LAB # 06

NESTED STATEMENTS, BREAK AND CONTINUE STATEMENTS

OBJECTIVE

Working on nested statements and control loop iteration using break and continue.

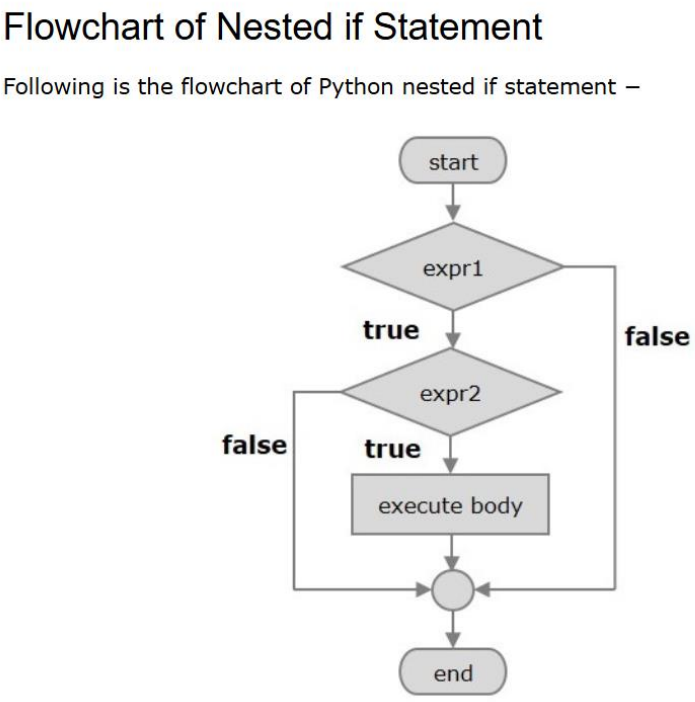
THEORY

Nested Statements:

A Nested statement is a statement that is the target of another statement.

Nestedif:

A Nested ***if*** is an ***if*** statement that is the target of another ***if*** statement.
Nested ***if*** statements mean an ***if*** statement inside another ***if*** statement.



Syntax:

```
if (condition1):
  # Executes when condition1 is true
    if (condition2):
      # Executes when condition2 is true
    # if Block is end here
# if Block is end here
```

LAB # 06

Example:

```
# The Magic Number Checker
num = int(input("Enter a number to test your luck: "))
print("You chose:", num)

if num % 2 == 0:
    if num % 3 == 0:
        print("✨ Wow! Your number is divisible by both 2 and 3! ✨")
    else:
        print("Almost magic! Divisible by 2 but not by 3.")
else:
    print("Hmm... not even divisible by 2!")
```

Output:

```
>>> %Run Lab_06.py

Enter a number to test your luck: 9
You chose: 9
Hmm... not even divisible by 2!
....The magic test is complete....
>>>
```

Example:

```
# Car Wash Queue System
car_number = int(input("Enter your car number: "))
if car_number % 2 == 0:
    if car_number % 3 == 0:
        print("Go to Wash Bay 6 (special combo wash).")
    else:
        print("Go to Wash Bay 2 (even-number wash).")
else:
    if car_number % 3 == 0:
        print("Go to Wash Bay 3 (triple wash).")
    else:
        print("Go to Wash Bay 1 (standard wash).")
```

Output:

```
>>> %Run Lab_06.py

Enter your car number: 15
Go to Wash Bay 3 (triple wash).
>>>
```

LAB # 06

Nested loops:

Nested loops consist of an outer loop and one or more inner loops.
Each time the outerloop repeats, the inner loops are reinitialized and start again.

Example:

```
for i in range(1, 6):
    for j in range(i):
        print(j, end=' ')
    print()
```

Output:

```
>>> %Run Lab_06.py
0
0 1
0 1 2
0 1 2 3
0 1 2 3 4
>>>
```

Example:

```
for i in range(4, 0, -1):      # i = 4, 3, 2, 1
    for j in range(i):          # print i, i times
        print(i, end=' ')
    print()                     # move to the next line '"
```

Output:

```
>>> %Run Lab_06.py
4 4 4 4
3 3 3
2 2
1
>>>
```

LAB # 06

Example:

```
# Example: rows square of stars

rows = int(input("Enter number of rows: "))
for i in range(rows):
    for j in range(rows-1):
        print("*", end=" ")
    print()
```

Output:

```
>>> %Run Lab_06.py

Enter number of rows: 5
* * * *
* * * *
* * * *
* * * *
* * * *
>>>
```

LAB # 06

EXERCISE

A. Point out the errors, if any, and paste the output in the following Python programs.

1. Code

```
x = 'abcd'
for i in range(len(x))
    for j in range(i+1):
        print(x[j], end=" ")
    print()
```

2. Code

```
x = 'abcd'
for i in range(len(x)):
for j in range(i):
    print(x[j], end=" ")
print()
```

3. Code

```
x = 'abcd'
for i in range(len(x)):
    for j in range(len(y)):
        print(x[j], end=" ")
    print()
```

LAB # 06

B. What will be the output of the following programs:

1. Code

```
# Input dynamic range
n = int(input("Enter the number up to which you want to check
Even/Odd: "))

for i in range(1, n + 1):       # Outer loop for numbers
    for j in range(1):           # Inner loop (demonstration
of nested loop)
        if i % 2 == 0:
            print(i, "is Even")
        else:
            print(i, "is Odd")
```

2. Code

```
# Input number of terms
n = int(input("Enter the number of Fibonacci terms: "))

a, b = 0, 1
print("Fibonacci Series:", end=" ")
for i in range(n):           # Outer loop for number of terms
    for j in range(1):       # Inner loop for demonstration
        print(a, end=" ")
        c = a + b
        a = b
        b = c
print()
```

LAB # 06

3. Code

```
# Input range for prime numbers
n = int(input("Enter the number up to which you want to print
prime numbers: "))

print("Prime numbers up to", n, "are:")
```

C. Write Python programs for the following:

1. Write a program to add first seven terms twice of the following series:

$$\frac{1}{1!}+\frac{2}{2!}+\frac{3}{3!}+\cdots$$

2. Write a program to print all prime numbers from 900 to 1000.
   [Hint: Use nested loops, break and continue]

3. Write a program to display multiplication table (1-5) using nested looping
   Sampled output: [hint: '{ } ' .format(value)]
   02 X 01 = 02