

Unit 6 Software design and development

Good practice

Software structure

- There are good and bad ways to write programs. Badly written programs might still work but:
 - they are difficult to maintain
 - they are more likely to contain bugs.
- Maintenance updates or bug fixes to a program are often done by someone other than the person who first wrote the program.
- This task is much easier if the code is well written.

Readability

Well written code has:

- **meaningful variable names** which give some clue as to the purpose of the variable.
- **comments.** These are added to explain what the code does, they are ignored by the computer but are very useful for humans.

Readable code

```
Module1.vb* Start Page
Module1
  Main
Module Module1
  Sub Main()
    Dim numbers As String           'Number input by user
    Dim total As Integer           'Running total
    Dim counter As Integer = 0     'Loop counter
    Console.WriteLine("Averages program")
    Console.WriteLine("Enter number, X to exit")
    numbers = Console.ReadLine
    Do Until (numbers = "X")
      total = total + numbers      'Input first number
      counter = counter + 1        'Loop until user enters X
      Console.WriteLine("Enter number, X to exit")
      numbers = Console.ReadLine  'Add to running total
    Loop                          'Increment counter
    Console.WriteLine("Average is " & total \ counter) 'Input next number
    Console.ReadLine()           'End of loop
  End Sub
End Module
```

Functions

As well as making the program readable, the programmer should also ensure the program is:

- **robust.** It should not be easy to crash the program. For example, the program should check user input is numeric where a number is expected because if a text input is used in a calculation the program will crash.
- **useable.** It should be easy to use. For example, screen forms should be clearly labelled and logically laid out so the user is not confused.

Quality of code

- **Portability.** In some applications it may be important for the program to run on different hardware and different software environments.
- **Maintainability.** It is important that a program is easy to maintain. This can be achieved by having:
 - well written code
 - detailed technical documentation.