# Programming 1

## Techniques

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| **Declaring variables** | Variable names should describe what is being stored and should not include spaces. You will also have to choose the correct data type. |
| **Assignment** | This is when you make a variable equal to something. When you assign a string value, you must use quotation marks. |
| **Input** | Reading values typed in by the user. |
| **Output** | Displaying information on the screen, including the results of processing. |
| **Operators** | Using the symbols for arithmetic. |

* Present your work on these tasks in a single Word document. Make sure that the document is saved with the filename **Programming 1 Username**, replacing ‘username’ with your username.
* Each time you complete a part of the task, you will need to record that in your document.
* Use task numbers and letters as well as headings and make sure you present your work clearly.
* Use copy and paste to put your code for the programming parts of the task.
* Type your answers to the other questions.

## Task 1

Copy the following program and run.

Dim forename As String

Dim age As Integer

Dim height As Double

forename = "Obidiah"

age = 17

height = 1.81

Console.Write(forename)

Console.Write(" is ")

Console.Write(age)

Console.Write(" years old and ")

Console.Write(height)

Console.WriteLine("m tall.")

Console.ReadLine()

1. Change the program so that the information that it displays your name, age and height (guess if you need to).
2. Write down the names of the 3 variables used in this program and explain why a different data type is used for each one.
3. The lines with an equals sign are assignment statements. Explain the difference between the way you assign a string compared to a number.
4. Explain the difference between outputting information stored in variables and outputting text chosen by the programmer.
5. Add a variable to the program to store the person’s form. Assign the variable a value. Add output statements so that, in addition to the name, age and height, the program also says something like **Obidiah is in form 11R**.

## Task 2

Copy the following program and run.

Dim forename As String

Dim age As Integer

Dim height As Double

Console.Write("What is your name? ")

forename = Console.ReadLine()

Console.Write("How old are you? ")

age = Console.ReadLine()

Console.Write("How tall are you in metres? ")

height = Console.ReadLine()

Console.WriteLine("{0} is {1} years old and {2}m tall.", forename, height, age)

Console.ReadLine()

1. The program does not produce the correct output. Make the change that is needed to the program to make it work correctly.
2. Add a variable to the program to store the person’s form. Add the statements needed to allow the user to be able to input this information. Change the output statement so that this information is displayed.
3. Declare a variable called **heightcm**. Make it equal to the user’s height multiplied by 100. Change the output statement to output the user’s height in centimetres instead of metres.
4. Add another variable to the program. Make it equal to the number of years left from the user’s age until they are 18. Add an output statement to display the number of years until the user turns 18.

## Task 3

Copy the following program and run.

Dim area As Double

Dim circumference As Double

Dim radius As Double

Dim pi As Double = Math.PI

Console.Write("Enter the radius of the circle: ")

radius = Console.ReadLine()

area = 0

circumference = 0

Console.WriteLine("Radius: {0}, Circumference {1}, Area {2}", radius, circumference, area)

Console.ReadLine()

1. To calculate the area of a circle, you do PI x RADIUS x RADIUS. To calculate the circumference of a circle, you do 2 x PI x RADIUS. Change the assignment statements so that they correctly calculate the circumference and area of a circle.
2. Find a web site that has information about how to calculate the area and circumference of a circle. Find examples of complete calculations and use them to check that your program is correct. Take screenshots to show how you tested your program and know that it works.
3. The diameter of a circle is double its radius. Add a variable to this program to store this information. Add an assignment statement to calculate the diameter of the circle. Adapt the program so that this information is displayed.