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BCS426

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**Question 1: Write a C# .NET Core Console App that asks the user to enter a character and line number and then displays a triangle of that size with the given character. For example, if the user entered \* as a character and 3 as line number then you display the following triangle on the console window.**

```
public static void question1()
{
    // Write a C# .NET Core Console App that asks the user to enter a character and line number and then displays a triangle of that size with the given character.
    //For example, if the user entered * as a character and 3 as line number then you display the following triangle on the console window.
    // *
    // **
    // ***

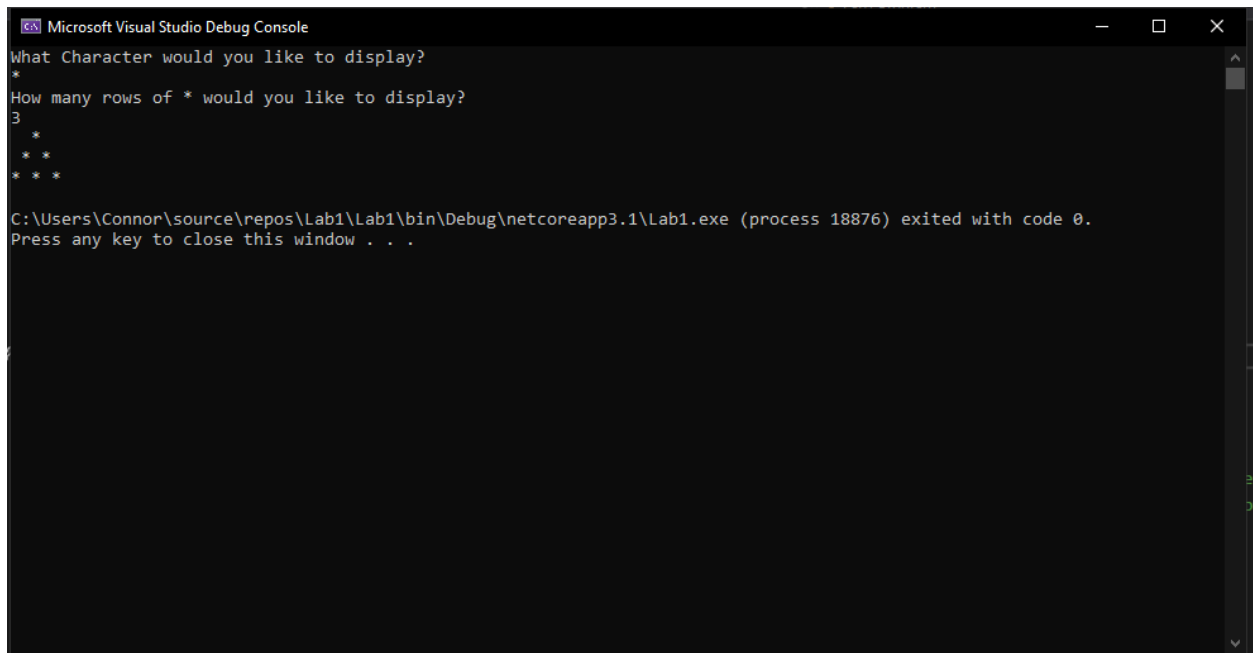
    WriteLine("What Character would you like to display?");
    string character = ReadLine();

    WriteLine("How many rows of " + character + " would you like to display?");
    int num = Convert.ToInt32(ReadLine());

    for (int i = 0; i < num; i++)
    {
        for (int j = num - i; j > 1; j--)
        {
            Write(" ");
        }

        for (int k = 0; k <= i; k++)
        {
            Write(character + " ");
        }

        WriteLine();
    }
}
```



```
Microsoft Visual Studio Debug Console
What Character would you like to display?
*
How many rows of * would you like to display?
3
 *
**
***

C:\Users\Connor\source\repos\Lab1\Lab1\bin\Debug\netcoreapp3.1\Lab1.exe (process 18876) exited with code 0.
Press any key to close this window . . .
```

**Question 2: Modify your program above to display a diamond shape rather than a triangle. For example, if the user entered \* as a character and 3 as line number then you display the following diamond on the console window.**

```
public static void question2()
{
    // Modify your program above to display a diamond shape rather than a triangle. For
    // *
    // * *
    // * * *
    // * *
    // *

    WriteLine("What Character would you like to display?");
    string character = ReadLine();

    WriteLine("How many rows of " + character + " would you like to display?");
    int num = Convert.ToInt32(ReadLine());

    for (int i = 0; i < num; i++)
    {
        for (int j = num - i; j > 1; j--)
        {
            Write(" ");
        }

        for (int k = 0; k <= i; k++)
        {
            Write(character + " ");
        }

        WriteLine();
    }

    for (int i = num - 1; i >= 1; i--)
    {
        for (int j = num - i; j > 1; j--)
        {
            Write(" ");
        }

        for (int k = 1; k <= i; k++)
        {
            Write(" " + character);
        }

        WriteLine();
    }
}
```

```
Microsoft Visual Studio Debug Console
What Character would you like to display?
*
How many characters wide would you like you diamond of *'s?
3
  *
 * *
* * *
 * *
  *

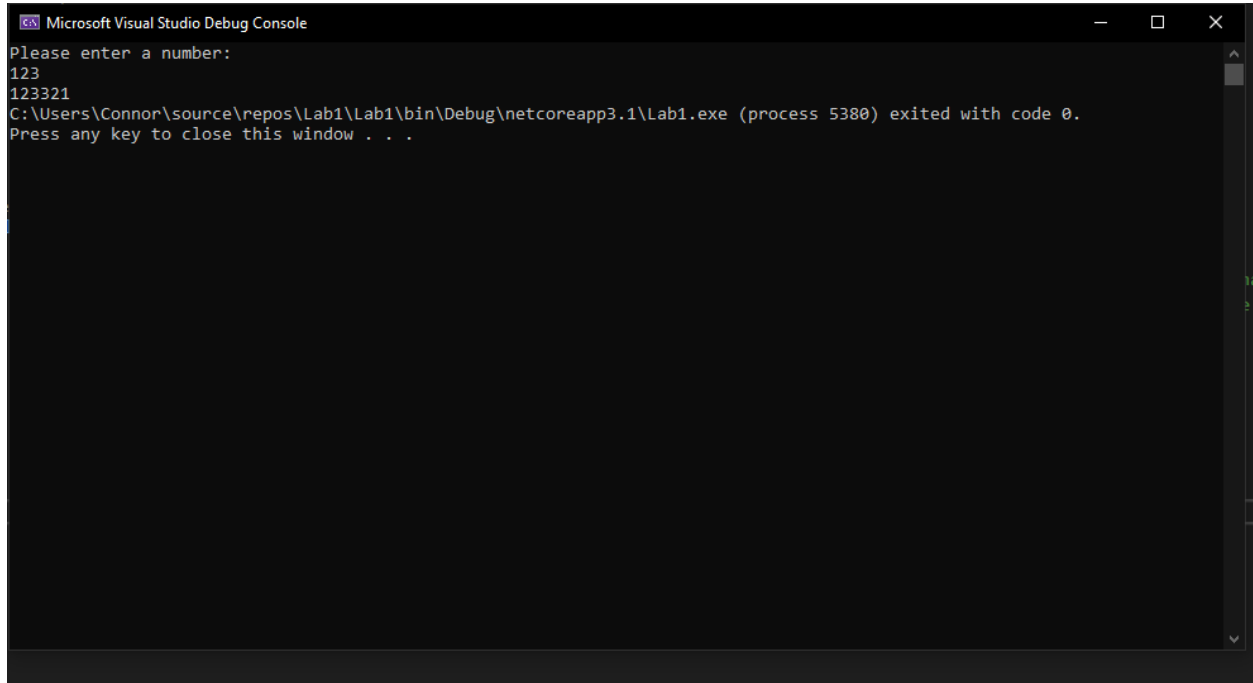
C:\Users\Connor\source\repos\Lab1\Lab1\bin\Debug\netcoreapp3.1\Lab1.exe (process 11056) exited with code 0.
Press any key to close this window . . .
```

**Question 3: (3) Write a C# .NET Core Console App that asks the user to enter a number and then displays a string with the original number followed by the reverse of the number. For example, if the user entered 123 as an int you program should create a string "123321" and display it on the screen**

```
public static void question3()
{
    //Write a C# .NET Core Console App that asks the user to enter a number
    //For example, if the user entered 123 as an int you should create a string "123321"
    //and display it on the screen

    WriteLine("Please enter a number: ");
    string num = ReadLine();

    int len = num.Length;
    for (int j=0; j < len; j++)
    {
        Write(num[j]);
    }
    for (int k = len; k > 0; k--)
    {
        Write(num[k-1]);
    }
}
```



```
Microsoft Visual Studio Debug Console
Please enter a number:
123
123321
C:\Users\Connor\source\repos\Lab1\Lab1\bin\Debug\netcoreapp3.1\Lab1.exe (process 5380) exited with code 0.
Press any key to close this window . . .
```

**Question 4: Write a C# Core Console App that validates a password string entered by the user to conform to the following rules:**

- Length between 6 and 15 characters.
- At least one uppercase letter (A-Z).
- At least one lowercase letter (a-z).
- At least one digit (0-9).
- At least one supported special character such as ! @ # \$ % ^ & \* ( ) + = \_ - { } [ ] : ; " ' ? < > , .

```
public static void question4()
{
    //(4) Write a C# Core Console App that validates a password string entered by the user to conform to the following rules:
    // Length between 6 and 15 characters.
    // At least one uppercase letter(A - Z).
    // At least one lowercase letter(a - z).
    // At least one digit(0 - 9).
    // At least one supported special character such as ! @ # $ % ^ & * ( ) + = _ - { } [ ] : ; " ' ? < > , .

    WriteLine("Please enter a secure password: ");
    string pass = ReadLine();

    bool isLong = false;
    bool hasUpperCase = false;
    bool hasLowerCase = false;
    bool hasDigit = false;
    bool hasSpecialChar = false;

    if (pass.Length > 5 && pass.Length < 16)
    {
        isLong = true;
    }

    for (int i = 0; i < pass.Length; i++)
    {
        if (Char.IsLetter(pass[i]) && Char.IsUpper(pass[i]))
        {
            hasUpperCase = true;
        }
    }

    for (int i = 0; i < pass.Length; i++)
    {
        if (Char.IsLetter(pass[i]) && Char.IsLower(pass[i]) )
        {
            hasLowerCase = true;
        }
    }

    for (int i = 0; i < pass.Length; i++)
    {
        if (Char.IsDigit(pass[i]))
        {
            hasDigit = true;
        }
    }
}
```

```
for (int i = 0; i < pass.Length; i++)
{
    if (Char.IsSymbol(pass[i]) || Char.IsPunctuation(pass[i]))
    {
        hasSpecialChar = true;
    }
}

if (isLong && hasUpperCase && hasLowerCase && hasDigit && hasSpecialChar)
{
    WriteLine("Your password is secure. Please do not share it with anyone!");
}

else
{
    WriteLine("Your password is NOT secure. Please enter another.");
    Program.question4();
}
```

Microsoft Visual Studio Debug Console

Please enter a secure password:  
pas  
Your password is NOT secure. Please enter another.  
Please enter a secure password:  
Password1!  
Your password is secure. Please do not share it with anyone!

C:\Users\Connor\source\repos\Lab1\Lab1\bin\Debug\netcoreapp3.1\Lab1.exe (process 11208) exited with code 0.  
Press any key to close this window . . .

**Question 5: Comment about this lab and how easy/hard/appropriate you found it for this course as a first lab.**

I felt as though this lab was more than fair for a 400-level class. It allowed us to refresh basic skills such as input/output as well as logic. Since this language is new to many, it allowed us to research new functions and structures within the language while guiding our learning toward the curriculum.