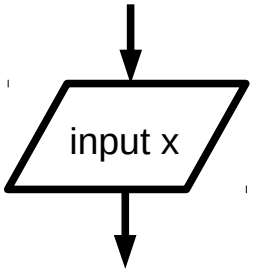
Flow Charts to Python

Computer Science ICS20

1 - Input



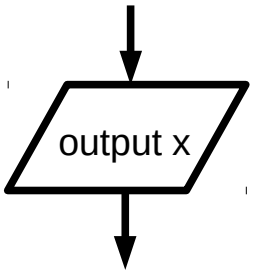
Python Code:

```
x = input()
```

Note 1: x is a string of characters. You may need to convert it to another type such as an integer. This can be done as follows: x = int(input())

Note 2: If you would like to make this input more user-friendly, then you can include some text prompt such as: x = input("Please enter a number: ")

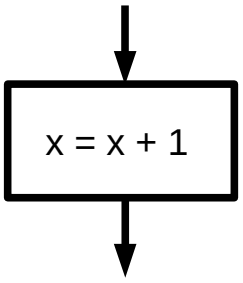
2 - Output



Python Code:

```
print( x )
```

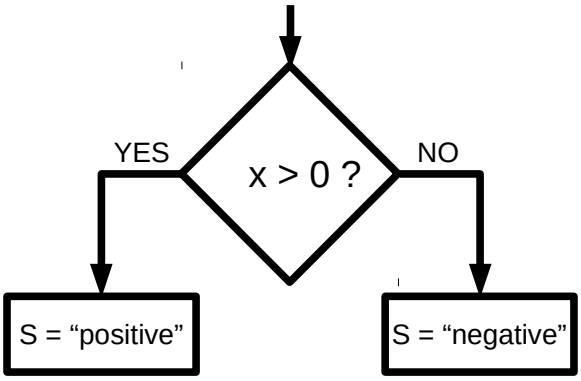
3 – Process



Python Code:

```
x = x + 1
```

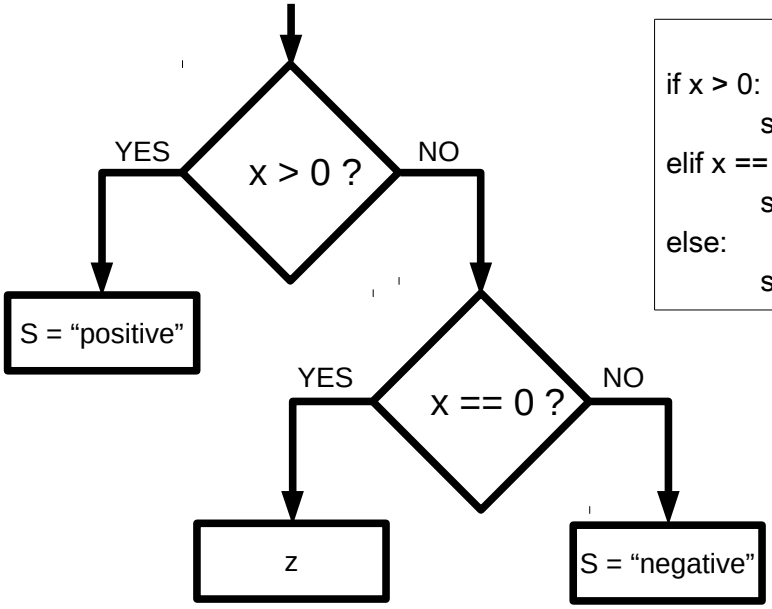
4 – Decision or Branching 4 – Decision or Branching



Python Code:

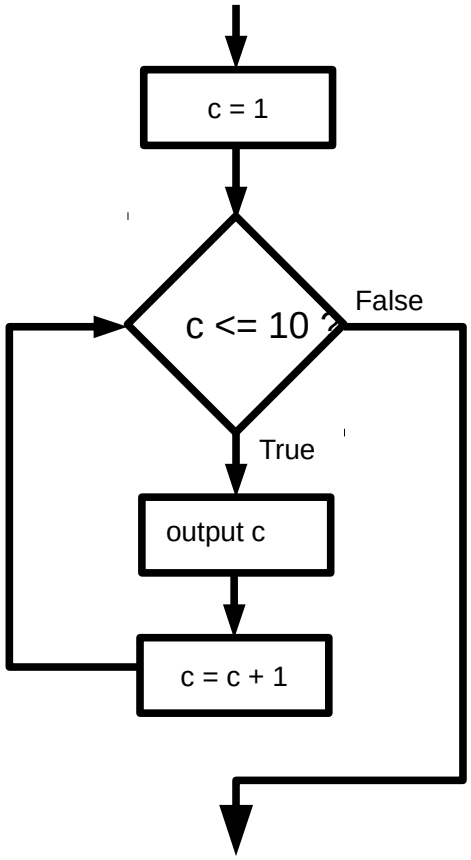
```
if x > 0:
        s = “positive”
else:
        s = “negative”
```

4 – Decision or Branching 4 – Decision or Branching (continued)




```
if x > 0:
        s = “positive”
elif x == 0:
        s = “zero”
else:
        s = “negative”
```

5 - Loop 1: The while loop

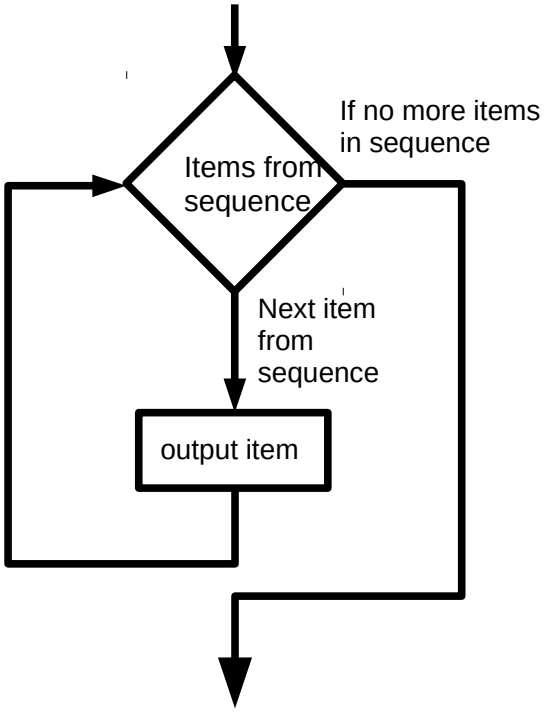


Python Code:

```
c = 1

while c <= 10:
        output c
        c = c + 1
```

The while loop repeats a statement or group of statements while a given condition is **true**. It tests the condition **before** executing the loop body.

5 - Loop 2: The for loop



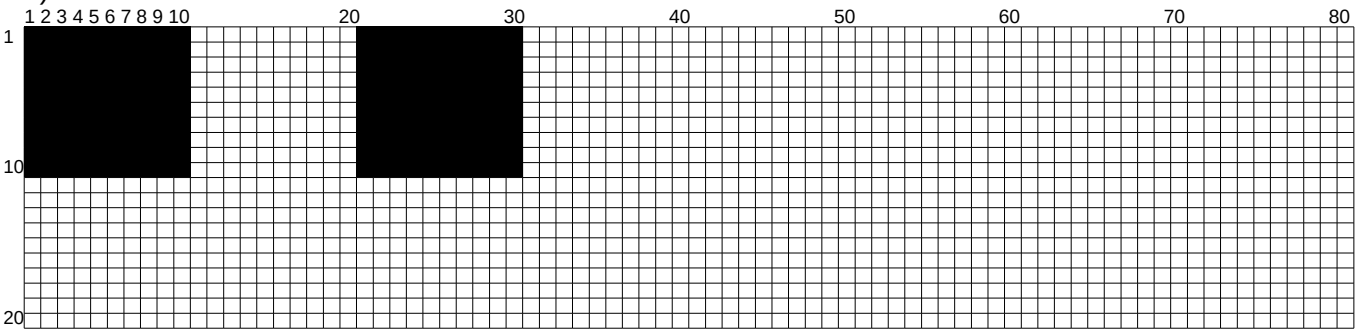
Python Code:

```
# the following prints the numbers 1 to 9

for item in range(1, 10):

        print item
```

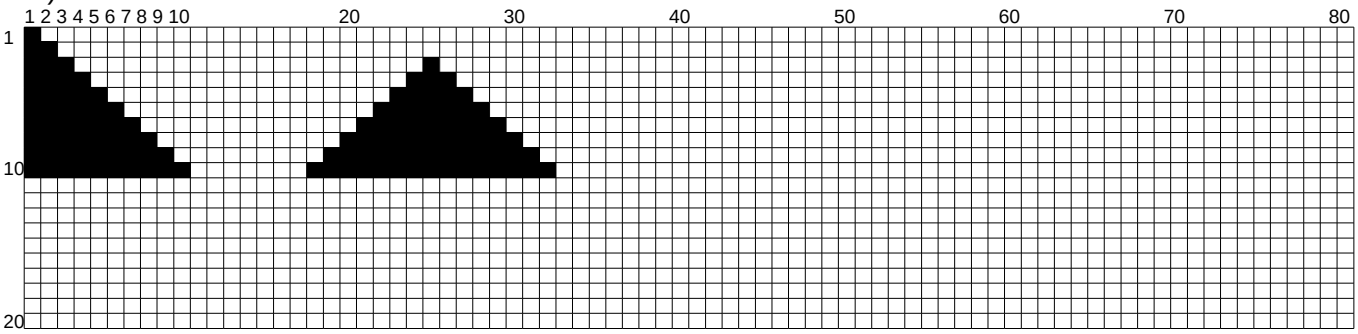
6 – Exercises

1. Write a Python program that outputs the following:
(For each square, you can print any character, such as # or $)

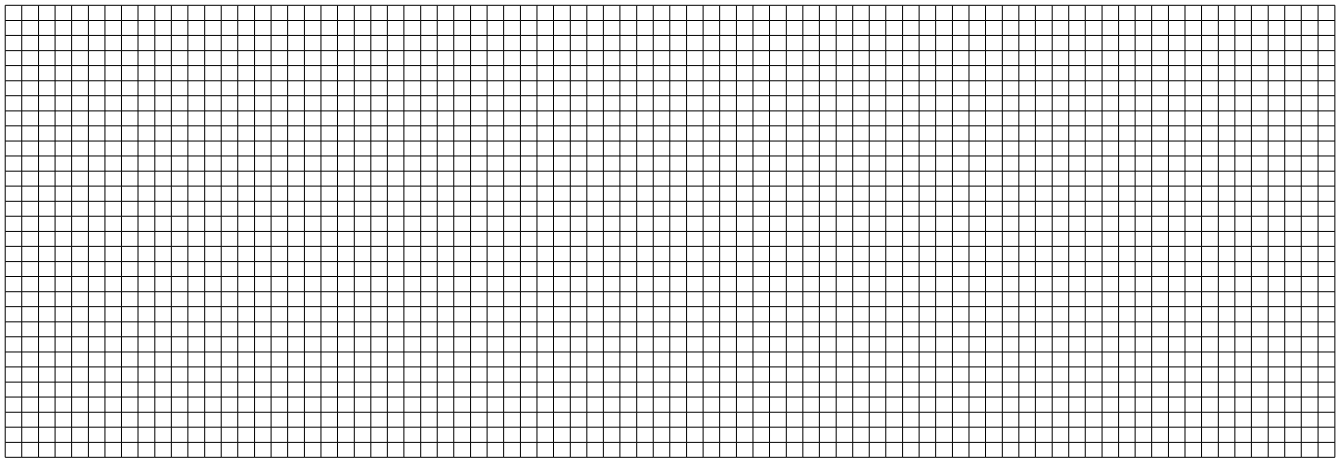
a)



b)

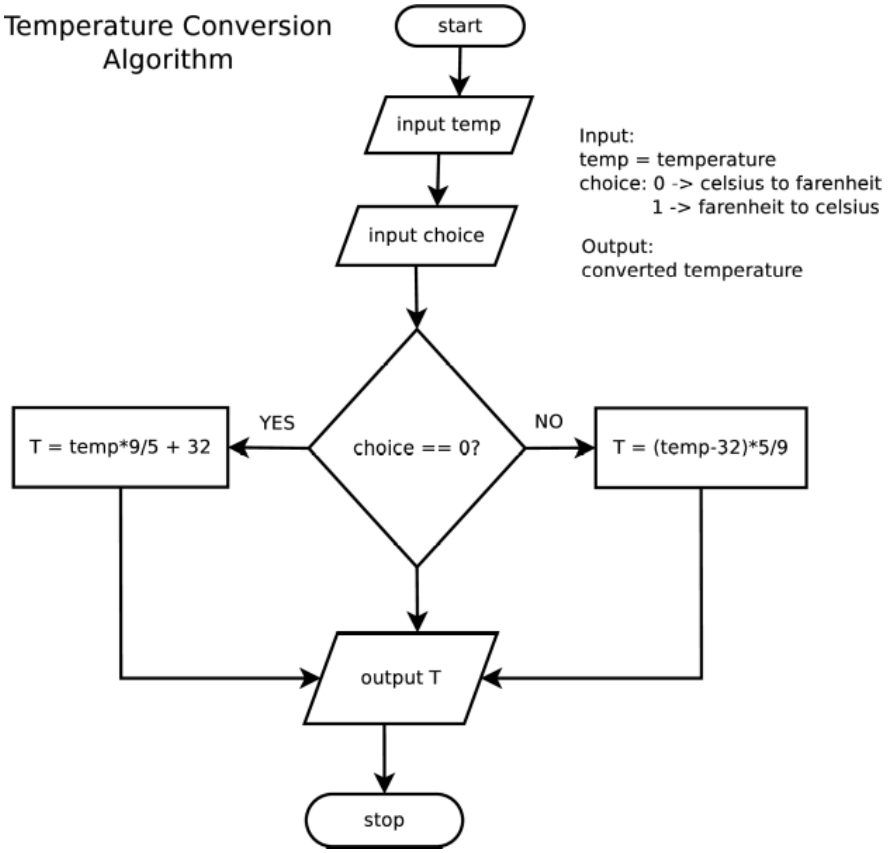


1. Try to write your name or draw a picture using the below graph as a guide:

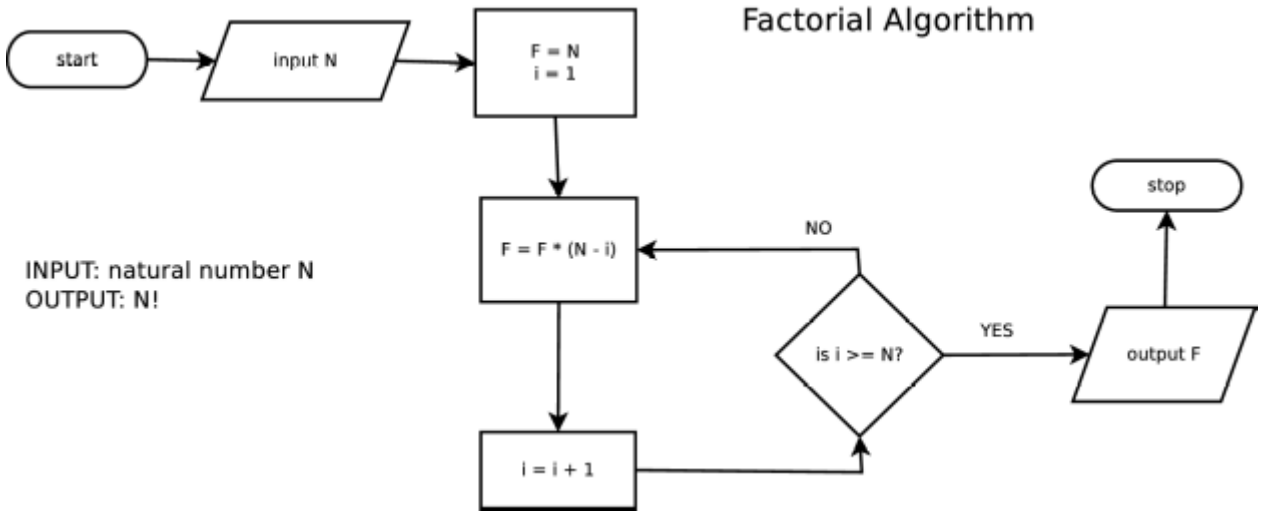


Convert the following flow charts to Python programs.

1. The following is a flow chart that converts temperatures between Celsius and Farenheit :



2. The following chart calculates the factorial of a given number:



3. The following flow chart determines the lowest and highest number from a sequence of positive numbers. The input sequence stops upon seeing the first negative number.