

An Engineer's Beginners Guide To Python (from a students perspective)

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1 Introduction

This document could be thought as the one stop shop to succeed in EMS412U python side of the module.

2 Week 0: The laying the foundation

Let's start with the most basic python program and explain some key concepts. Below is a "code block", this contains the actual raw python code.

```
1 # Author: Muhie
2 # Date: 21/05/24
3 # Explanation of the program: Outputs a Hello World! to the screen
4 """I can
5 write a comment
6 on multiple lines"""
7 print("Hello World!")
8
```

```
1 Output:
2 Hello World!
3
```

Lines 1-3: In every program you write you MUST always start with:

- Your name
- Today's date
- A brief explanation of the program

As you can see in the example above before writing my name, date and explanation I use a hashtag (#) symbol, this denotes a comment. A comment is completely separate to the main program, comments do not effect the functionality of the program. One more thing to note is that if you need a comment over multiple lines you can use three quotation marks: three before the start of the comment and then three after the comment, as seen above with *lines 4-6*. *Line 7:* This is where the actual python code

starts the keyword

Syntax - these are mainly keywords (and symbols like a hashtag # or a combination of symbols and keywords like `print("")`).

3 KEY CONCEPTS YOU'LL NEED FOR WEEKS 1-12

3.1 Week 1: Variables

A variable is simply a value that can change. A variable can have many different types below is the most common types that you will use throughout the module.

```
1 # Author: Muhie
2 # Date: 22/05/24
3 """Explanation of the program: A simple program showing how
   variables can be assigned in python"""
4
5 a = 5 # integer
6 b = "hello" # string
7 c = True # boolean
8 d = 3.14 # float
9
```

3.2 Week 2: Selection and Iteration

```
1 # Author: Muhie
2 # Date: 22/05/24
3 """Explanation of the program: A simple program showing what a for
   loop does and what an if statement is"""
4 start = 0
5 stop = 10
6 for i in range(start, stop):
7     print(i)
8
9 a = 5
10 if a > 5:
11     print("a is greater than 5!")
12 elif a == 5:
13     print("a is equal to 5!")
14 else:
15     print("a is not equal to 5 or greater than 5")
16
17
18
```

3.3 Week 3:

3.4 Key syntax

```
1 import (your library name here) # this imports a library, a library
2
```

4 I NEED HELP WHAT DO I DO!

A good reference guide to python syntax and concepts