

TABLE OF CONTENTS

GENERAL INFORMATION.....	1
TYPES FOR VARIABLES.....	1
OOBASIC.....	1-7
FUNCTIONS AND SUBS.....	1
STRUCTURE	1-4
<i>general structure of functions.....</i>	<i>1-2</i>
<i>if conditions</i>	<i>2-3</i>
<i>loops</i>	<i>3-4</i>
SAMPLE QUESTION.....	5-7
MATLAB	8-10
SCRIPTS AND FUNCTIONS	8
FUNCTION STRUCTURE	8
<i>general structure</i>	<i>8</i>
<i>loops and conditions.....</i>	<i>8-9</i>
<i>logical arrays and vectorization.....</i>	<i>9</i>
SAMPLE QUESTION	10

ENGG1811 NOTES

****For reference throughout these notes: VBA refers to Visual Basic for Applications which is an indistinguishable language to OOBASIC and is used In Microsoft Excel instead of OOCALC.**

Variable Types

- Integer – Includes all whole real numbers. E.g. -1,0,1,2,3,...
- Double – Includes all integers AND decimal numbers. E.g. 1.48,2,3.6533,...
- Long – Includes all integers and doubles. Used for very large numbers.
- String – Includes all letters or words.
- Boolean – Includes True or False. Variable = 1 if true, = 0 if false.
- Variant – Can be used for any type if unsure (not encouraged).

OpenOffice Basic

Sub vs. Function

A function is a program that takes input and returns output. It can take multiple inputs and return multiple outputs.

A sub is a program that can be run and does not return a value but in VBA it can process information and do something with it.

Function notation

The structure of a function:
Option Explicit
Option VBASupport 1
Assign Constants (e.g. Const NAMEOFCONSTANT = 10)
Function NAME(Var1 As Double, Var2 As Double...)
Define and Assign Variables
(e.g. Dim variableName As Type)
(e.g. variableName = 10)
FUNCTION BODY(IFs, FORs, WHILEs etc.)
Output (NAME = ...)
End Function

When writing a function in VBA It begins with the word 'Function' and ends with the words 'End Function'.

The function declaration is given as:

functionName(var1 As Type1, var2 As Type2) As Type3

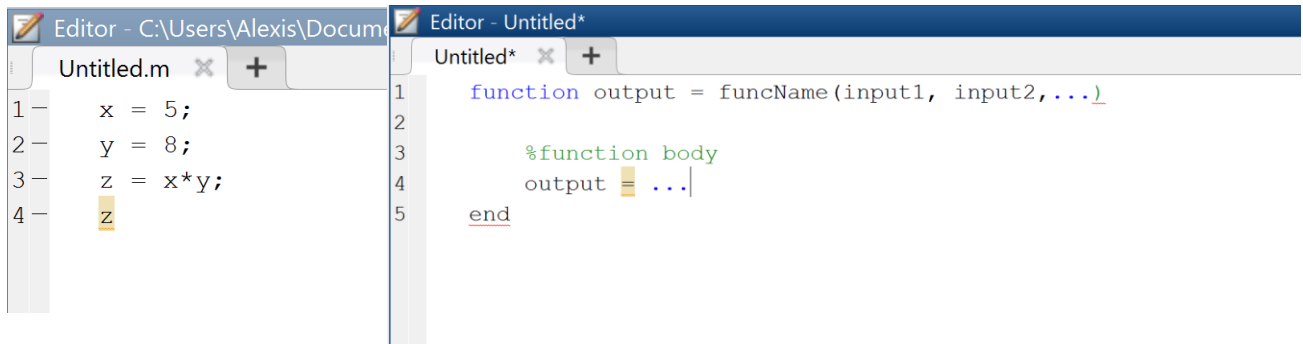
MATLAB

Script vs. Function

Much like in OOBASIC, a script compares to a sub and the functions are of similar concepts. In matlab there is **no capitalization** unlike in OOBASIC. A script is literally written instructions and does not require declaration or initialization like the 'Sub Main()' in OOBASIC.

In order for any script to be able to run on Matlab, it must be saved and added to path if it needs to be.

This is the difference between a script(left) and a function(right):



A function has proper format with inputs and outputs. A script is just straight commands that get executed in the command line in order.

Notice how each command in the script has a semicolon after it. That prevents it from showing on the screen in the command window below the script window when executed and they want you to include this in your exam answers. **You will lose marks otherwise.**

Functions

Structure

Function [Output1, Output2...] = NAME(Input1, Input2...)

Narginchk(n,n); *n refers to maximum and minimum arguments in the function. Probs identical.

FUNCTION BODY(IFs, FORs, WHILEs etc.)

End

Loops

For Loops

for n = 1:1:k

BODY ARGUMENTS (don't forget ;)

end

Where the first 1 is the first value n is worth, the second 1 is the increment of n every cycle (like Step 1 in OOBASIC), and k is the final value of n before the loop stops.