University

Question 3

- Find at least 3 compilation errors from the following code and explain them. Find 1 in Main and at least 2 in MyFunction.

```
class Program
{
        static void Main(string[] args)
        {
            MyFunction(3.3, 4.4);
            MyFunction(5.5, 6.6);
        }

        int MyFunction(double a, double b)
        {
            int x, y, z;
            z = a * a;
            y = b * b;
            if (z > 100 || y > 100 || x > 100)
            {
                x = Math.Sqrt(y + z);
            }
            return x;
        }
}
```

Question 5

- What is the output from the following code?

```
static void Main(string[] args)
{
    string s = "Hello World!";
    s.Replace('H', 'J');
    Console.WriteLine(s);
}
```

Question 6 Primer

- Note: you can use the **ref** keyword to pass a parameter by reference
- Use the **ref** keyword both in the parameter declaration in the function AND in the call to the function
  - An example in the question 6 code
- Can pass a structure by reference instead of by value by using **ref**
- Can pass a reference to a reference by using **ref** with a class object

Question 6

- What is the output of the following code?

```
static void Main(string[] args)
{
        string s = "Hello World!";
        DoReplacement(ref s);
        Console.WriteLine(s);
}

static void DoReplacement(ref string s)
{
        s.Replace('H', 'J');
}
```

Question 7

- If we wanted the following code to display "**Jello World!**" how can we alter it by changing DoReplacement and leaving Main alone?

```
static void Main(string[] args)
{
        string s = "Hello World!";
        DoReplacement(ref s);
        Console.WriteLine(s);
}

static void DoReplacement(ref string s)
{
        s.Replace('H', 'J');
}
```

Question 8A

- What is the output of program A?
- What is the output of program B?

Program A

```
static void Main(string[] args)
{
    for (int i = 0; i < 5; i++)
    {
        Console.WriteLine(i.ToString());
    }
}
```

Program B

```
static void Main(string[] args)
{
    for (int i = 0; i < 5; ++i)
    {
        Console.WriteLine(i.ToString());
    }
}
```

Question 8B

- What is the output of program A?
- What is the output of program B?
- Do these even compile?

Program A

```
static void Main(string[] args)
{
    for (int i = 0; i++ < 5; )
    {
        Console.WriteLine(i.ToString());
    }
}
```

Program B

```
static void Main(string[] args)
{
    for (int i = 0; ++i < 5; )
    {
        Console.WriteLine(i.ToString());
    }
}
```

Question 9

- Write a function to multiply 2 ushort values without using the * operator
  - It must run in (very close to) constant time
  - Multiplying 10,000 and 20,000 should not result in thousands more operations than multiplying 10 and 20
  - In other words, don’t implement it by looping from 1 to operand A and adding operand B to itself that many times
- Addition and a few bitwise operators are all you should need
- What should the return type of the function be?

Summary

- EVERYTHING within these slides should make good sense to you
- These are the types of things that you'll need to know how to do for homework assignments, exams, and many practical software engineering problems
- These are just a small handful of examples. We will have more questions throughout the semester and we'll look at several that are much more difficult.