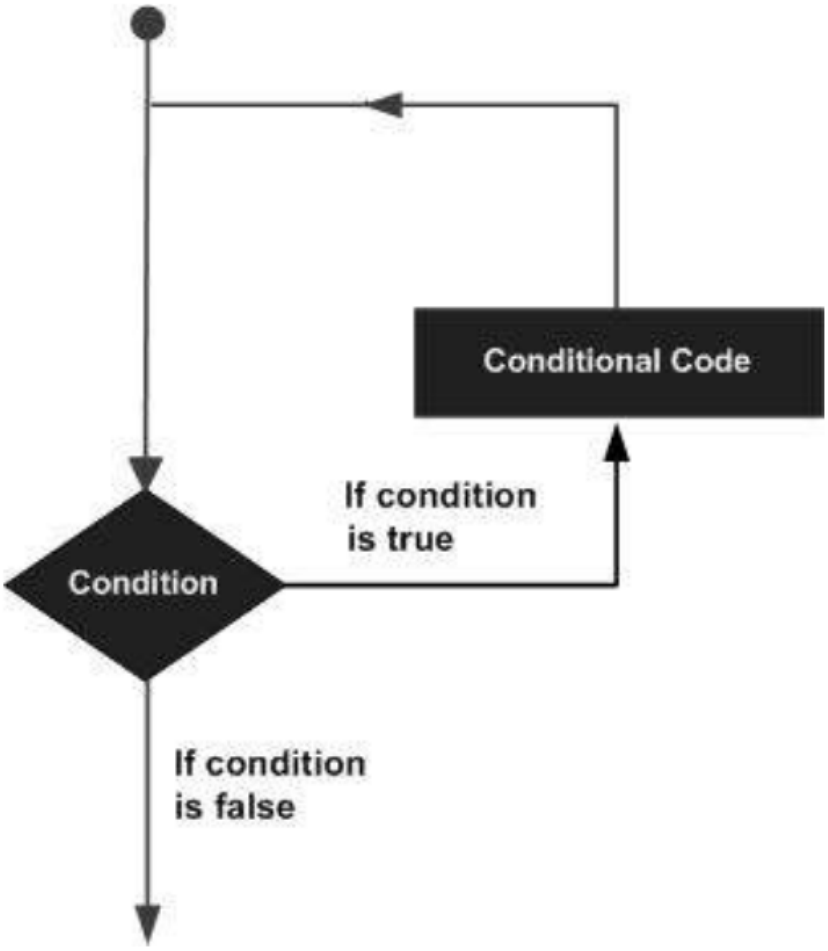
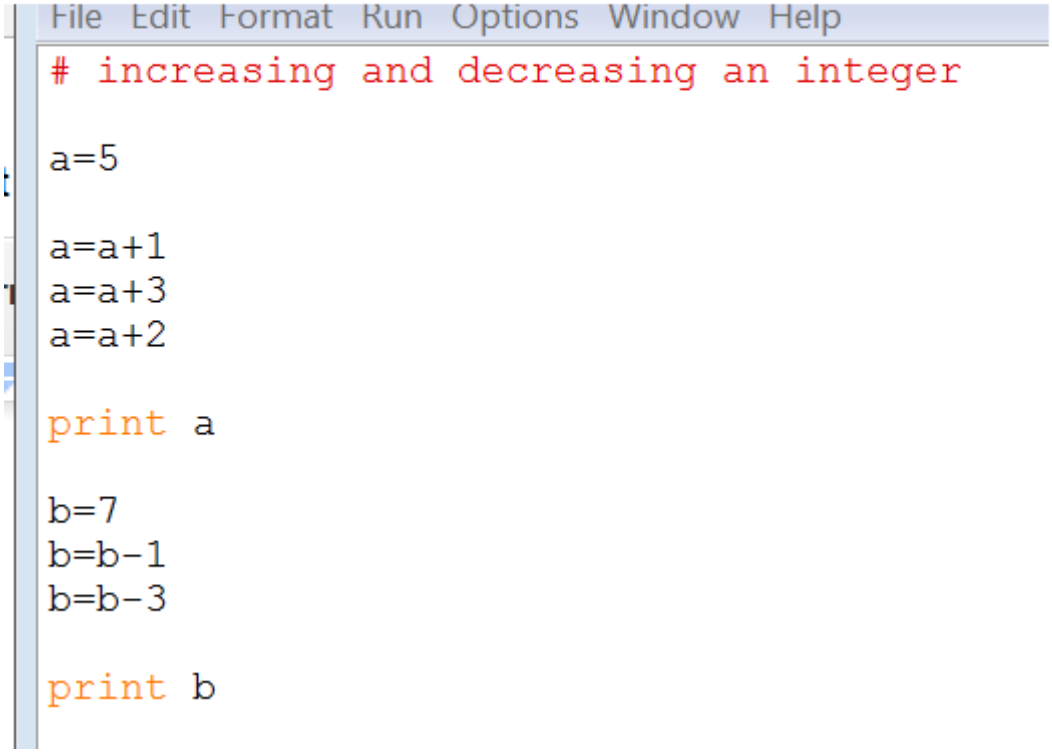
Loops allow you to run same code many times, this is the flow diagram for loops:




Before using loops we need to understand how to increase the value of an index:

**Computer Experiment 1**




Run the above program a few times, each time change the value of a,b, and some numbers.

For Loops

**Computer Experiment 2**

This is how a for loop works:

```
n=10
for n in range(10,20):
    print n
    n=n+1


print'end of loop'
```

Run this program a few times, and for each run change the values in inside the bracket, and sometimes the number added to n.

**Exercise 1**

Write a program where the loop runs from 20 to 10 and print these value.

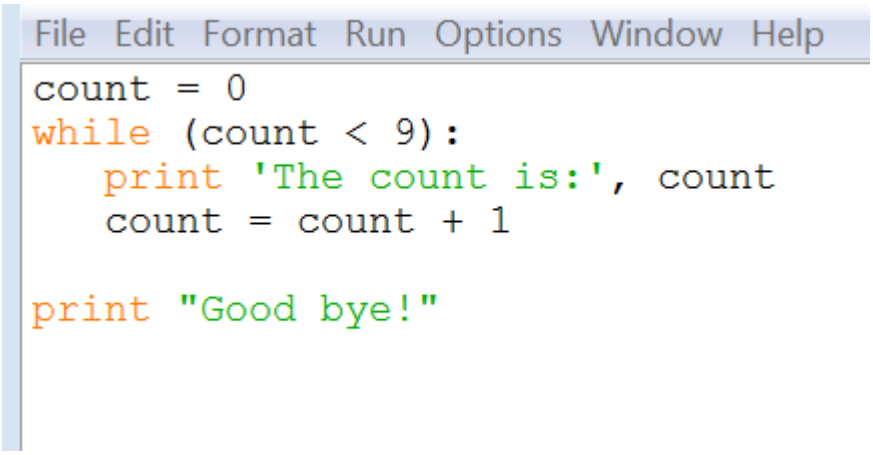
**Exercise 2**

Write a program where the user enter a number between 10 and 100. A loop runs between 1 and the value entered. Using % remainder print out all the factors of that number.

**Exercise 2a**

Modify the above program using conditional statements inside a loop, to determine if the enter number is a prime number. **Hint** design the program first using a flow diagram.

**While loops:**
While loops depend on a condition see the following program:




**Computer Experiment 3**
Run the above program change the starting value of count, and the number 9, and run a few times.

**Exercise 3**
Write a program where a user enters a number n. The program prints the sentence “tell me why I don’t like mondays?” n times. Can the program be written using both types of loops?

**Exercise 4**
Write a program where the user enters their full name, and a letter. The program counts the number of times the chosen letter is in the name. Hint you will need to use the len(string) statement. There is more than one way to write this program.