Visual Basic Loops

To help avoid infinite loops make sure do following:
1) Initialize LCV (Loop Control Variable)
2) Test LCV
3) Update/Change LCV inside the loop

Syntax for VB loop structures

1) Do While Loop, also called While loop, either one of the following do the same thing and are both permitted in Visual Basic.

\[
\text{Do While ( Expression )}
\begin{align*}
\text{Statement 1} \\
\text{Statement 2} \\
\vdots \\
\text{Statement N}
\end{align*}
\text{Loop}
\]

\[
\text{While ( Expression )}
\begin{align*}
\text{Statement 1} \\
\text{Statement 2} \\
\vdots \\
\text{Statement N}
\end{align*}
\text{End While}
\]

2) Do Loop While

\[
\text{Do}
\begin{align*}
\text{Statement 1} \\
\text{Statement 2} \\
\vdots \\
\text{Statement N}
\end{align*}
\text{Loop While ( Expression )}
\]

Both of these loops will repeat or loop on a True expression and stop on False. Difference is as follows:

- Do While Loop (also basic While loop)
  - ) Test first
  - ) Then maybe executes statements

- Do Loop While
  - ) Executes first
  - ) Then test expression

3) For/Next Loop

\[
\text{For LCV = Initial_Value To Final_Value [ step increment ]}
\begin{align*}
\text{Statement 1} \\
\text{Statement 2} \\
\vdots \\
\text{Statement N}
\end{align*}
\text{Next LCV}
\]

For loops are very similar to the basic while loops and are normally used when know the number of loops you are going to do beforehand. If the Step increment is left off, it defaults to 1, otherwise step can be any number, positive or negative. ( If negative, loop would go down, not up. )
Examples of Visual Basic Loops

All examples assume “option strict On”

1) Uses a Do While Loop to count how many even numbers user enters, stop on 0.

Dim N, Total as Integer

console.writeline(“Please enter number, 0 to stop”)
N = CInt(console.readline())    ‘ #1, initialize LCV
Do While ( N <> 0 )            ‘ #2, test LCV
    If ( N mod 2 = 0 ) then
        Total = Total + 1
    End if
    console.writeline(“Enter next number, 0 to stop”)
    N = CInt(console.readline())    ‘ #3, update/change LCV inside loop
Loop

2) Uses a Do Loop While to sum up numbers 1 to entered positive integer by user.

Dim N, Sum As Integer

console.writeline(“Please enter positive number”)
N = CInt(console.readline())    ‘ #1, initialize LCV
Do
    Sum = Sum + N
    N = N – 1                    ‘ #3, update/change LCV inside loop
Loop While ( N > 0 )           ‘ #2, test LCV

3) Uses a For/Next Loop to find the average of five scores.

Dim Total, Score As Decimal
Dim Students As Integer

For Students = 1 to 5           ‘ #1,#2 and #3 all in this line
    console.writeline(“Enter Score “)
    Score = CDec(console.readline())
    Total = Total + Score
Next Student

Average = Total/5