



## Highsted Knowledge Organiser

### Computer Science: Python Programming – Year 9

#### 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
- Iteration	- For loop
- Boolean operators	-

#### 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>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
<code>elif name == "Bob"</code>	Check if name is Bob after checking if it is Alice – elif is another option
<code>for i in range(0, 10):</code> <code>print i</code>	Repeats the code saying print 10 times – the condition to stop is it has to print 10 times first
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

#### 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

#### Iteration

```
1 count = 0
2 for i in range(0,10):
3     print(i, "hello")
4     count = count + 1
5 print("0-10 prints",count, "times the word hello then stops")
```

0 hello  
1 hello  
2 hello  
3 hello  
4 hello  
5 hello  
6 hello  
7 hello  
8 hello  
9 hello  
0-10 prints 10 times the word hello then stops

#### Challenge question

- Write a program to iterate the first 10 numbers and in each iteration, print the sum of the current and previous number.

#### Suggested reading

- <https://www.tutorialspoint.com/python3/index.htm>
- [https://www.w3schools.com/python/python\\_intro.asp](https://www.w3schools.com/python/python_intro.asp)

**What I need to know**

- What are mobile apps
- How to design a simple mobile app
- How to interact with the interface
- How to create a simple Tappy Tap App

**Key Vocabulary**

- Analysis	- Design
- Develop	- Debug
- GUI	- Selection
- Event driven	- Syntax error
- Iteration	- For loop

**Student reference point**

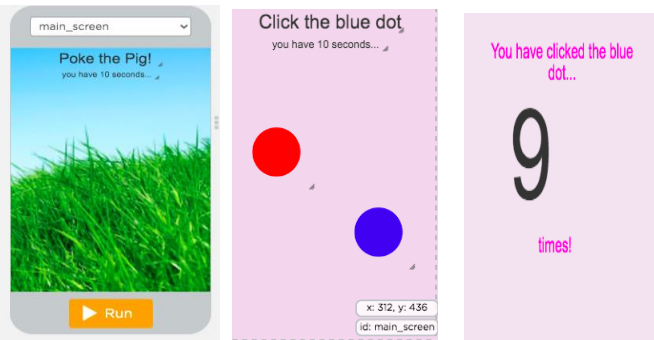
**Mobile Apps**

Applications that run on a 'mobile device'



**Graphical User Interface (GUI)**

The GUI is the screen which the user interacts with to access apps or programs on the device. The **Tappy Tap** app development GUI is a mobile device, a phone. It has a home screen, a game screen and a score screen for the user to use.



**Analysis:** Investigate the existing problem to find solutions

**Design:** Plan a new system or solution

**Development:** Code the new solution

**Test:** Run the code to see its outcome

**Debug:** Identify and fix errors in the code or solution

**Syntax error:** Code that the program can't understand and won't run

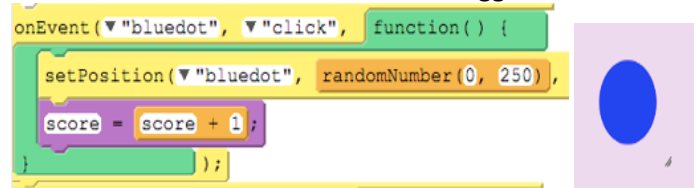
**Logic error:** Code that is incorrect but the program will still run with the wrong or unexpected outcome.

**Python Variables**



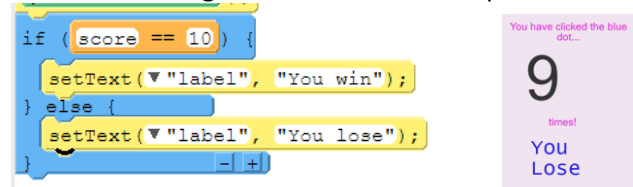
**Event Driven**

- How the user actions can be triggered



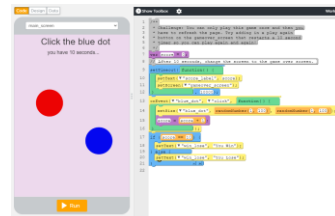
**Selection**

- Selecting from more than one option

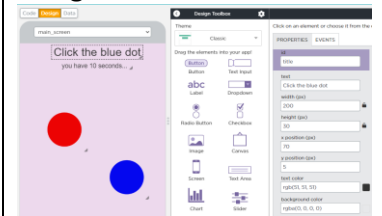


**Tappy Tap Interface**

**Code Section**



**Design Section**



**Challenge question**

- What makes a good mobile app for kids aged between 10 and 13 years old?

**Suggested reading**

- <https://www.codecademy.com/catalog/subject/mobile-development>
- <https://www.bbc.co.uk/bitesize/topics/zf2f9j6/articles/zxgq7ty>