
Q1:

Write a program to print a rectangular pattern of `M` rows and `N` columns using the characters shown below.

Input:

- Two integers `m` and `n` representing the number of rows and columns, respectively.

Output:

- A rectangular pattern with `m` rows and `n` columns.

Example:

For `Input: m = 3, n = 10`, the output should be:

```
+----------+
|          |
|          |
|          |
+----------+
```

Test Case 2:

Input:

m = 4, n = 6

Output:

```
+------+
|      |
|      |
|      |
|      |
+------+
```

Topics Covered: Loops(nested)

Q2:

You are given an `MxN` matrix. Write a program to print the elements of the principal diagonal of the matrix.

Input:

1. Two integers `m` and `n`.
2. The next `m` lines contain `n` space-separated integers, denoting the elements of the matrix.

Output:

- A single line containing the elements of the principal diagonal.

Example:

For `Input:`

```
3 3
1 2 3
10 20 30
5 10 15
```

The output should be:

[1, 20, 15]

Additional Test Case:

Input:

4 4
4 5 6 7
8 9 10 11
12 13 14 15
16 17 18 19

Output:

[4, 9, 14, 19]

Topics Covered: Arrays(2D)

Q3:

Write a Java program that includes a method to calculate the factorial of a given number. The program should also include a method to check if a number is prime. Use these methods to print the factorial of a number and check if the factorial is a prime number.

Input:

- An integer `n`.

Output:

- The factorial of `n`.
- A message indicating whether the factorial is a prime number.

Example:

For `Input: 5`, the output should be:

Factorial of 5 is 120
120 is not a prime number

Additional Test Case:

Input:

n = 7

Output:

Factorial of 7 is 5040
5040 is not a prime number

Topics Covered: Methods