C++-A04:Nested Loop

1. **Print a Multiplication Table:**
   - Write a C++ program to print the multiplication table of a number `N` (up to `N x N`) using nested loops.

   Input:

   ```
   N = 5
   ```

   Output:

   ```
   1 2 3 4 5
   2 4 6 8 10
   3 6 9 12 15
   4 8 12 16 20
   5 10 15 20 25
   ```

2. **Print a Number Pyramid Pattern:**
   - Write a C++ program to print a pyramid pattern of numbers. For example, for `N = 5`, the pattern should look like:

```
    1
   121
  12321
 1234321
123454321
```

Input:

```
N = 4
```

Output:

```
   1
  121
 12321
1234321
```

3. **Print a Right-Angled Triangle with Stars:**
   - Write a C++ program to print a right-angled triangle of stars. For example, for `N = 5`, the pattern should be:

```
*
**
***
****
*****
```

Input:

```
N = 5
```

Output:

```
*
**
***
```

```
****
*****
```

4. **Generate a Chessboard Pattern:**
   - Write a C++ program to generate a chessboard pattern using stars () and spaces. For `N = 8`, the pattern should look like:

```
* * * *
 * * * *
* * * *
 * * * *
* * * *
 * * * *
* * * *
 * * * *
```

Input:

```
N = 8
```

Output:

```
* * * *
 * * * *
* * * *
 * * * *
* * * *
 * * * *
* * * *
 * * * *
```

5. **Print All Prime Numbers in a Range (Using Nested Loop):**
   - Write a C++ program to print all prime numbers between 1 and `N` using a nested loop. A prime number is only divisible by 1 and itself.

Input:

```
N = 30
```

Output:

```
2 3 5 7 11 13 17 19 23 29
```

6. **Find the Sum of All Divisors for Numbers in a Range:**
   - Write a C++ program to find the sum of divisors of each number from `1` to `N` using a nested loop.

   Input:

   ```
   N = 6
   ```

   Output:

   ```
   Divisors of 1: 1
   Divisors of 2: 1 2
   Divisors of 3: 1 3
   Divisors of 4: 1 2 4
   Divisors of 5: 1 5
   Divisors of 6: 1 2 3 6
   ```

7. **Print a Square of Stars:**
   - Write a C++ program to print a square of stars (). For `N = 5`, the pattern should look like:

   ```
   *****
   *****
   *****
   *****
   *****
   ```

   Input:

   ```
   N = 5
   ```

Output:

```
*****
*****
*****
*****
*****
```

8. **Generate a Multiplication Triangle:**
   - Write a C++ program to print a multiplication triangle. For example, for `N = 4`, the pattern should look like:

```
1
2 4
3 6 9
4 8 12 16
```

Input:

```
N = 4
```

Output:

```
1
2 4
3 6 9
4 8 12 16
```

9. **Generate a Diamond Shape with Stars:**
   - Write a C++ program to generate a diamond shape pattern of stars. For example, for `N = 5`, the pattern should look like:

```
    *
   ***
  *****
 *******
*********
```

```
 *******
  *****
   ***
    *
```

Input:

```
N = 5
```

Output:

```
    *
   ***
  *****
 *******
*********
 *******
  *****
   ***
    *
```

10. **Generate a Right-Angled Triangle of Numbers:**
    - Write a C++ program to print a right-angled triangle of numbers. For `N = 5`, the pattern should look like:

```
1
12
123
1234
12345
```

Input:

```
N = 5
```

Output:

```
1
12
123
1234
12345
```