

# Star Pattern Programs in C#

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This document contains various star pattern programs written in C#. Each code snippet is followed by an explanation and the expected output to illustrate how the patterns look when executed.

## 1. Inverted Triangle and Right Triangle Patterns

Code:

```
```csharp
for(int i = 1; i <= 5; i++) {
    for(int j = 5; j >= i; j--) {
        Console.Write(" * ");
    }
    Console.WriteLine();
}
Console.WriteLine("\n\n");
for(int i = 1; i <= 5; i++) {
    for(int j = 1; j <= i; j++) {
        Console.Write(" * ");
    }
    Console.WriteLine();
}
```
```

### Explanation:

This code creates two different patterns. The first pattern is an inverted triangle, while the second pattern is a right triangle that grows from 1 to 5 rows.

### Expected Output:

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

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

## 2. Right-Aligned Triangle Pattern

Code:

```
```csharp
int i, j;
for(i = 1; i <= 5; i++) {
    for(j = 5; j > i; j--) {
        Console.Write(" ");
    }
    for(j = 1; j <= i; j++) {
        Console.Write("*");
    }
    Console.WriteLine(" ");
}
```
```

Explanation:

This code creates a right-aligned triangle pattern with spaces on the left side to align the stars to the right.

Expected Output:

```

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

## 3. Center-Aligned Triangle Pattern

Code:

```
```csharp
for(i = 1; i <= 5; i++) {
    for(j = 5; j > i; j--) {
        Console.Write(" ");
    }
    for(j = 1; j <= 2 * i - 1; j++) {
        Console.Write("*");
    }
    Console.WriteLine();
}
```

```
}  
```
```

Explanation:

This code generates a center-aligned triangle. It adjusts spaces to create a centered pyramid pattern.

Expected Output:

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

## 4. Symmetrical Triangle Star Pattern

Code:

```
```csharp  
for(i = 1; i <= 5; i++) {  
    for(j = 5; j > i; j--) {  
        Console.Write(" ");  
    }  
    for(j = 1; j <= i; j++) {  
        Console.Write("*");  
    }  
    for(j = 1; j < i; j++) {  
        Console.Write("*");  
    }  
    Console.WriteLine();  
}  
```
```

**Explanation:**

This code generates a symmetrical triangle by printing stars on both left and right sides of the center.

### Expected Output:

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

## 5. Diamond Shape Pattern

Code:

```
```csharp
for(i = 1; i <= 5; i++) {
    for(j = 5; j > i; j--) {
        Console.Write(" ");
    }
    for(j = 1; j <= i; j++) {
        Console.Write("*");
    }
    for(j = 1; j < i; j++) {
        Console.Write("*");
    }
    Console.WriteLine();
}
for(i = 1; i <= 4; i++) {
    for(j = 1; j <= i; j++) {
        Console.Write(" ");
    }
    for(j = 4; j >= i; j--) {
        Console.Write("*");
    }
    for(j = 4; j > i; j--) {
        Console.Write("*");
    }
    Console.WriteLine();
}
```
```

**Explanation:**

This code generates a diamond shape by combining a pyramid pattern (upper part) and an inverted pyramid pattern (lower part).

**Expected Output:**

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