Ling 5801 - Problem Set 2
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1(a) For the given Python program the following is the output :

    X
    XX
    XXX

Note : The first line in the output is a blank line.

1(b)
```
n=4
for i in range(0,n):
    s = ''
    for j in range(0,i):
        s = s + 'X'
    print(s)
```

Line#1 initializes a variable n with a value of 4.

Line#2 is a for loop, which will run on a loop variable i, with the values of i ranging from 0 to n-1 (n-1 is inclusive)

Line#3 initializes a local variable s inside the for loop in line#2. This variable will be created for each pass of the for loop

Line#4 is another for loop, on a local variable j, with the values ranging from 0 to i-1. i is determined from the loop in line#2 above.

Line#5 appends character 'X' to the variable s described in line#3. This line will be executed for every pass of the for loop in line#4.

Line#5 prints the value of s on the console. This line will be executed for every pass of the for loop described in line#2.

2. The time complexity of the above code is **O(n²)**.
   This is because, the loop in line#4 will be executed 'i' times for each value of i.
   The loop in line#2 will be executed 'n' times.
   Now since, i can vary from 0 to n-1, the running time of the algorithm becomes **O(n²)**.

3(b) For the reversed FSA as derived from the code, and the given input 'sil voc sil' the fsarec.py program prints **'yes'.**