Loop Statements (for,while)

Statements	Syntax	Example	Meaning
while	while (Condition): statement(s)	count = 0 while (count < 3): count = count+1 print("Hello Bennettians") **Output:** Hello Bennettians Hello Bennettians Hello Bennettians	while loop is used for iterators
for	for iterator_var in sequence: statements(s)	l = ["bennett", "for", "bennettians"] for i in l: print(i) **Output:** bennett for bennettians	for can be used to iterate over iterators and a range.

nested-for	for iterator_var in sequence:
	for iterator_var in sequence:
	statements(s)
	statements(s)
		for i in range(1, 5):
		for j in range(i):
		print(i, end=' ')
		print( )
		Output:
		1
		2 2
		3 3 3
		4 4 4 4
			Python programming language allows to use for loop inside another for loop.

nested-while	while expression:
	while expression:
	statement(s)
	statement(s)
		i = 1
		j = 5
		while i < 4:
		while j < 8:
		print(i, ",", j)
		j = j + 1
		i = i + 1
		Output:
		1 , 5
		2 , 6
		3 , 7
			Python programming language allows to use while loop inside another while loop.

1. Predict the output:

```
count = 0
while True:
   print("Bennett")
   print(count +=1)
```

2. Predict the output:

```
num = 10
while num > 6:
   print(num)
   num = num-1
   print(num)
print("Loop End")
```

3. Predict the output:

```
sum = 0
for val in range(1, 6):
        sum = sum + val
print(sum)
```

4. Print the following pattern

```
*
* *
* * *
* * * *
* * * * *
```

5. Write a program using while loop to generate the first 10 natural numbers and their sum.

6. Program to find prime numbers in a given range using for loop: (*range 25 to 50*)

E.g., 8 is not a Prime Number because it can be made by 2×4 = 8
31 is a Prime Number because no other whole numbers multiply together to make it.

Prime numbers between 25 and 50 are:
29
31
37
41
43
47

7. Write a Program to Print the Fibonacci sequence, using loop

Note: In mathematical terms, the sequence F_n of Fibonacci numbers is defined by the
$F_n = F_{n-1} + F_{n-2}$
with
$F_0 = 0$ and $F_1 = 1$.

Input: How many terms? (e.g., 7)
Output: Fibonacci sequence: 0 1 1 2 3 5 8

8. Write a program to take the input from user (*e.g., num = 5*), and compute the factorial.

9. Write a Python program to find the sum of the following series for the given values of *x* and *n*. (*input x = 2, n = 5*)

sum = *1 + x + x^2 / 2 + x^3/3 + ... + x^n/n*

Control Statements (Continue,Break,Pass)

Statements	Example	Meaning

Continue	for char in 'Pythn':
	if (char == 'y'):
	continue
	print("Current character: ", char)
	Output:
	Current character: P
	Current character: t
	Current character: h
	Current character: n
		When the program encounters continue statement, it will skip the statements which are present after the continue statement inside the loop and proceed with the next iterations.

break	for char in 'Python':
	if (char == 'h'):
	break
	print("Current character: ", char)
	Output:
	Current character: P
	Current character: y
	Current character: t
		The break statement is used to terminate the loop containing it, the control of the program will come out of that loop.

pass	for char in 'Python':
	if (char == 'h'):
	pass
	print("Current character: ", char)
	Output:
	Current character: P
	Current character: y
	Current character: t
	Current character: h
	Current character: o
	Current character: n
		Pass statement is python is a null operation, which is used when the statement is required syntactically.

1. Predict the output:

```
for num in [20, 11, 9, 66, 4, 89, 44]:
        if num%2 == 0:
        continue
        print(num)
```

2. Given a list iterate it and display numbers which are divisible by 5 and if you find number greater than 150 stop the loop iteration

list1 = [12, 15, 32, 42, 55, 75, 122, 132, 150, 180, 200]

Output:
15
55
75
150

3. Predict the output

```
s = "bennett"
for i in s:
    if i == 'n':
        print('Pass executed')
        pass
    print(i)
```

4. Predict the output

```
for i in range(4):
    for j in range(4):
        if j==2:
            break
        print("The number is ",i,j);
```

5. Predict the output

```
my_list = ['C/C++', 'JAVA', 'Python', 'Lisp', 'Ruby', 'Python']
i = 0

while True:
    print(my_list[i])
    if (my_list[i] == 'Python'):
        print('Found the name Python')
        break
        print('After break statement')
    i += 1

print('After while-loop exit')
```

6. Fill in the black (i.e., ??, here), and also predict the output.

```
for n in range(2, 10):
  for x in range(2, n):
         if n % x == 0:
                  print(n, 'equals', x, '*', n//x)
                  break
         else:
              print(n, 'is a ?? number')
```

7. Program to calculate the sum of 4 numbers, and calculate sum until user enters positive numbe