Python

Assignment Questions

Assignment

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

1. For loop: A for loop is a control flow statement that executes code repeatedly for a particular number of iterations. In this control flow statement, the keyword used is for. The for loop is used when the number of iterations is already known.

The for loop has two parts:

- Header: The header part specifies the iteration of the loop. In this part, the loop variable is also declared, which tells the body which iteration is executed.
- Body: This part contains the statement executed per iteration.

Let's see the flow of the for loop:

- Initialise the starting value
- Check that the starting value is less than the stopping value.
- While loop: A loop that executes a single statement or a group of statements for the given true condition. The keyword used to represent this loop is "while". A "while" loop is used when the number of iterations is unknown. The statement repeats itself till the boolean value becomes false. In a while loop, the condition is tested at the start, also known as the *pre-test loop*. Let's see the flow of the while loop:
- Initialise the starting value
- Check that the starting value is less than the stopping value.
- Execute the statement.
- Increment the starting value. Let's see how the while loop works.

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

While loop:

```python
num = int(input("Enter a number: "))


if num < 0:

    print("Enter a positive number")
```

```python
    else:

        sum = 0


        while(num > 0):

            sum += num

            num -= 1

        print("The sum is",sum)
```

For loop:

```python
num = int(input("Please enter the number: "))


sum = 0


for value in range(1, num + 1):

    sum = sum + value


print(sum)
```

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.

```python
unit = int(input("Enter your unit: "))

if unit <= 100:

    bill = unit * 3.46

elif unit >= 101 and unit <= 300:

    bill = 346 + ((unit - 100) * 7.43)

elif unit >= 301 and unit <= 500:

    bill = 346 + 1486 + ((unit - 300) * 10.32)
```

```
else:

    bill = 346 + 1486 + 2064 + ((unit - 500) * 11.71)

print("Bill Per Unit:",bill)

bill = bill + (unit*1.45)

print("Bill after adding Line rent:",bill)

bill = bill + 100

print("Bill after adding Meter rent:",bill)

bill = bill + (bill*0.16)
print("Total Bill after adding tax:",bill)
```

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"

 Note: Create your assignment in Jupyter notebook and upload it in GitHub & share that github   repository
 link through your dashboard.

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