Training Report Day-10

17 June 2024

❖ Loops in python:-

Loops are important in Python or in any other programming language as they help you to execute a block of code repeatedly. You will often come face to face with situations where you would need to use a piece of code over and over but you don't want to write the same line of code multiple times.

In Python we have mainly two different types of loops:

- for loop : In the context of most data science work, Python for loops are used to loop through an iterable object (like a list, tuple, set, etc.) and perform the same action for each entry. For example, a for loop would allow us to iterate through a list, performing the same action on each item in the list.

- While loop: The while loop is somewhat similar to an if statement, it executes the code inside, if the condition is True. However, as opposed to the if statement, the while loop continues to execute the code repeatedly as long as the condition is True.

✓ for loops:-

A for loop acts as an iterator in Python; it goes through items that are in a *sequence* or any other iterable item. Iterable is an object, which one can iterate over. Objects that we've learned about that we can iterate over include strings, lists, tuples, and even built-in iterables for dictionaries, such as keys or values.

Examples:-

```
for i in range(1,11):
  print(i)
list1=[1,2,3,4]
# list1[0]
for i in range(0,len(list1)):
  print(list1[i])
list1=[1,2,3,4]
```

```
for i in list1:
  print(i)
num=int(input('Enter a number: '))
if num==0:
  print(1)
elif num==1:
  print(1)
else:
  fact=1
  for i in range(1,num+1):
    fact=fact*i
print(fact)
```

The variable name used for the item is completely up to the coder, so use your best judgment for choosing a name that makes sense and you will be able to understand when revisiting your code. This item name can then be referenced inside your loop, for example if you wanted to use if statements to perform checks.

✓ While Loops:-

The while statement in Python is one of the most general ways to perform iteration. A while statement will repeatedly execute a single statement or group of statements as long as the condition is true. The reason it is called a 'loop' is because the code statements are looped through over and over again until the condition is no longer met.

Example:-

```
x = 0
while x < 10:
  print('x is currently: ',x)
  # print('x is still less than 10, adding 1 to x')
  x=x+1
x = 0
while x < 5:
  print('x is currently: ',x)
  print(' x is still less than 10, adding 1 to x')
```

```
  x+=1
print("All done")
print("I am done with the iterations")
```

- break, continue, pass:-

Break:-

```
for / while loop:
    # statement(s)
    if condition:
        break
    # statement(s)
# loop end
```

Continue:-

```
for / while loop:
   # statement(s)
   if condition:
      continue
   # statement(s)
```

Pass:-

```
function/ condition / loop:
   pass
```