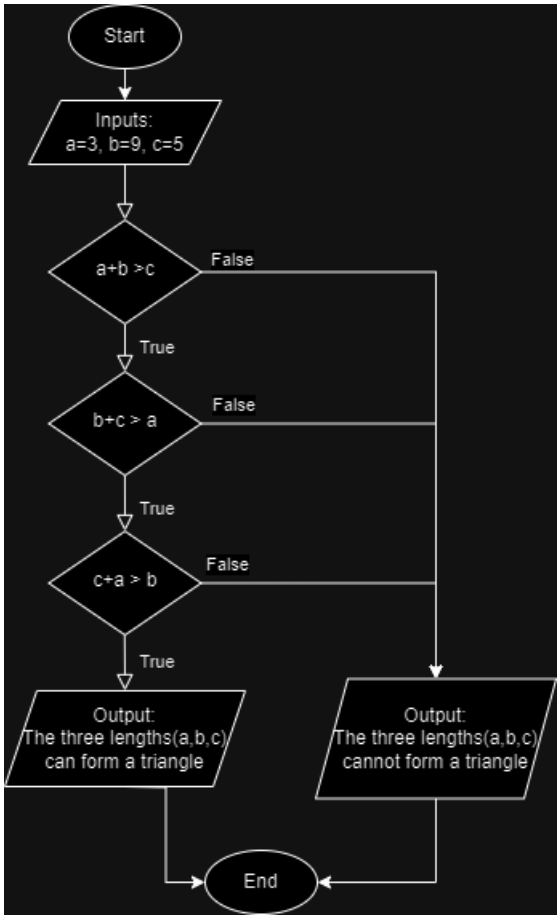
Assignment II Part I

1.

a)

- Input
  - The program takes in the integer values of a, b and c
    - i.e. a=3, b=9, c=5
- Processing
  - Check if all 3 conditions, a+b>c, b+c>a, c+a>b are True or not.
  - If all three conditions are True, the lengths can form a triangle. Otherwise, they can't.
  - i.e.
    - 3+9>5 is True
    - 9+5>3 is True
    - 5+3>9 is False
- Output
  - If the 3 conditions were met, the program outputs that the lengths a, b and c CAN form a triangle
  - If any of the 3 conditions were not met, the program outputs that the lengths a, b and c CANNOT form a triangle
  - i.e.
    - The lengths a=3, b=9, c=5 CANNOT form a triangle.

1b) Flowchart:



1d) Screenshot:

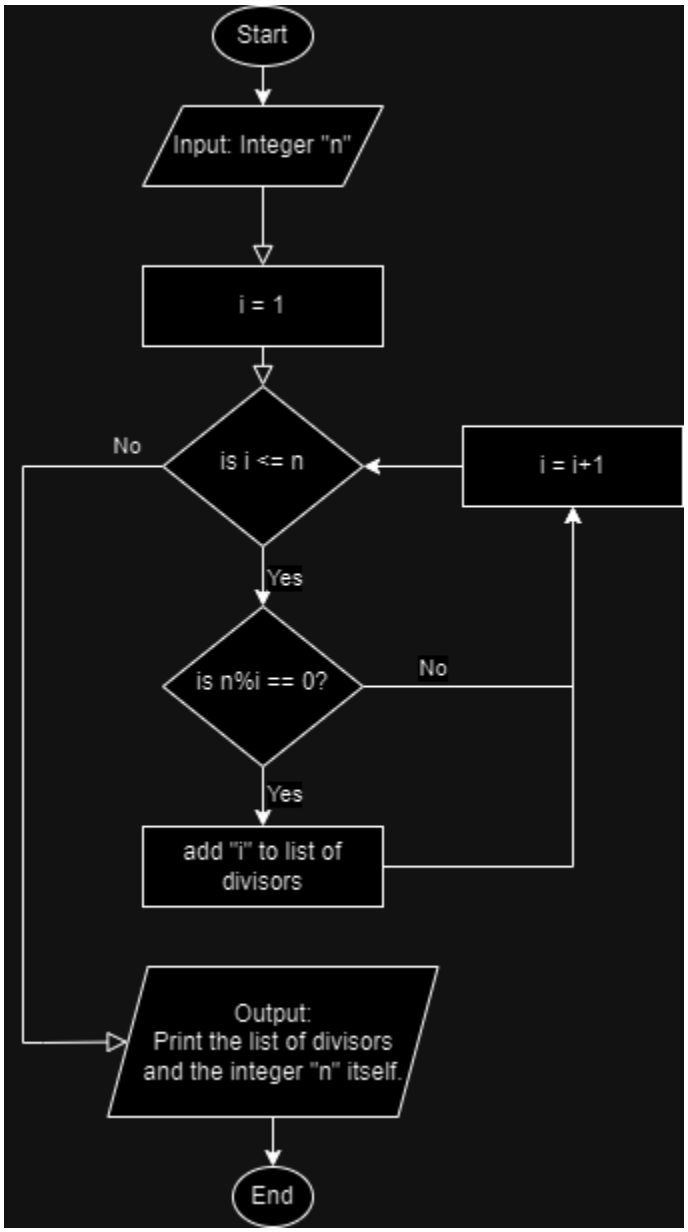
```
PS C:\Stuff\VSCode\COMP-1405> & C:/Users/derek/AppData/Local/Programs/Python/Python312/python.exe c:/Stuff/VSCode/COMP-1405/Assignments/A2/CO
MP_1005_1405/101331395_A2/testp1.py
The lengths a=3, b=9 and c=5 CANNOT form a triangle.
PS C:\Stuff\VSCode\COMP-1405>
```

2.

a)

- Input
  - The program takes in an integer “n”.
    - E.g. n = 9
- Processing
  - The program cycles through every integer from 1 to n (both inclusive), and check (using modulo) wether each integer gives a remainder of 0 after a division with n.
  - If True, save the integer in a list of divisors, and move onto the next integer. Otherwise do nothing and move onto the next integer.
    - This is done using a for loop to cycle through each integer
      - n%1 == 0 → divisor, append to list
      - n%2 != 0 → non-divisor, skip
      - n%3 == 0 → divisor, append to list
      - n%4 != 0 → non-divisor, skip
      - Etc…
      - n%9 == 0 → divisor, append to list
- Output
  - Ouput list of divisors, as well as “n”, which is also a divisor. This can be done by joining the list.
    - The divisors for n=9 are: 1, 3 and 9

2b) Flowchart:



2d) Screenshot:

```
PS C:\Stuff\VSCode\COMP-1405> & C:/Users/derek/AppData/Local/Programs/Python/Python312/python.exe c:/Stuff/VSCode/COMP-1405/Assignments/A2/COMP_1005_1405/101331395_A2/testp2.py
n = 9 has divisors: 1, 3 and 9.
PS C:\Stuff\VSCode\COMP-1405>
```