Practice Session – Problem Sheet

Write algorithms, draw flow charts for the following problems and solve them using python codes.

1. **Program to print the following as it is in the screen.**

```
Twinkle, twinkle, little star,
        How I wonder what you are!
                Up above the world so high,
                Like a diamond in the sky.
Twinkle, twinkle, little star,
        How I wonder what you are
```

2. **To find the factorial of a given number 'n' using while loop.**

Sample Input/output:

Input n: 5
Output: 5 x 4 x 3 x 2 x 1 = 120

Input n =3
Output: 3 x 2 x 1 = 6

3. **Program to print multiples of a given number.**
Hint: modulus operator (%)

Sample Input/output:

Input n: 5
Output: **5**,10,15,20,25,…

Input n: 3
Output: **3**, 6, 9, 12, 15, 18,…

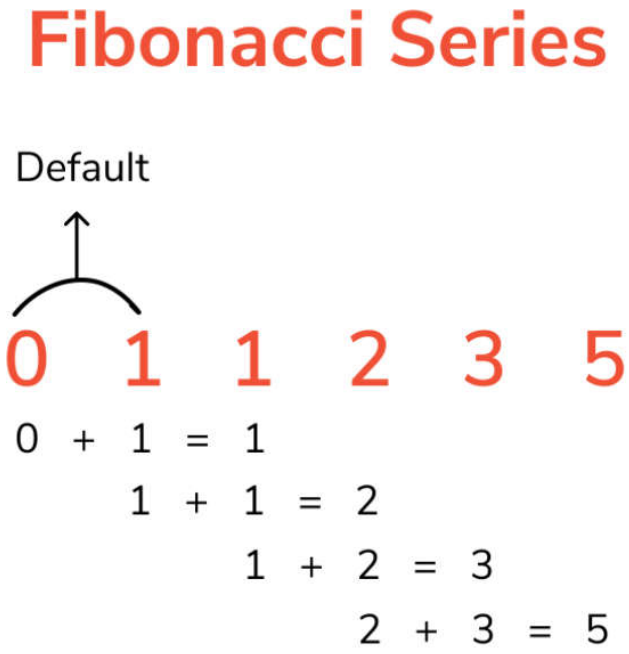
4. Program to find whether a number is divisible by 7 or not.

Sample Input/output:

Input n: 5
Output: The given number '5' is not divisible by 7.

Input n: 14
Output: The given number '14' is divisible by 7.

5. To print the '**Fibonacci Sequence' series.**



Sample Input/output:

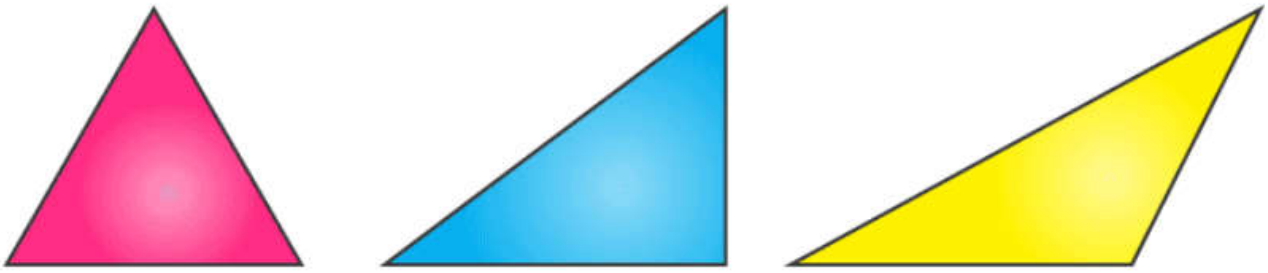
Input: Number of terms n : 3
Output:
0, 1, 1

Input: Number of terms n : 5
Output:
0, 1, 1, 2, 3

Input: Number of terms n : 9
Output:
0, 1, 1, 2, 3, 5, 8, 13, 21

6. Check whether the given triangle is **Acute angle triangle/** right angle triangle / **Obtuse angle triangle**. You can read three angles from user. Print the results legibly.

Types of Triangles:

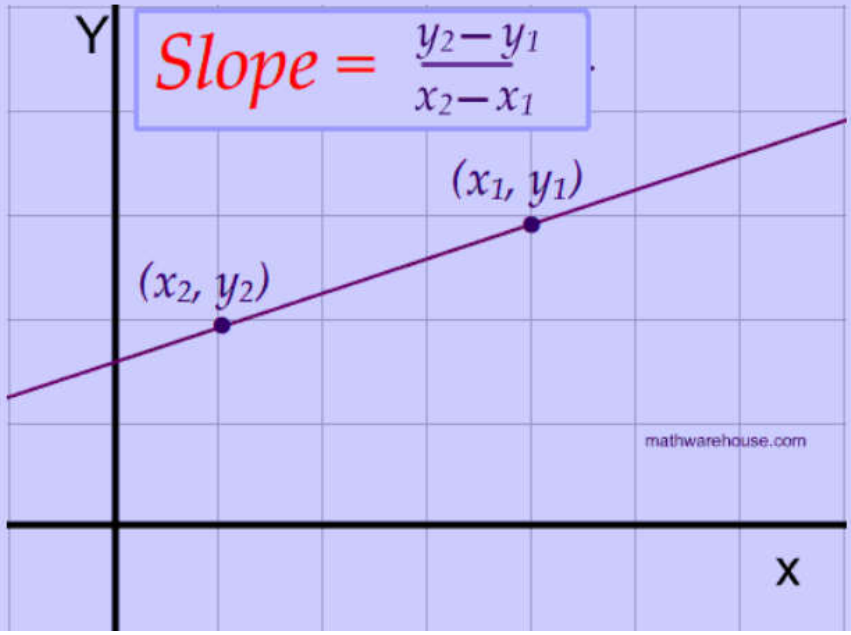


Acute angle triangle Right angle triangle Obtuse angle triangle

1. **Acute angle triangle:** When the angle between any 2 sides is less than 90 degrees it is called an acute angle triangle.
2. **Right angle triangle:** When the angle between a pair of sides is equal to 90 degrees it is called a right-angle triangle.
3. **Obtuse angle triangle:** When the angle between a pair of sides is greater than 90 degrees it is called an obtuse angle triangle.

7. To find the slope of a given line. You can read the coordinates from users.

The slope of a line characterizes the direction of a line. To find the slope, you divide the difference of the y-coordinates of 2 points on a line by the difference of the x-coordinates of those same 2 points.



Example:

The **slope of a line** going through the point (1, 2) and the point (4, 3) is $\frac{1}{3}$.

Remember: difference in the y values goes in the numerator of formula, and the difference in the x values goes in denominator of the formula.