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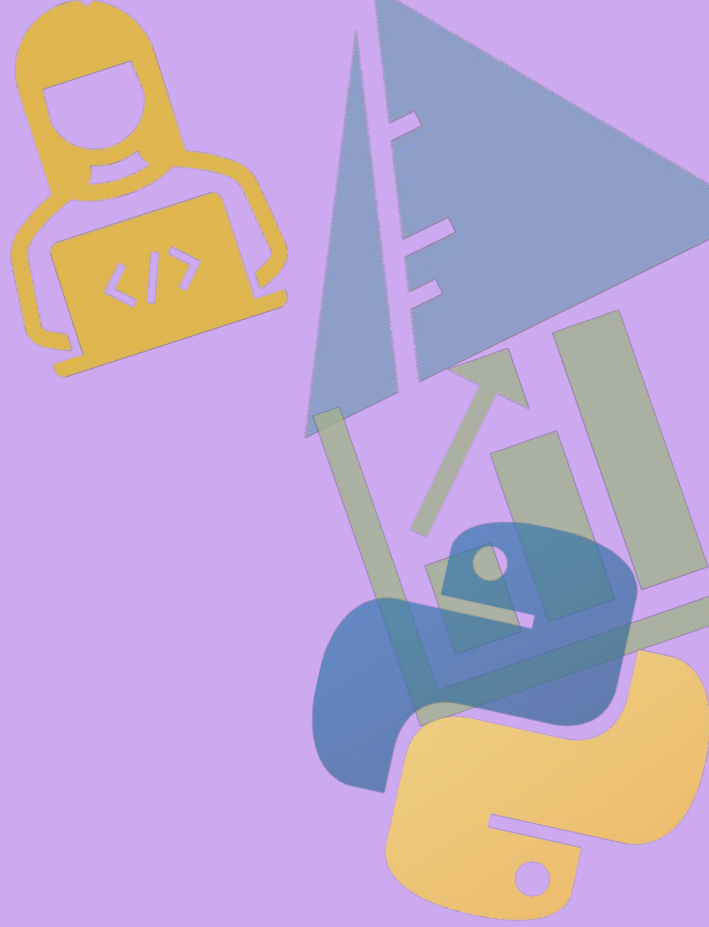
Flag Quiz

Level 1- Python



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Introduction

The flag of a country is a patriotic symbol that represents its belief, vision, core strength and even include the military associations.

Flags have existed as symbols since some thousands of years ago. The colours and symbols featured in the flags of all countries hold a specific philosophical, historical or any other specific meaning.

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Task

- Create a quiz on Flags, with help from the fun facts on the next slide and your own knowledge.

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Process

- ✔ Write an informative quiz using a mixture of your own knowledge and the fun facts displayed on the next few slides.
- ✔ Use a counter to keep score,
- ✔ Use for loops to print the quiz out for the reader.

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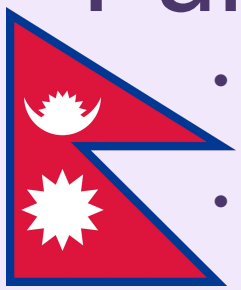
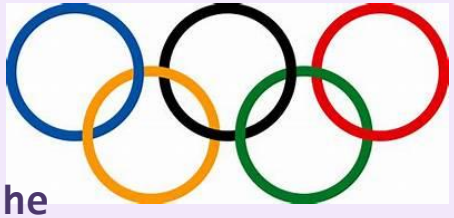
Fun Facts



- Nepal is the only country in the world that isn't in the shape of a rectangle
- Each of the five Olympic rings stands for the five continents linked together in friendship.



- Belize has the most colours on a flag in the whole world.
- A lion is the most popular animal to be put on flags.

- The flag of the United Kingdom is actually called the Union Jack.
- The Albanian flag contains a double-headed eagle.

- As of 2022 there are currently 254 countries in the world!
- The Canadian flag contains a maple leaf in the centre of it.

- The American flag contains three colours; red, white and blue.

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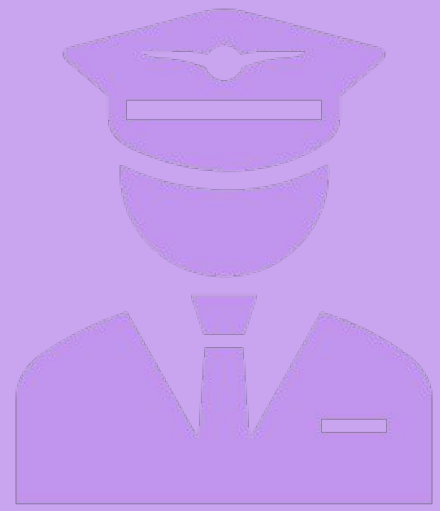

Subroutines

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Subroutines are sets of instructions designed to perform a frequently used operation within a program.

```
1
2 def greeting():
3     print("Hello World!")
4     print("How are you today?")
5
6
7 greeting()
8
```

```
Hello World!
How are you?
```

Subroutines can store code and will only be run when ‘called’.

There are two main types of subroutine: procedures and functions.

Procedures are not required to return a value, whereas functions must return a value.

Subroutines are great ways of writing more maintainable code and leads to more structured, organised and understandable programs.

Step 1

Creating the ‘Welcome’ subroutine

The quiz starts off with a subroutine to welcome the user into the flag quiz.

```
1 #Flag Quiz
2 #Subroutine to welcome the player
3 def Welcome():
4     print("Welcome to the Flag quiz!")
5     print("There are ten questions in this quiz")
6     print("Try to answer as many questions correctly as possible")
7     print("Be Careful, this quiz is case sensitive, so make sure each word begins with a capital letter.")
```

The subroutine is defined using the def() function along with the subroutine name ‘Welcome()’. The next few print statements then outline how the quiz works for the user.

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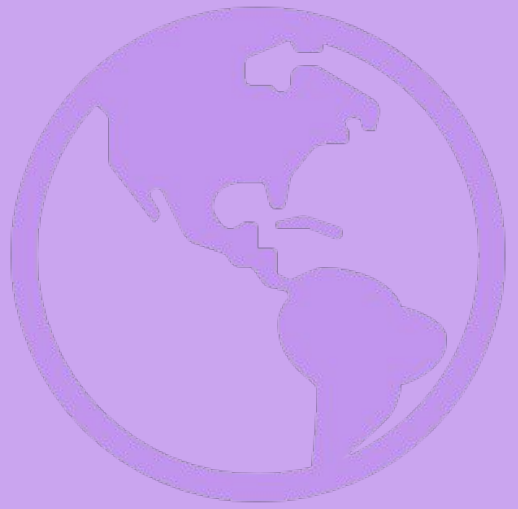

Arrays

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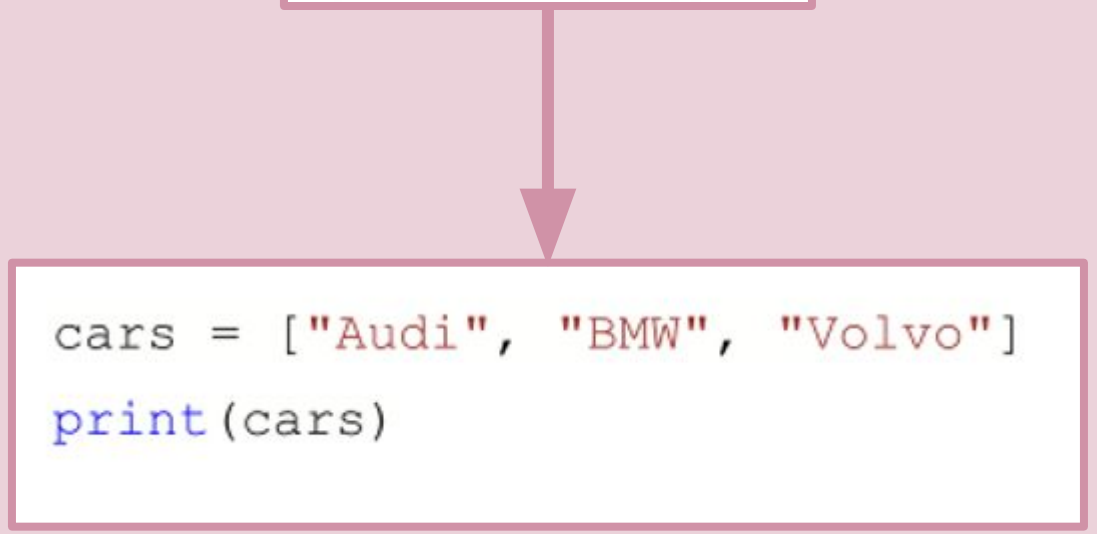
An array is a container which can hold a fixed number of items of the same type.

Each item stored in an array is called an element, and its index is the position where it is within the array

If you have a list of items (for example car names) storing the values individually means that it can be had to find a specific value (especially if you want to store 300 cars not 3)

```
car1 = "Audi"
car2 = "BMW"
car3 = "Volvo"
```



```
cars = ["Audi", "BMW", "Volvo"]
print(cars)
```

Step 2

Creating the questions and the score

Line 9 creates a counter variable named ‘score’ so that throughout the quiz the users score is counted ready to be displayed at the end.

```
8  #Score Variable put as a counter
9  score = 0
10 #List of Questions for the user to answer
11 Ques = ["1. Which countries flag has a Maple leaf on it? ",
12         "2. How many colours does the USA flag have?(3,4,2): ",
13         "3. Flags are always Rectangle, (T or F): ",
14         "4. How many rings are on the Olympic Flag? ",
15         "5. What is the flag of the UK called? ",
16         "6. Which of these colours isn't featured on the flag of India? Orange, Red, Blue, Green: ",
17         "7. How many flags are there in the world as of 2022?(203, 226, 254): ",
18         "8. Which countries flag has the most colours? ",
19         "9. Which countries flag depicts a double-headed eagle? ",
20         "10. What is the most popular animal to be put on flags? ",]
```

A array is then created which holds all of the questions that the quiz will display. Each item is separated with speech marks and a comma with the first and last item being opened and closed with a set of square brackets.

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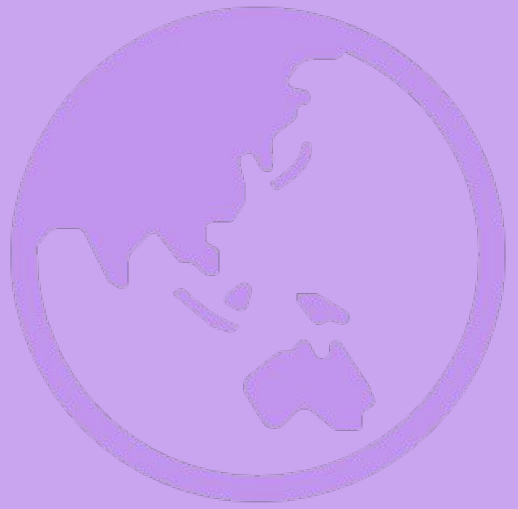

Step 3

Creating an array

Another array is created with the answers to each question in order. This has been done so that when we compare the values later on in the program the question and answer should match perfectly.

```
21 #Another list is created with the answers to each question in order
22 Ans = ["Canada",
23         "3",
24         "F",
25         "5",
26         "Union Jack",
27         "Red",
28         "254",
29         "Belize",
30         "Albania",
31         "Lion",]
```

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Loops

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A loop is a sequence of instructions that is continually repeated until a certain condition is reached.

In Python there are two main loops: ‘FOR Loops’ and ‘WHILE Loops’

While Loops are condition controlled and will repeat until their condition is false.

For loops are count controlled and will repeat a set number of times.

```
1
2  condition = True
3  while condition:
4      print("Repeating...")
5
6      print("Finish loop?")
7      finished = input()
8
9
10     if finished == "Y":
11         condition = False
12
```

```
Repeating...
Finish loop?
N
Repeating...
Finish loop?
N
Repeating...
Finish loop?
N
Repeating...
Finish loop?
Y
```

```
1
2  for i in range(5):
3      print(i)
4
5
```

```
0
1
2
3
4
```

Accessing elements in arrays

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u can refer to an array element using its index number (the number of the position that the element is in)

```
cars = ["Audi", "BMW", "Volvo"]

fcar = cars[0]
print(fcar)
```

To get the value of the first array item in this list:

- Use the square brackets []

For the first element, the index will be 0 (0 index in python means we don't start counting from one- so technically the 0^{th} element of the list rather than the 1^{st})

If we wanted to print the second element instead, 1 would go in the square brackets and so on

Step 4

Creating the main code

The subroutine ‘Welcome()’ has been called. A for loop is then used so that the program will run through the array called ‘Ques’ and display each question to the user one at a time.

```
32 #Start of the main code
33 Welcome()
34 for i in range(10):
35     userAns = input("Question "+ Ques[i])
36     if userAns == Ans[i]:
37         print("Correct!")
38         score = score + 1
39     else:
40         print("Not quite right this time! The correct answer is " + Ans[i])
41
42 print("Your final score is: ", score)
```

The users answer is then stored in the variable ‘userAns’. If the answer the user has given matches the answer in the ‘Ans’ array then 1 point is added to the counter, otherwise the other print statement pops up.

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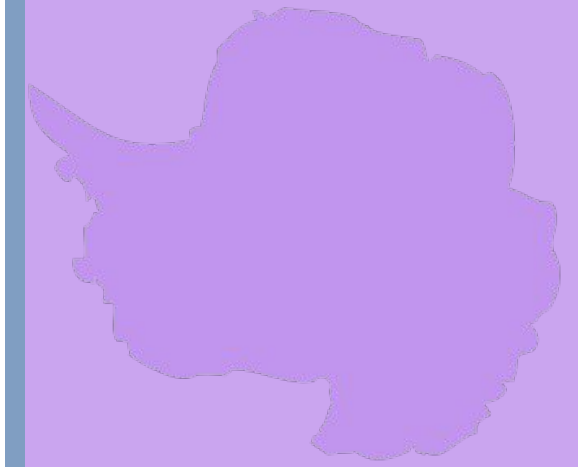

IF Statements

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```
1  print("Enter a number: ")
2  num = int(input())
3
4  if num == 10:
5      print("Number is equal to 10")
6
7  elif num > 10:
8      print("Number is greater than 10")
9
10 else:
11     print("Number is less than 10")
12
```

The IF statement is a decision-making statement that guides a program to make decisions based on specified criteria.

The IF statement executes one set of code if a specified condition is met (TRUE) or another set of code evaluates to FALSE.

```python
#Flag Quiz
#Subroutine to welcome the player
def Welcome():
    print("Welcome to the Flag quiz!")
    print("There are ten questions in this quiz")
    print("Try to answer as many questions correctly as possible")
    print("Be Careful, this quiz is case sensitive, so make sure each word begins with a capital letter.")
#Score Variable put as a counter
score = 0
#List of Questions for the user to answer
Ques = ["1. Which countries flag has a Maple leaf on it? ",
        "2. How many colours does the USA flag have?(3,4,2): ",
        "3. Flags are always Rectangle, (T or F): ",
        "4. How many rings are on the Olympic Flag? ",
        "5. What is the flag of the UK called? ",
        "6. Which of these colours isn't featured on the flag of India? Orange, Red, Blue, Green: ",
        "7. How many flags are there in the world as of 2022?(203, 226, 254): ",
        "8. Which countries flag has the most colours? ",
        "9. Which countries flag depicts a double-headed eagle? ",
        "10. What is the most popular animal to be put on flags? ",]
#Another list is created with the answers to each question in order
Ans = ["Canada",
       "3",
       "F",
       "5",
       "Union Jack",
       "Red",
       "254",
       "Belize",
       "Albania",
       "Lion",]
#Start of the main code
Welcome()
for i in range(10):
    userAns = input("Question "+ Ques[i])
    if userAns == Ans[i]:
        print("Correct!")
        score = score + 1
    else:
        print("Not quite right this time! The correct answer is " + Ans[i])

print("Your final score is: ", score)
```

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Conclusion

Learning outcomes:

- ✔ You should be able to use if statements,
- ✔ You should be able to define and call a subroutine,
- ✔ You should be able to create and access elements inside an array,
- ✔ You should be able to use a for loop.

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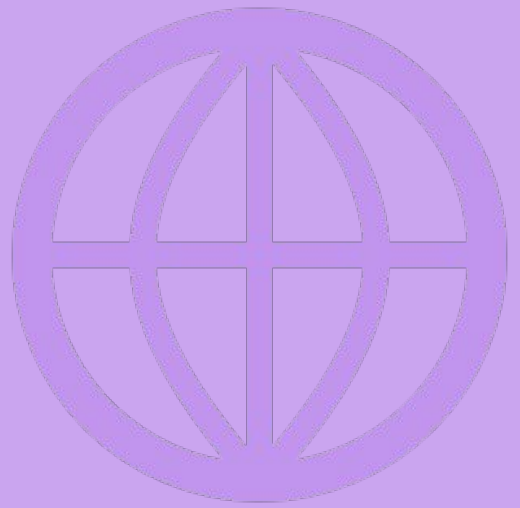

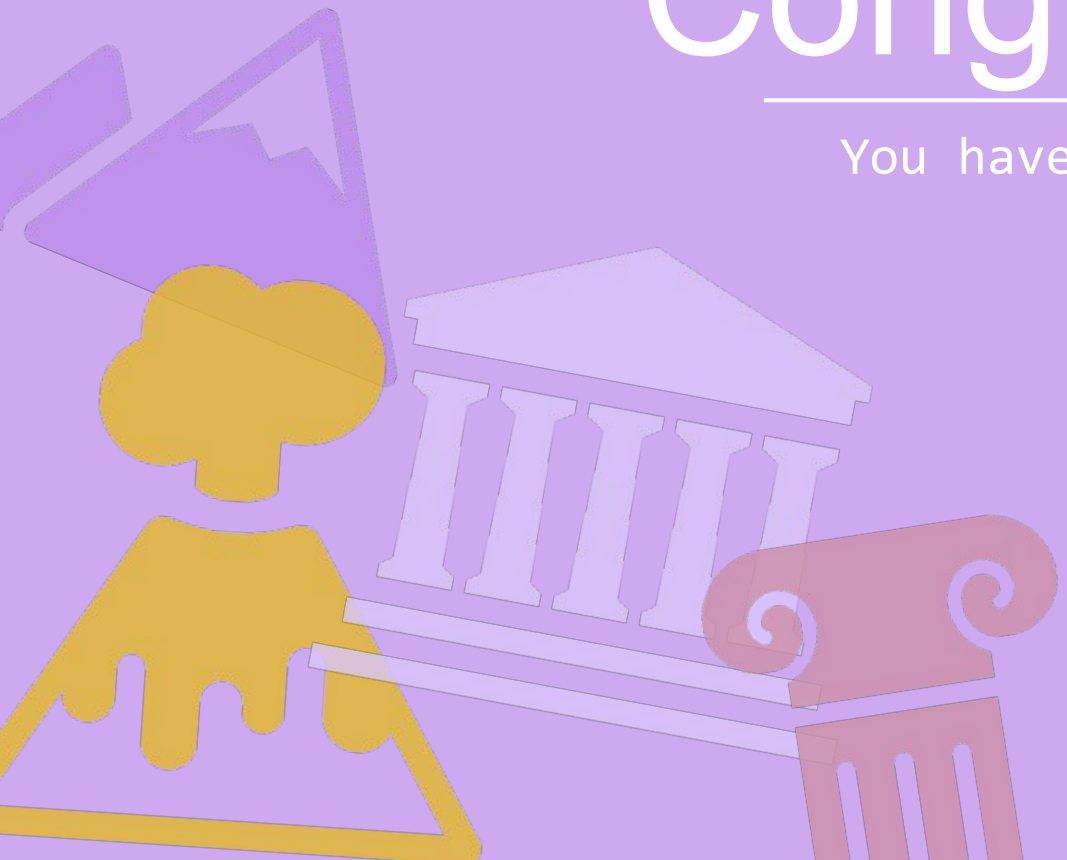

Congratulations!

You have created a flags quiz!

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