Introduction to Python

The `range` function specifies a range of integers:

- range(**start**, **stop**)   - the integers between **start** (inclusive)
                                      and **stop** (exclusive)

- It can also accept a third value specifying the change between values.
    - range(**start**, **stop**, **step**) - the integers between **start** (inclusive)
                                               and **stop** (exclusive) by **step**

- Example:
```
for x in range(5, 0, -1):
    print x
print "Blastoff!"
```

Output:
```
5
4
3
2
1
Blastoff!
```

- **Exercise:** How would we print the "99 Bottles of Beer" song?

Loops

- Write a python program to take input of a number that is greater than or equal to 6 from a user, then print a countdown from that number to one.
- Take an integer as input and print its multiplication table using a while loop.
- Write a program that calculates and prints the sum of all even numbers from 1 to a given number using a while loop.
- Write a program that checks if a given number is prime using a while loop.
- Print all even numbers between 1 and 20 using a for loop.
- Write a Python program that uses a for loop to calculate the sum of all even numbers from 1 to 20 (inclusive). Print the result.
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Write a Python program that takes a student's score as input (an integer between 0 and 100) and prints the corresponding letter grade based on the following grading scale:

- A: 90-100
- B: 80-89
- C: 70-79
- D: 60-69
- F: 0-59

Your program should display an error message if the entered score is outside the valid range (less than 0 or greater than 100).

Loops

```
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```

Write a program to print the following pattern using nested for loops:

Loop Control Statement

break	Jumps out of the closest enclosing loop
continue	Jumps to the top of the closest enclosing loop
pass	Does nothing, empty statement placeholder

Assignments

- Write a program to generate and print the Fibonacci sequence up to a specified number using a while loop.
- Write a Python program that uses a for loop to calculate the sum of all even numbers from 1 to 100 (inclusive). Print the result.
- Write a Python program that takes two integers as input, stores them in variables, and then swaps the values of these variables without using a temporary variable.
- Print all leap years between 2000 and 2020 using a for loop.
- Write a Python program that computes the factorial of an integer.
- Explain the following code with a flow diagram:
  - ```
    y=0
    while(y<10):
      y = y/2 + 1
      print("value of y inside loop: ", y)
      print("I am inside circle")
    print("I am outside circle. My value is:", y)
    ```

The End