

Assignment 03: 02 Feb 2023

Q1. Explain with an example each when to use a for loop and a while loop.

Q2. Write a python program to print the sum and product of the first 10 natural numbers using for and while loop.

Q3. Create a python program to compute the electricity bill for a household.

- The per-unit charges in rupees are as follows: For the first 100 units, the user will be charged Rs. 4.5 per unit, for the next 100 units, the user will be charged Rs. 6 per unit, and for the next 100 units, the user will be charged Rs. 10 per unit, After 300 units and above the user will be charged Rs. 20 per unit.
- You are required to take the units of electricity consumed in a month from the user as input.
- Your program must pass this test case: when the unit of electricity consumed by the user in a month is 310, the total electricity bill should be 2250.

Q4. Create a list of numbers from 1 to 100. Use for loop and while loop to calculate the cube of each number and if the cube of that number is divisible by 4 or 5 then append that number in a list and print that list.

Q5. Write a program to filter count vowels in the below-given string.

string="I want to become a data scientist"

Q1. Explain with an example each when to use a for loop and a while loop.

Ans:

Parameter	For Loop	While Loop
Keyword	For	While
Use	Number of iterations already known.	No prior information on the number of iterations.
In absence of condition	Loop runs infinite times.	Display the compile time error.
Initialization Nature	Once done can't be repeated.	Repeat at every iteration.
Initialization in accordance with iteration	To be done at the start of the loop.	Can be done anywhere in the loop body.
Function used	Range function is used to iterate.	No such function is used in the while loop.
Generator Support	For loop can be iterated on generators in python.	While loop can't be iterated on Generators directly.
Speed	Faster	Slower
Syntax	sequence = [True, True] # Initialization for iterator_var in sequence: # Condition and Updation statements(s) # Body of loop	expression = True # Initialization while expression: # Condition statement(s) # Body of loop
	n = [1, 2, 3]	i = 1

example	for i in n: print(i)	while i < 3: print(i) i += 1
	#For loop will run infinite times a = [1] for i in a: print("Scaler") a.append(i)	#While loop will run infinite times while True: print("Hello")

Q2. Write a python program to print the sum and product of the first 10 natural numbers using for and while loop.

Ans:

#sum of first 10 natural no.

```
n=int(input("Enter number : "))
```

```
sum=0
```

```
i=1
```

```
while i<=n :
```

```
    sum = sum + i
```

```
    i=i+1
```

```
print(sum)
```

#product of first 10 natural no.

```
n=int(input("Enter number : "))
```

```
product=1
```

```
i=1
```

```
while i<=n :
```

```
    product = product * i
```

```
    i=i+1
```

```
print(product)
```

Q3. Create a python program to compute the electricity bill for a household.

- The per-unit charges in rupees are as follows: For the first 100 units, the user will be charged Rs. 4.5 per unit, for the next 100 units, the user will be charged Rs. 6 per unit, and for the next 100 units, the user will be charged Rs. 10 per unit, After 300 units and above the user will be charged Rs. 20 per unit.
- You are required to take the units of electricity consumed in a month from the user as input.
- Your program must pass this test case: when the unit of electricity consumed by the user in a month is 310, the total electricity bill should be 2250.

Ans:

```
unit=int(input("Enter consumption of your electricity unit: "))
```

```
if unit <= 100 and unit > 0 :
```

```
    unit=unit * 4.5
```

```
    print("cost of inputting <= 100 unit is ", unit)
```

```
if unit <= 200 and unit > 100 :
```

```
unit = 450 + (unit- 100) * 6
print("Cost of inputting unit<=200 && unit>100 is ", unit)
if unit <=300 and unit > 200 :
    unit = 450 + 600 + (unit - 200)* 10
    print("Cost of inputting unit<=300 && unit>200 is ",unit)
else :
    unit = 450 + 600 + 1000 + (unit - 300)*20
    print("Cost of inputting unit>300 is ",unit)
```

Q4. Create a list of numbers from 1 to 100. Use a for loop and while loop to calculate the cube of each number and if the cube of that number is divisible by 4 or 5 then append that number in a list and print that list.

Ans:

```
# Initializing list
l = [1, 2, 3, 4 ,5 ,10]

# Cube List using loop
res = []
for i in l:
    res.append(i*i*i)
if (i*i*i) % 5 == 0 :
    res.append(print(res))
```

Q5. Write a program to filter count vowels in the below-given string.

string="I want to become a data scientist"

Ans:

```
# Function to count vowel
def vowel_count(str):
    count = 0
    # Creating a set of vowels
    vowel = set("aeiouAEIOU")
    # Loop to traverse the alphabet in the given string
    for alphabet in str:
        if alphabet in vowel:
            count = count + 1
    print("No. of vowels :", count)
# Driver code
str = "I want to become a data scientist"
# Function Call
vowel_count(str)
```