ISYS 812:
Programming and Applications for Data Analytics

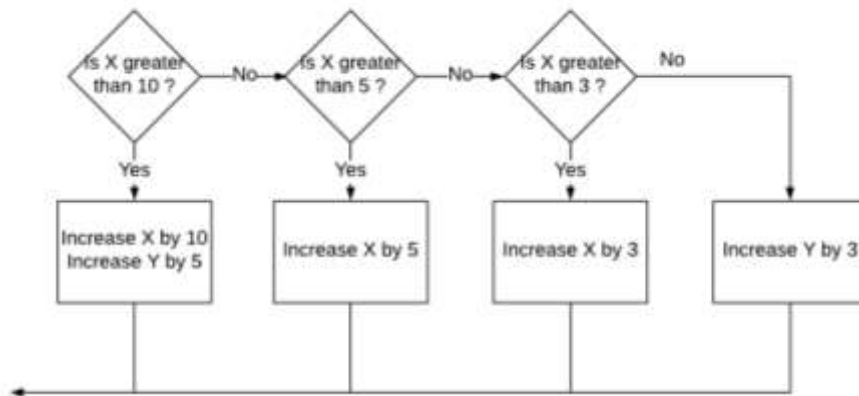# Practice Session 3

Question 1

Assume two variables X and Y.
Convert the following flowchart into a Python code using if-else-elif statements

Question 2
Some friends from high school are in town and are planning to visit you. You want to take them to a local restaurant, but you are not sure if any of them have dietary restrictions. You made the following list of possible restaurants to go to with information about their menu :

Burgers Madness : Vegetarian : No; Vegan: No;   Gluten-Free: No
Lovin' Veggies :   Vegetarian : Yes; Vegan: Yes; Gluten-Free: Yes
Pizza Mania :   Vegetarian : Yes; Vegan: No;   Gluten-Free: Yes
Napolita :   Vegetarian : Yes; Vegan: Yes; Gluten-Free: No
Coffeebucks :   Vegetarian : Yes; Vegan: Yes; Gluten-Free: No
Mama's Kitchen :   Vegetarian : Yes; Vegan: No;   Gluten-Free: No

To assist you in your decision, write a program that will ask if any members of your party are vegetarian, vegan, or gluten-free. The program will then display a list of restaurants fulfilling your party dietary needs.

The following are examples of your program output :

```
Is anyone in your party a vegetarian? Please answer by 'yes' or 'no'
```
yes
```
Is anyone in your party a vegan? Please answer by 'yes' or 'no'
```
no
```
Is anyone in your party gluten free? Please answer by 'yes' or 'no'
```
yes

```
Here are your restaurant choices:
Pizza Mania
Lovin' Veggies
```

Another example :

```
Is anyone in your party a vegetarian? Please answer by 'yes' or 'no'
```
yes
```
Is anyone in your party a vegan? Please answer by 'yes' or 'no'
```
yes
```
Is anyone in your party gluten free? Please answer by 'yes' or 'no'
```
yes

```
Here are your restaurant choices:
Lovin' Veggies
```

Question 3

A right triangle can have sides that are all integers.

The set of three integer values for the sides of a right triangle is called a Pythagorean triple.

These three sides must satisfy the relationship **that the sum of the squares of two of the sides is equal to the square of the hypotenuse**.

Find all Pythagorean triples for side1, side2 and hypotenuse (such as 3, 4 and 5) all no larger than 20.

Use a triple-nested for-loop that tries all possibilities.

Question 4

The following table indicate the daily highest temperature in San Francisco between June 20, 2019 and June 26, 2019.

73	70	79	79	72	72	70

Those temperatures are in Fahrenheit.

1. Using a **for loop,** write a program that converts those temperatures in Celsius and store the Celsius temperatures in a list.

Recall that Celsius = (5.0/9.0) x (Fahrenheit – 32.0)

2. Modify the program in 1. to display the highest temperature between June 20, 2019 and June 26, 2019.

Question 5

Write a program that predicts the approximate size of a population of organisms.

The application should use text boxes to allow the user to enter the starting number of organisms, the average daily population increase (as a percentage), and the number of days the organisms will be left to multiply.

For example, assume the user enters the following values:

       Starting number of organisms: 2

       Average daily increase: 30%

       Number of days to multiply: 10

The program should display the following table of data: (your displayed values may not be rounded up)

Day Approximate	Population
1	2
2	2.6
3	3.38
4	4.394
5	5.7122
6	7.42586
7	9.653619
8	12.5497
9	16.31462
10	21.209