

IST 256  
Lab Week 4, Day 1 (Wednesday) – September 23, 2009

**1. Understanding Loops – showing the variables of a program**

For this problem, you are not to put any part of the program into Visual Studio. You are to write your answers on this lab sheet. (Think of this as a practice exam question.)

```
Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click
    Dim counter, sum, square As Integer
    counter = 0
    square = 0
    sum = 0

    ' add the squares of integers from 1 to 6
    For counter = 1 To 6 Step 1
        square = counter * counter
        sum = sum + square
    Next

    ' show the number to the user
    Label1.Text = CStr(sum)
End Sub
```

As this program is executed, it will keep the variables in memory, and the values of the variables will change during the execution of the program.

1. In the table below, write the values of the variables counter, square and sum after they are initialized (in the first assignment statement) under the column labeled “init”.
2. Then for each loop iteration, write the values of the variables counter and sum at the end of that loop iteration (from the assignment statements during the loop and from the automatic assignment counter = counter + 1 at the end of the for loop).

Only fill in as many values as needed in the table. **Be sure to notice when the loop ends!**

Variable	init	Val1	Val2	Val3	Val4	Val5	Val6	Val7	Val8
counter									
square									
sum									

What number will be shown to the user in Label1? (write it here):

## 2. Writing a program with Multiple Forms: What's in a Shoebox

For this application, you are going to create a series of forms and a program that allows the user to navigate through the forms in order to find the “shoebox” and see what’s inside.

The navigation consists of going from your room (which is on the initial form) to your closet and then to a shoebox stored there.

You’ll need a room form, a closet form, and a shoebox form. The shoebox form should tell what’s in the shoebox. You can make this be whatever you want (within good taste).

The room form should have a button that goes to the closet form and a close button. The closet form should have a button that goes to the shoebox form and a button that goes back to the room form.

The shoebox form should have a label that tells something that is in the shoebox and a button that goes back to the closet form.

First debug this part of the program, making sure that all the navigation buttons work.

**Optional Additional Part:** instead of first showing the user what is in the shoebox, ask them to guess a letter that is in the contents of the shoebox, and then let them know if they are right or wrong.

For this, you need to add another Label and TextBox to the Shoebox form:

Guess a letter for my shoebox: | \_\_\_\_\_ |

For example, suppose that your shoebox has “old pictures”:

If the user types “z”, then you put label text that says something like

“No, your letter is not in my old pictures”.

But if the user types “c”, then you say “Yes, your letter is in my old pictures”.

To tell if the letter is in the label text, use the Instr function. For example, suppose that you have a variable called letter, that you assigned from whatever the user typed in the TextBox. Suppose that you also have a variable called contents that is the string describing what is in the shoebox.

For example, *contents = “old pictures”*

And suppose that you have an Integer variable called position, then you can call Instr to ask the position of where the value of the contents string contains the value of the letter:

position = Instr(contents, letter)

If the letter occurs in the contents string, the value of position will be greater than 0.

**Print the programs for the three forms and hand them in at the end of Lab today together with this sheet.**