1. Iterating over Sequences: using for Loop

1.1 For loop is used to construct definite loops, that is it iterate once for each element in a specified sequence of elements.

Syntax:

for k in sequence:

> suite

Variable k is referred to as a Loop Variable.

For loop can be applied to all the three sequences: Lists, Tuples and Strings.

```
list1 = [11,21,33]
# for loop will print all the elements in the list one by one
for k in list1:
  print(k)
```

```
11
21
33
```

```
list1 = [11,21,33]
# for loop will print all the elements in the list one by one
for k in range(3):
  print(k,":",list1[k])
```

```
0 : 11
1 : 21
2 : 33
```

1.2 else in for/while Loop

Loop statements in python may have an else clause.

It is executed when the loop terminates through exhaustion of the iterable (with for) or when the condition becomes false (with while), but not when the loop is terminated by a break statement.

```
list1 = [2, 5, 3, 6]
for var in list1:
  print(var)
else:
  print('I am here because I have iterated through all the complete list')
```

```
2
5
3
6
I am here because I have iterated through all the complete list
```

Statements inside else clause will not execute when the loop terminates by a break statement.

```
for var in range(1,15):
  if var > 10:
       print(var)
       break
else:
  print(var, 'value is never greater than 10')
```

```
11
```

1.3 Built-in Function: Range

Range function generates a sequence of integers.

Note that Range function do not create a sequence. It produces next item of the sequence when required. In this way it does not required

1.3.1 Creates a sequence from 0 till (given_argument-1) . Last value will be given argument - 1

As only one argument is given to range function, so by default list started with value 0.

```
range(5)
```

```
range(0, 5)
```

```
# Prints numbers from 0 to 4 generated by function range(5)
for i in range(5):
  print(i)
```

```
0
1
2
3
4
```

1.3.2 Creates a sequence from first argument given till (second_argument-1).

```
range(2,5)
```

```
range(2, 5)
```

```
# Prints numbers from 2 to 4 generated by function range(2,5)
for i in range(2,5):
```

```
  print(i)
```

```
2
3
4
```

1.3.3 Creates a sequence from first argument given till (second_argument-1) with a step size given in third argument.

By default third argument is 1

```
range(1,11,3)
```

```
range(1, 11, 3)
```

```
# Prints numbers from 1 to 11 with a step value of 3
for i in range(1,11,3):
  print(i)
```

```
1
4
7
10
```

Assignment

1.Write a Python program to print all even numbers from a given numbers list in the same order and stop the printing if any numbers that come after 237 in the sequence.

Sample numbers list :

numbers = [386, 462, 47, 418, 907, 344, 236, 375, 823, 566, 597, 978, 328, 615, 953, 345, 399, 162, 758, 219, 918, 237, 412, 566, 826, 248, 866, 950, 626, 949, 687, 217, 815, 67, 104, 58, 512, 24, 892, 894, 767, 553, 81, 379, 843, 831, 445, 742, 717, 958,743, 527]

2.Write a Python program that accepts a single integer value entered by the user. If the value entered is less than one, the program prints nothing. If the user enters a positive integer, n, the program prints an n×n box drawn with * characters.

For example: If the users enters 1, the program prints *

If the user enters a 2, it prints

**

**

If the user enters a 3, it prints

***

***

***

Double-click (or enter) to edit