LAB GOALS

To create Random numbers. To develop console application using the following constructs:
1) Randomize
2) Rnd()
3) Cint()

To get started you first need to login into the lab computer. If you do not know how please ask me to show you. Once you are logged in, make sure you double click the “Map O:drive” icon. Then proceed to open up Microsoft Visual Basic .NET.

Step 1: Create a new console project named “Console_Application_Random_Numbers”.

Step 2: Random numbers come in handy in a number of ways. Often times, our programs need to simulate some random events. For example our program may have simulate when a customer enters the store, or how many items they will purchase, or how much money they will spend, or in the case of a card game, what should be the next card drawn from the deck of cards. Visual Basic and (most other programming languages) provide a built-in function for generating random numbers. In this lab we will explore this functionality of VB .Net. So, let’s start by typing the following code in your console application:

```
Option Explicit On
Option Strict On
Module Module1
    Sub Main()
        Randomize() ' Initialize the random number generator
        Console.ReadLine() ' pause the program
    End Sub
End Module
```

The Randomize() function above simple initializes the random number generator. In other words, it will create a seed for the random numbers. You can think of the seed as the genetic parent of the random numbers we are about to generate. Note that Randomize() does not generate the random numbers itself. It just gets things ready for us to start using another function called Rnd(). Rnd() is the function that actually generates and returns the next random number. More specifically, Rnd() return a single precision floating point number (between 0 and 1).

Step 2: Add the following lines right after the Randomize() line.

```
Dim myRandomNumber As Single
myRandomNumber = Rnd()
Console.WriteLine(myRandomNumber)
```

Run: Compile and Run your program a few times. You should see a randomly generated number (between 0 and 1) appear in your console window.

Step 3: Often times we need a random number within a certain range. For example you are trying to simulate how often a customer walks in the door, and a typical customer arrival is between 0 and 600 second. (0 to 10 minutes). How can we get our random number generator to generate a number in the range of 0 to 600? Think about this and come up with some ideas before going to the next page.
Hopefully, you have come up with some type of solution to this. But if you have not, here is a solution: In order to generate a random number between 0 and 600, we simply have to do two things. First, multiply the random number by 600. Then we have to convert the number to an integer between 0 and 600. Add the following three lines after the line "myRandomNumber = Rnd()"

```vbnet
myRandomNumber = myRandomNumber * 600
Dim myNewRandomNumber As Integer
myNewRandomNumber = CInt(myRandomNumber)
```

Run: Compile and Run your program a few times. You should see a randomly generated number (between 0 and 600) appear in your console window. Here is the entire code:

```vbnet
Option Explicit On
Option Strict On

Module Module1

Sub Main()
    Randomize()       ' Initialize the random number generator
    Dim myRandomNumber As Single
    myRandomNumber = Rnd()

    myRandomNumber = myRandomNumber * 600
    Dim myNewRandomNumber As Integer
    myNewRandomNumber = CInt(myRandomNumber)

    Console.WriteLine(myRandomNumber)
    Console.ReadLine()       ' pause the program

End Sub

End Module
```

Step 4: **Challenge:** What if you need to generate a number between 10 and 25? Can you modify the above program to produce random numbers between 10 and 25?