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# Nested Looping

It is a programming technique where one loop is placed inside another loop.

This is often used when we need to perform a repetitive task within another repetitive task.

# Examples:

## Printing a Rectangle of Stars:

using System;

class Program

{

static void Main()

{

int rows = 5;

int cols = 10;

for (int i = 0; i < rows; i++)

{

for (int j = 0; j < cols; j++)

{

Console.Write("\*");

}

Console.WriteLine();

}

}

}

## Printing a Right Triangle:

using System;

class Program

{

static void Main()

{

int rows = 5;

for (int i = 0; i < rows; i++)

{

for (int j = 0; j <= i; j++)

{

Console.Write("\*");

}

Console.WriteLine();

}

}

}

## Printing Triangle of Numbers:

using System;

class Program

{

static void Main()

{

int rows = 5;

for (int i = 1; i <= rows; i++)

{

for (int j = 1; j <= i; j++)

{

Console.Write($"{j} ");

}

Console.WriteLine();

}

}

}

# Problems:

## Pattern 1 Write a program in C# Sharp to display a pattern like a right angle triangle with a number.

The pattern like :

1

12

123

1234

using System;

class Program

{

static void Main()

{

int rows = 4;

for (int i = 1; i <= rows; i++)

{

for (int j = 1; j <= i; j++)

{

Console.Write(j);

}

Console.WriteLine();

}

}

}

## Pattern 2 Write a C# Sharp program to make such a pattern like a right angle triangle with the number increased by 1.

The pattern like :

1

2 3

4 5 6

7 8 9 10

using System;

class Program

{

static void Main()

{

int rows = 4;

int currentNumber = 1;

for (int i = 1; i <= rows; i++)

{

for (int j = 1; j <= i; j++)

{

Console.Write(currentNumber + " ");

currentNumber++;

}

Console.WriteLine();

}

}

}

## Pattern 3 Write a program in C# Sharp to make such a pattern like a pyramid with numbers increasing by 1.

1

2 3

4 5 6

7 8 9 10

using System;

class Program

{

static void Main()

{

int rows = 4;

int currentNumber = 1;

for (int i = 1; i <= rows; i++)

{

// Print spaces

for (int j = 1; j <= rows - i; j++)

{

Console.Write(" ");

}

// Print numbers

for (int j = 1; j <= i; j++)

{

Console.Write(currentNumber + " ");

currentNumber++;

}

Console.WriteLine();

}

}

}

## Pattern 4 Write a program in C# Sharp to print Floyd's Triangle.

1

01

101

0101

10101

using System;

class Program

{

static void Main()

{

int rows = 5;

int currentNumber = 1;

for (int i = 1; i <= rows; i++)

{

// Print numbers

for (int j = 1; j <= i; j++)

{

Console.Write(currentNumber % 2);

currentNumber++;

}

Console.WriteLine();

}

}

}

## Pattern 5 Write a program in C# Sharp to display the pattern like a diamond.

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\*\*\*\*\*

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\*

using System;

class Program

{

static void Main()

{

int rows = 5;

// Upper half of the diamond

for (int i = 1; i <= rows; i++)

{

// Print spaces

for (int j = 1; j <= rows - i; j++)

{

Console.Write(" ");

}

// Print stars

for (int j = 1; j <= 2 \* i - 1; j++)

{

Console.Write("\*");

}

Console.WriteLine();

}

// Lower half of the diamond

for (int i = rows - 1; i >= 1; i--)

{

// Print spaces

for (int j = 1; j <= rows - i; j++)

{

Console.Write(" ");

}

// Print stars

for (int j = 1; j <= 2 \* i - 1; j++)

{

Console.Write("\*");

}

Console.WriteLine();

}

}

}

## Pattern 6 Write a program in C# Sharp to print Pascal Triangle.

1

1 1

1 2 1

1 3 3 1

1 4 6 4 1

using System;

class Program

{

static void Main()

{

int rows = 5;

for (int i = 0; i < rows; i++)

{

int number = 1;

// Print spaces

for (int j = 1; j <= rows - i; j++)

{

Console.Write(" ");

}

// Print numbers

for (int j = 0; j <= i; j++)

{

Console.Write(number + " ");

number = number \* (i - j) / (j + 1);

}

Console.WriteLine();

}

}

}