February 25, 2023 ▪ Pattern

Pattern – 9: Diamond Star Pattern

Problem Statement: Given an integer **N,** print the following pattern :

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

Here, N = 5.

Examples:

```
Input Format: N = 3
Result:
  *
 ***
*****
```

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

Input Format: N = 6

Result:

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

Solution

Disclaimer: *Don't jump directly to the solution, try it out yourself first.*

Problem Link

Approach:

There are 4 general rules for solving a pattern-based question :

- We always use nested loops for printing the patterns. For the outer loop, we count the number of lines/rows and loop for them.
- Next, for the inner loop, we focus on the number of columns and somehow connect them to the rows by forming a logic such

Recent Posts

Top LinkedList Interview Questions – Structured Path with Video Solutions

Insert before the node with Value X of the Linked List

Insert before the Kth element of the Linked List

Insert at the head of a Linked List

Delete the node with value X of a Linked List

that for each row we get the required number of columns to be printed.

- We print the '*' inside the inner loop.
- Observe symmetry in the pattern or check if a pattern is a combination of two or more similar patterns or not.

This pattern is just a mixture of the last two patterns (erect pyramid and inverted pyramid). Firstly, we will print the erect pyramid and then an inverted pyramid below it.

Code:

C++ Code

```
#include <bits/stdc++.h>
using namespace std;

void erect_pyramid(int N)
{
    // This is the outer loop which will l
    for (int i = 0; i < N; i++)
    {
        // For printing the spaces before
        for (int j =0; j<N-i-1; j++)
        {
            cout <<" ";
        }

        // For printing the stars in each
        for(int j=0;j< 2*i+1;j++){

            cout<<"*";
        }

        // For printing the spaces after t
         for (int j =0; j<N-i-1; j++)
        {
```

```
            cout <<" ";
        }

        // As soon as the stars for each i
        // next row and give a line break
        // would get printed in 1 line.
        cout << endl;
    }
}

void inverted_pyramid(int N)
{
    // This is the outer loop which will l
    for (int i = 0; i < N; i++)
    {
        // For printing the spaces before
        for (int j =0; j<i; j++)
        {
            cout <<" ";
        }

        // For printing the stars in each
        for(int j=0;j< 2*N -(2*i +1);j++){

            cout<<"*";
        }

        // For printing the spaces after t
         for (int j =0; j<i; j++)
        {
            cout <<" ";
        }

        // As soon as the stars for each i
        // next row and give a line break
        // would get printed in 1 line.
        cout << endl;
    }
}

int main()
{
    // Here, we have taken the value of N
```

```
        // We can also take input from the use
        int N = 5;
        erect_pyramid(N);
        inverted_pyramid(N);

        return 0;
```

Output

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

Java Code

```
class Main {

   static void erect_pyramid(int N)
{
    // This is the outer loop which will l
    for (int i = 0; i < N; i++)
    {
        // For printing the spaces before
        for (int j =0; j<N-i-1; j++)
        {
            System.out.print(" ");
        }

        // For printing the stars in each
        for(int j=0;j< 2*i+1;j++){
```

```
                System.out.print("*");
            }

            // For printing the spaces after t
             for (int j =0; j<N-i-1; j++)
            {
                System.out.print(" ");
            }


            // As soon as the stars for each i
            // next row and give a line break
            // would get printed in 1 line.
            System.out.println();
        }
    }

    static void inverted_pyramid(int N)
    {
        // This is the outer loop which will l
        for (int i = 0; i < N; i++)
        {
            // For printing the spaces before
            for (int j =0; j<i; j++)
            {
                System.out.print(" ");
            }

            // For printing the stars in each
            for(int j=0;j< 2*N -(2*i +1);j++){

                System.out.print("*");
            }

            // For printing the spaces after t
            for (int j =0; j<i; j++)
            {
                System.out.print(" ");
            }


            // As soon as the stars for each i
```

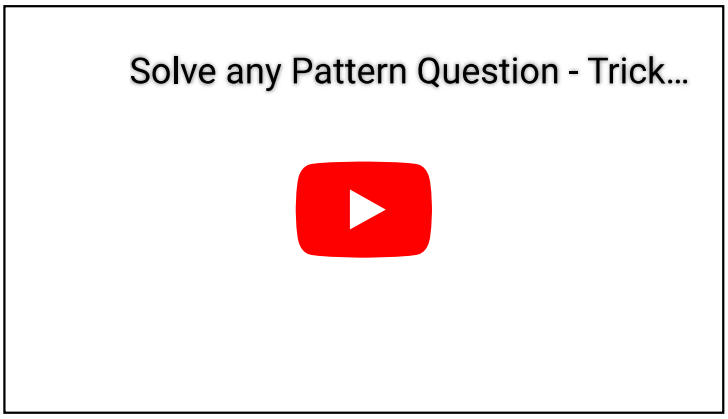
```
            // next row and give a line break
            // would get printed in 1 line.
            System.out.println();
        }
    }

        public static void main(String[] args)

            // Here, we have taken the value o
            // We can also take input from the
            int N = 5;
            erect_pyramid(N);
            inverted_pyramid(N);
        }
```

Output

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

> Special thanks to **Priyanshi Goel** for contributing to this article on takeUforward. If you also wish to share your knowledge with the takeUforward fam, please check out this article. If you want to suggest any

> improvement/correction in this article
>
> please mail us at write4tuf@gmail.com



DSA Self Paced | Strivers A2ZDSA Course

« Previous Post
Pattern – 10: Half Diamond Star Pattern

Next Post »
Pattern – 8: Inverted Star Pyramid

Load Comments

takeUforward

The best place to learn data structures, algorithms, most asked coding interview questions, real interview experiences free of cost.

Follow Us

DSA Playlist	DSA Sheets	Contribute
Array Series	Striver's SDE Sheet	Write an Article
Tree Series	Striver's A2Z DSA Sheet	
Graph Series	SDE Core Sheet	

DP Series Striver's CP Sheet