



Highsted Knowledge Organiser

Computer Science: Python Programming (1) – Year 9 – Term 1

What I need to know

- The use of variables, inputs and operators
- The use of the 3 main programming constructs: –
 - Sequence
 - Selection
 - Iteration
- The use of Boolean operators in selection
- Identifying and fixing syntax and logic errors

Key Vocabulary

- Variable	- Input
- Sequence	- Selection
- Syntax error	- Logic error
- String	- Integer
- Boolean operators	- Float

Student reference point

Python	Description
<code>print("hello")</code>	Prints the value between the speech marks
<code>input (" ")</code>	Inputs/asks for a value/answer from the user
<code>x = input(" ")</code>	Assigns a string value from the user to x
<code>x = int(input(" "))</code>	Assigns an integer value from the user to x
<code>x = "words"</code>	Assigns the string value words to the variable x
<code>x = 5</code>	Assigns the integer value 5 to the variable x
<code>x = True</code>	Assigns the variable x as a Boolean data type to be either True or False
<code>x = 1.55</code>	Assigns the va
<code>print("Hello", "World!")</code>	Prints 2 strings joined together (concatenate) by a space, outputting "Hello World!"
<code>age = 12</code> <code>print ("Age is: " + str(age))</code>	Assigning an integer value to age but outputting it as a string by casting the type from integer to string and concatenating it with another string, then printing, "Age is 12"
<code>if name == "Alice":</code>	Checks that name is Alice, thus this condition is true
<code>else:</code>	If name isn't Alice, then the condition is false
Syntax error	Any grammatical error, any variable not defined
Logic error	Any error that is unexpected but the program still runs

Python Variables

```
1 age = 12
2 name = "Alice"
3 print (name , "is" , (str(age)))
```

Alice is 12

Input Function

String input

```
name = input("What is your name?: ")
```

What is your name?:

Sam

Integer input

```
age = int(input("What is your age?: "))
```

What is your age?:

14

Sequence

```
1 num1 = int(input("Enter number 1: "))
2 num2 = int(input("Enter number 2: "))
3 sum = num1 + num2
4 print("Sum of ", num1, "and" , num2, "is", sum)
```

Enter number 1: 12

Enter number 2: 32

Sum of 12 and 32 is 44

Selection

```
1 age = int(input("Enter your age: "))
2 if age >= 17:
3     print("You can drive a car")
4 elif age >=15:
5     print("You can have a provisional driving licence")
6 else:
7     print("You can't have either a provisional driving licence or drive a car")
```

Enter your age: 17

You can drive a car

Enter your age: 15

You can have a provisional driving licence

Enter your age: 14

You can't have either a provisional driving licence or drive a car

Challenge question

- Write a program to assign grades (A-D) to students based on their individual performance.

Suggested reading

- <https://www.w3schools.com/python/>



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Computer Science: Computer Systems – Year 9



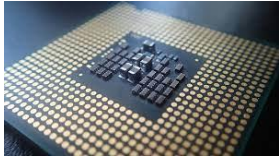
What I need to know




- What is a computer system
- What is an embedded system
- What are the input, output and storage devices of a computer system
- What is computer memory

Key Vocabulary

- Computer system	- Embedded system
- Input devices	- Output devices
- Storage devices	- RAM/ROM
- Accessibility devices	- Virtual memory

Student reference point

Computer Systems	Embedded Systems	Computer Processing Unit (CPU)	Factors affecting the CPU Performance
<p>A system that comprises of hardware and software that performs more than one task. e.g. desktop, laptops, smartphone</p> 	<p>A system that is built into other devices usually as control systems. They are designed to perform one task and is more efficient at that task. e.g. dishwasher, SATNAV, microwave</p> 	<p>The CPU is the core of the computer. It is responsible to perform all tasks of a computer.</p> 	<ul style="list-style-type: none"> - Number of cores – each core processes data independently but if there are more cores, more data can be processed at the same time. - Clock speed – it monitors how many instructions per second can the computer perform. The higher the clock speed the faster and more instructions can be performed. - Cache size – it is a storage in or close to the CPU. It stores frequently used data and instructions. The larger it is the more data it can hold for the CPU to process thus the faster the computer runs.

Input Devices	Output Devices	Storage Devices
<p>Input devices allow the user to enter/send a signal to the computer.</p> 	<p>Output devices send the signal/results to the user.</p> 	<p>Storage devices allow the user to save files and data for a long period of time to be accessed later.</p> 
ROM (Read Only Memory)	RAM (Random Access Memory)	Virtual Memory
<p>ROM is the computer's permanent, non-volatile memory. It stores data files required to start the computer called the BIOS. It has a very small capacity and it cannot be edited.</p>	<p>RAM is a temporary storage that stores currently in used data and files, that the CPU needs to process. It is volatile which means when the computer is turned off all the content is removed from the RAM unless it is saved to a permanent storage.</p>	<p>Virtual memory is used if the RAM is filled up. This is a temporary found on the hard disk. Data is moved to the virtual memory if it is not urgent then back to the RAM to be sent to the CPU. Virtual memory is slower than RAM as it is an additional storage medium.</p>

Challenge question

- What computer devices are there to help people with varied disability to access a computer?

Suggested reading

- <https://www.bbc.co.uk/bitesize/guides/zbfny4j/revision/1>