

Python Programming (Part 2)

Programming Loops

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Programming - Loops

Objectives

To understand the use of variables and prints statements.

To understand the use of conditional scripts (IF, ELIF & ELSE)

To understand the use of For Loops and While Loops

Outcomes

Time

Pupils will complete the following Python Tasks:

Task 1: While Loop Part 1

Task 2: While Loop Part 2

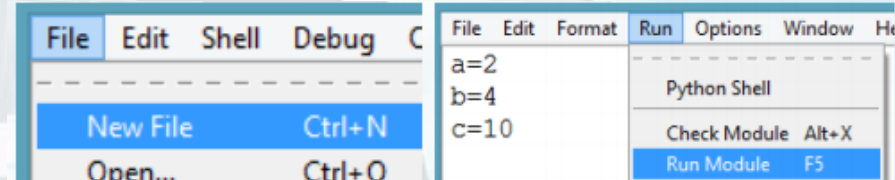
Task 3: While Loop Part 3

Extension: Phone Task

Task 1: While Loop Part 1



- 1) Click on **File >> New File**
- 2) Write the program below and then **Run Module**.



Enter the following script shown below. This script will allow you to enter 3 names into the **name list**.

```
attempt=0
name= []

while attempt <3:
    name.append(input("Input student name: "))
    attempt=attempt+1

for x in name:
    print("Name: "+(x))
```

Attempt starts at 0

1 is added to **attempt** every cycle of the loop.

0
1
2

Loop will stop when attempt is equal to 2 which is less than 3.

Task 2: While Loop Part 2

Enter the following script shown below. This script will loop 3 times allowing you to enter first and second names of three students into the appropriate lists.

```
attempt=0
firstname=[]
secondname=[]

while attempt <3:
    firstname.append(input("Input student's first name: "))
    secondname.append(input("Input student's second name: "))
    attempt=attempt+1

for x,y in zip(firstname,secondname):
    print("First Name: "+(x)+" "+"Second Name: "+(y))
```

Attempt starts at 0

1 is added to attempt every cycle of the loop.

For Loop will print of names of each student including first and second names.

Task 3: While Loop Part 3

```
attempt=0
name=[]
list1=[]
markone=0
mark1="false"

while attempt <3:
    print("Enter Student name and marks")
    name.append(input("Input student name: "))

    while mark1=="false":

        markone=int(input("Enter 1st mark mark into a list "))

        if markone <30:
            print("You have entered a valid mark")
            list1.append(markone)
            print("You have chosen to add "+str(markone)+" to your grade book")
            mark1="true"
        else:
            print("You have entered a invalid mark. Try again")

    print("-----")

    attempt=attempt+1
    mark1="false"

for x, y in zip (name, list1):
    print("Name "+(x)+" Mark: "+str(y))
```

Enter the following script shown below. This script will allow you to enter the names and marks for three students.

Loop restarts

Marks entered need to be below 30

Loop is broken when mark1 changes to true

1 is added to attempt every cycle of the loop.

For Loop will print of names of each student and their mark.

Extension: Phone Task

```
balance=10
option=0
loop="true"

seeptions=input("Would you like to see the phone topup options: Y for Yes or N for exit: ")
if seeptions=="Y" or seeptions=="y":

    while loop=="true":
        phone_option=["1. Balance", "2. Phone Topup","3. Data Topup"]
        for p in phone_option:
            print(p)
        try:
            option=int(input("Enter your option: "))
        except:
            print("You did not enter a number.")

        if option==1:
            print("You have chosen to check your balance:")
            loop="false"
            print("Your balance is: "+str(balance))

            seeptions=input("Would like to choose another option (Y for Yes): ")
            if seeptions=="Y" or seeptions=="y":
                loop="true"
            else:
                exit()

        elif option==2:
            print("You have chosen to topup your phone credit:")
            loop="false"

        elif option==3:
            print("You have chosen to topup your data:")
            loop="false"

        else:
            print("You can only enter the following options: 1-3")

    else:
        exit()
```

Enter the following script shown. This program will allow you select the following options:

- Phone Balance
- Phone Top-up
- Data Top-up

While and For loops have been used.

Extension Task

```
balance=10
option=0
loop="true"

seeptions=input("Would you like to see the phone topup options: Y for Yes or N for exit: ")
if seeptions=="Y" or seeptions=="y":

    while loop=="true":
        phone_option=["1. Balance", "2. Phone Topup","3. Data Topup"]
        for p in phone_option:
            print(p)
        try:
            option=int(input("Enter your option: "))
        except:
            print("You did not enter a number.")

        if option==1:
            print("You have chosen to check your balance:")
            loop="false"
            print("Your balance is: "+str(balance))

            seeptions=input("Would like to choose another option (Y for Yes): ")
            if seeptions=="Y" or seeptions=="y":
                loop="true"
            else:
                exit()

        elif option==2:
            print("You have chosen to topup your phone credit:")
            loop="false"

        elif option==3:
            print("You have chosen to topup your data:")
            loop="false"

        else:
            print("You can only enter the following options: 1-3")

    else:
        exit()
```

1. Add code to return to the options menu again for choices 2 & 3.
2. Add code to increase balance value based on input.
3. Add code to increase data value based on input.

Extension: Limit the user on the amount of top-up they can make.

Plenary – Refer to the Lesson Objectives

Objectives

To understand the use of variables and prints statements.

To understand the use of conditional scripts (IF, ELIF & EISE)

To understand the use of For Loops and While Loops

Plenary Task (Q&A)

1. Describe the use of variables in Python.
2. Describe the use of conditional scripts in Python.
3. Describe the use of loops in Python.