1. explain with an example each when to use a for loop and a while loop.

ANSWER =

for loop is used when you know the loop should execute n times but while loop is used when asking for user input.

EXAMPLE =

```
for i in range(1,11):
    print(i)

i=1
while i<=10:
    print(i)
    i+=1
```

2. write a program to print the sum and product of the first 10 natural numbers using while and for loop.

ANSWER =

```
i=1
sum=0
product=1
while i<=10:
   sum=sum+i
   product=product*i
   i+=1
print(sum)
print(product)



sum=0
product=1
for i in range(1,11):
   sum=sum+i
   product=product*i
print(sum)
print(product)
```

3. create a python program to compute the electricity bill for a household
the per unit charge in rupees are as follows:
for the first 100 unit the user will be charged rs 4.5 per unit, the user will be charged rs 6 per unit for the next 100 units, and for the next 100 units the user will be charged rs 10 per unit , after 300 units and above the user will be ch arged rs 20 per unit. you are required to take the units of electricity consumed in a month from the user as input. you r program must pass this test case: when the unit of electricity consumed by the user in a month is 310 the total electr

icity bill should be 2250.

ANSWER =

```
unit=int(input("enter the units"))
if unit<=100:
    bill=unit*4.5
    print(bill)
elif unit>100 and unit<=200:
    bill=100*4.5+(unit-100)*6
    print(bill)
elif unit>200 and unit<=300:
    bill=100*4.5+(200-100)*6+(unit-200)*10
    print(bill)
elif unit>300:
    bill=100*4.5+(200-100)*6+(300-200)*10+(unit-300)*20
    print(bill)
```

4. 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.

ANSWER =

```
print("Hello world")
l=[]
for i in range(1,101):
    l.append(i)
l1=[]
for i in l:
    l1.append(i**3)
l2=[]
for i in l1:
    if i%4==0 or i%5==0:
        l2.append(i)
print(l2)
```

5. write a program to filter count vowels in the below given string.
string="I want to become a data scientist"

ANSWER =

```
string="I want to become a data scientist"
str_lower=string.lower()
vowels="aeiou"
```

```
count=0
for x in str_lower:
    if x in vowels:
        count+=1
print(count)
```