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Task:

Write a C# program that calculates the factorial of a non-negative integer entered by the user. The program should continuously prompt the user for input until they enter the letter **q** to quit. The program should perform the following:

Requirements:

- Prompt the user to enter a non-negative integer.
- Calculate the factorial of the entered number.
- Display the result to the user.
- If the user enters a negative integer, display an error message.
- If the user enters any non-numeric input other than **q**, display an error message.
- Write the solution within the **Main** function in the `Program.cs` file.

Input Format:

- The input should be an integer greater than 0.
- The input should be **q** to quit the program.

Output Format:

- The output is to be printed as the factorial of the input number.

Refer Sample Output:

Sample Input 1

```
4
2
q
```

Sample Output 1

```
The factorial of 4 is 24.
The factorial of 2 is 2.
```

Sample Input 2

```
8
-2
q
```

Sample Output 2

```
The factorial of 8 is 40320.
Invalid input! Please enter a non-negative integer.
```

Commands to Run the Project:

```
cd dotnetapp
dotnet run
dotnet build
dotnet clean
```

Note:

The project will not be submitted if **"Submit Project"** is not done at least once.

ANSWER:

```csharp
using System;

class Program
{
    public static void Main()
    {
//4 Factorial Calculation Program
        Console.WriteLine("\n4) Factorial Calculation");
        Console.WriteLine("Enter a non-negative integer to calculate its factorial (or 'q' to quit):");
        // Loop to continuously prompt user for input
        while (true)
        {
            string input = Console.ReadLine();
            if (input.ToLower() == "q"){ break; } // Exit loop if user enters 'q'
            int number;
            number = Convert.ToInt32(input);
            if (number >= 0)
            {
```

```csharp
            if (number < 0)
            {
                Console.WriteLine("Error: Please enter a non-negative integer.");
            }
            else
            {
                long factorial = 1;
                for (int i = 1; i <= number; i++)
                {
                    factorial *= i;
                }
                Console.WriteLine("Factorial of " + number + " is: " + factorial);
            }
        }
        else
        {
            Console.WriteLine("Error: Invalid input. Please enter a non-negative integer or 'q' to quit.");
        }
    }
  }
}
```