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Drejtimi: Shkenca Kompjuterike
Kampusi: Prishtinë/ Lipjan
Viti: I parë
Statusi: I rregullt

Chapter 5

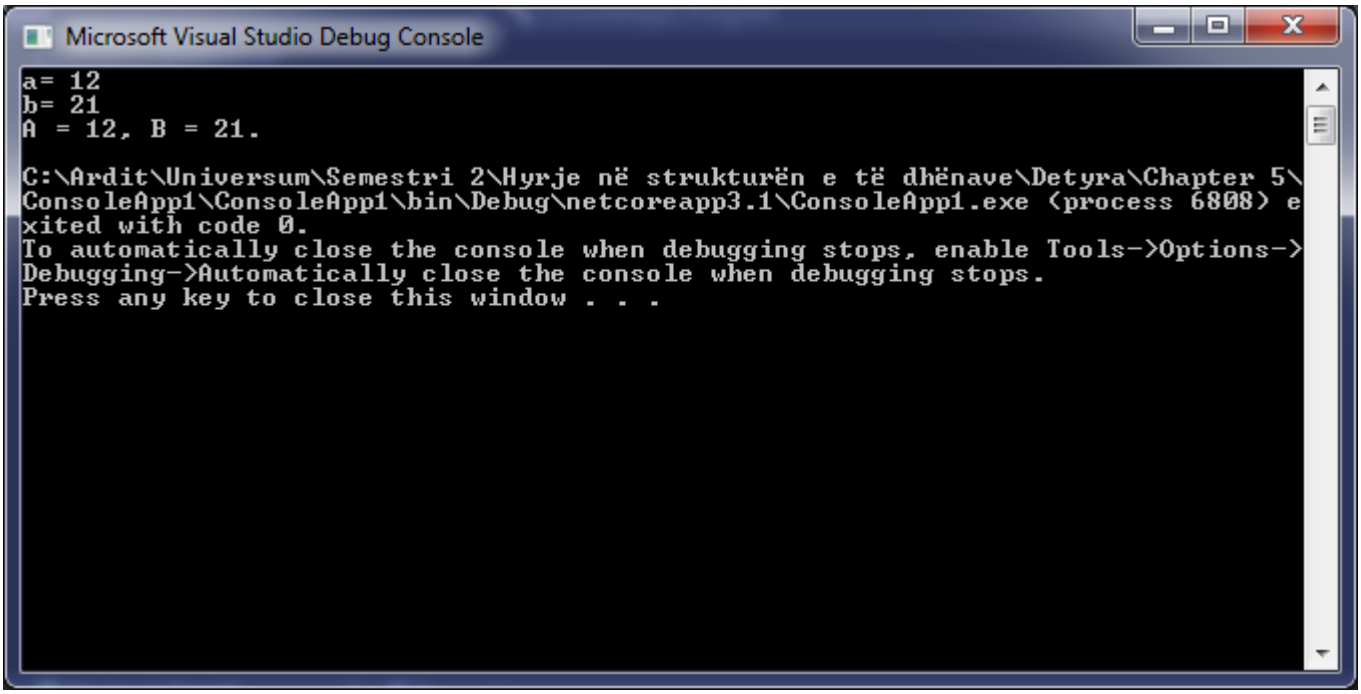
1. Write an **`if`**-statement that takes two integer variables and **exchanges** their values if the first one is greater than the second one.

```
using System;

namespace ConsoleApp1
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.Write("a= ");
            int a = Int32.Parse(Console.ReadLine());
            Console.Write("b= ");
            int b = Int32.Parse(Console.ReadLine());

            if (a > b)
            {
                a = a + b;
                b = a - b;
                a = a - b;
            }

            Console.WriteLine("A = {0}, B = {1}.", a, b);
        }
    }
}
```

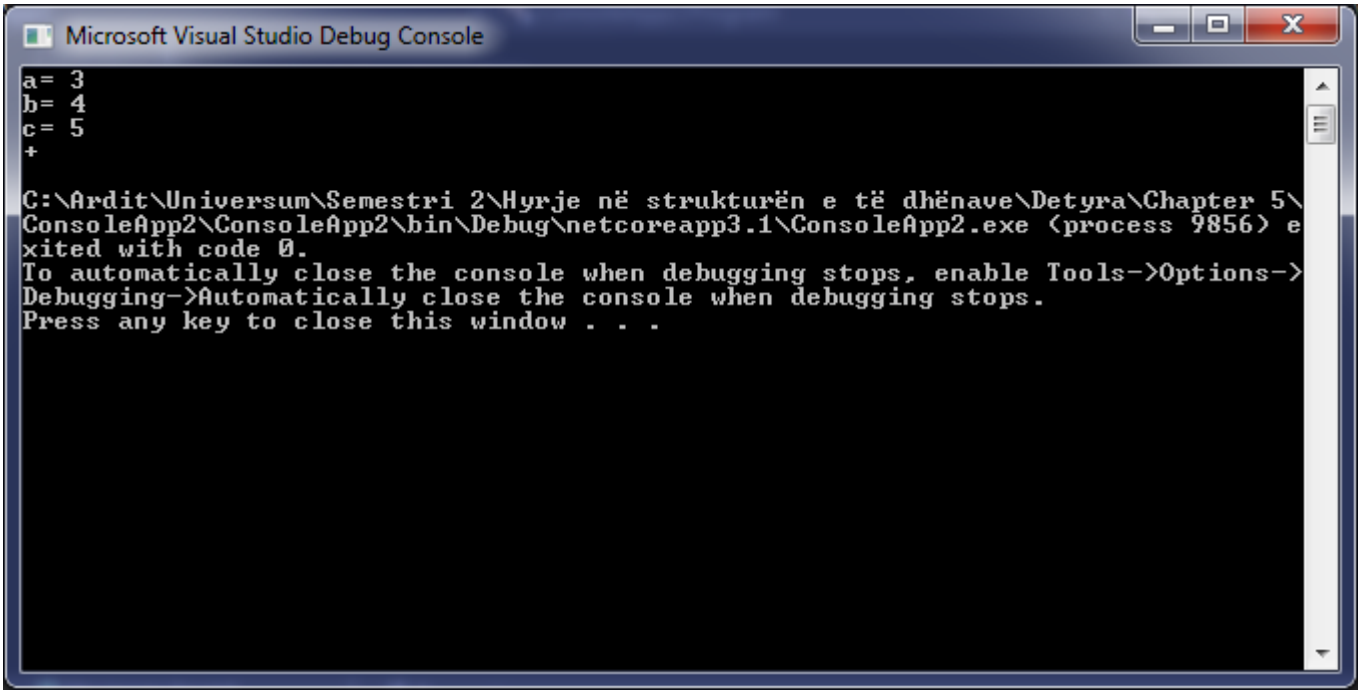


2. Write a program that shows the sign (**+** or **-**) of the product of three real numbers, without calculating it. Use a sequence of **if** operators.

```
using System;

namespace ConsoleApp2
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.Write("a= ");
            int a = Int32.Parse(Console.ReadLine());
            Console.Write("b= ");
            int b = Int32.Parse(Console.ReadLine());
            Console.Write("c= ");
            int c = Int32.Parse(Console.ReadLine());

            if (a < 0 && b < 0 && c < 0) Console.WriteLine("-");
            else if (a >= 0 && b >= 0 && c >= 0) Console.WriteLine("+");
            else if (a < 0 && b < 0 && c >= 0) Console.WriteLine("+");
            else if (a < 0 && b >= 0 && c < 0) Console.WriteLine("+");
            else if (a >= 0 && b < 0 && c < 0) Console.WriteLine("+");
            else if (a < 0 && b >= 0 && c >= 0) Console.WriteLine("-");
            else if (a >= 0 && b < 0 && c >= 0) Console.WriteLine("-");
            else if (a >= 0 && b >= 0 && c < 0) Console.WriteLine("-");
        }
    }
}
```

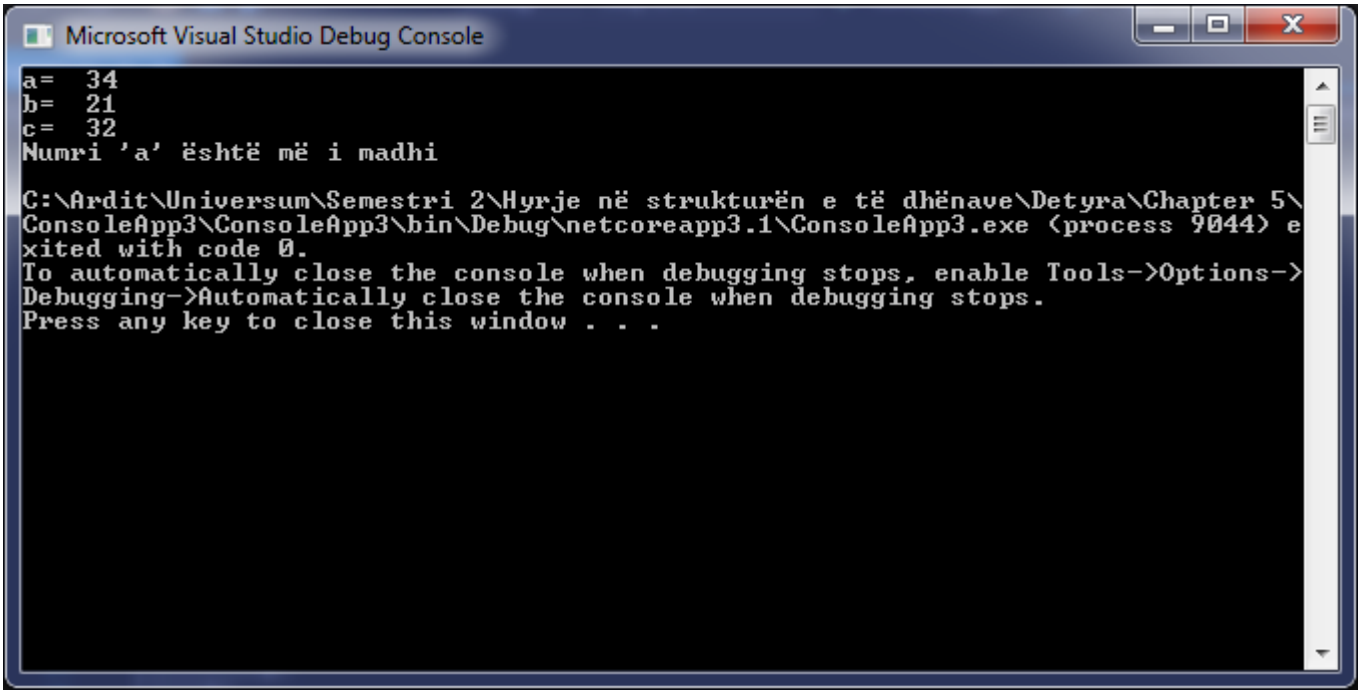


3. Write a program that finds the **biggest of three integers**, using nested **`if`** statements.

```
using System;

namespace ConsoleApp3
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.Write("a=  ");
            int a = Int32.Parse(Console.ReadLine());
            Console.Write("b=  ");
            int b = Int32.Parse(Console.ReadLine());
            Console.Write("c=  ");
            int c = Int32.Parse(Console.ReadLine());

            if (a > b)
                if (a > c) Console.WriteLine("Numri 'a' është më i madhi");
                else if (a < c) Console.WriteLine("Numri 'c' është më i madhi");
                else Console.WriteLine("Numri 'a' dhe 'c' është më i madhi");
            else if (a < b)
                if (b > c) Console.WriteLine("Numri 'b' është më i madhi");
                else if (b < c) Console.WriteLine("Numri 'c' është më i madhi");
                else Console.WriteLine("Numri 'b'dhe 'c' është më i madhi");
        }
    }
}
```



4. **Sort 3 real numbers** in descending order. Use nested **`if`** statements.

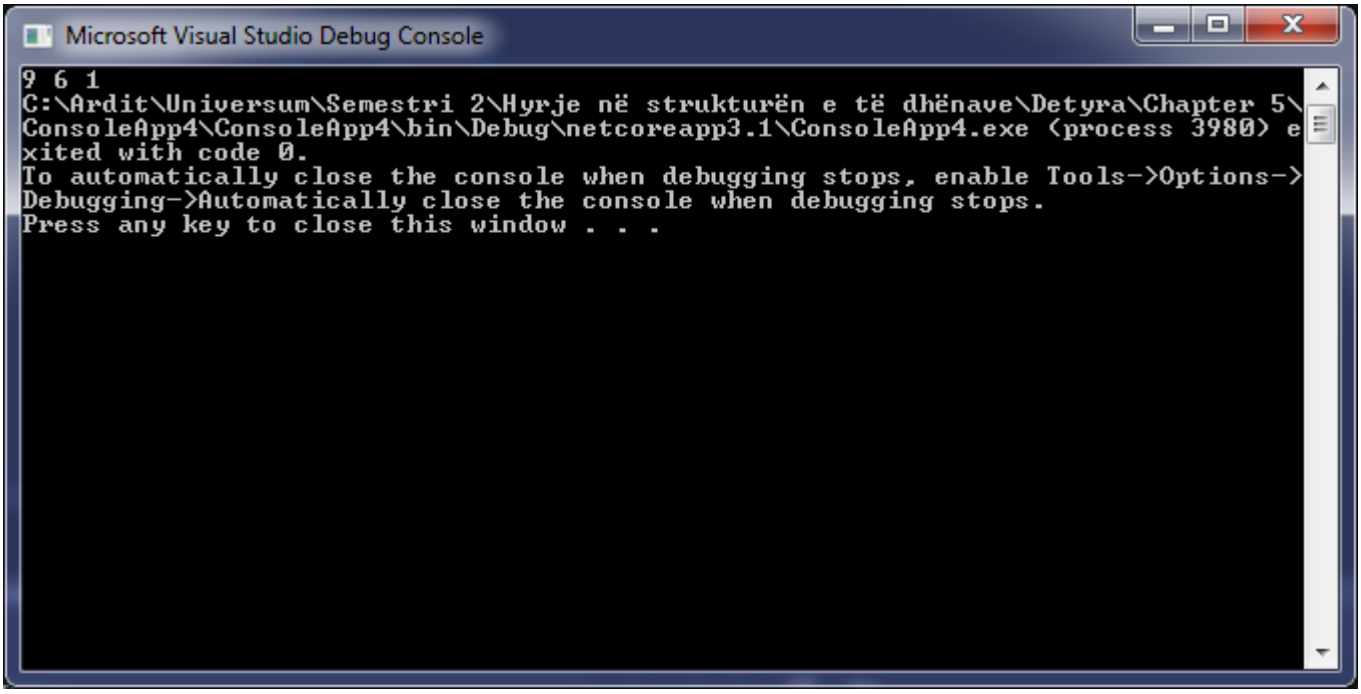
```
using System;

namespace ConsoleApp4
{
    class Program
    {
        static void Main(string[] args)
        {
            int[] arr = new int[] { 1, 9, 6};

            Array.Sort(arr);

            Array.Reverse(arr);

            foreach (int value in arr)
            {
                Console.Write(value + " ");
            }
        }
    }
}
```

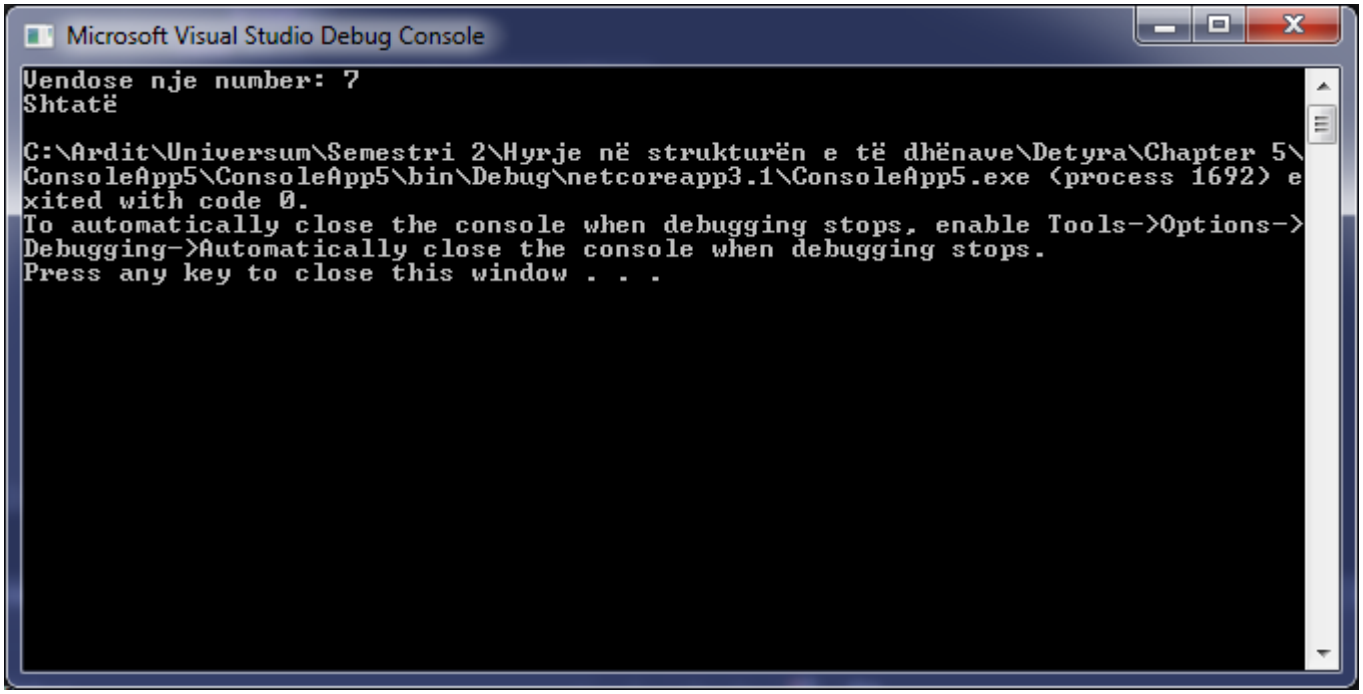


5. Write a program that asks for a digit (0-9), and depending on the input, **shows the digit as a word** (in English). Use a **`switch`** statement.

```
using System;

namespace ConsoleApp5
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.Write("Vendose nje number: ");
            int number = Int32.Parse(Console.ReadLine());

            switch (number)
            {
                case 0:
                    Console.WriteLine("Zero");
                    break;
                case 1:
                    Console.WriteLine("Një");
                    break;
                case 2:
                    Console.WriteLine("Dy");
                    break;
                case 3:
                    Console.WriteLine("Tre");
                    break;
                case 4:
                    Console.WriteLine("Katër");
                    break;
                case 5:
                    Console.WriteLine("Pesë");
                    break;
                case 6:
                    Console.WriteLine("Gjashtë");
                    break;
                case 7:
                    Console.WriteLine("Shtatë");
                    break;
                case 8:
                    Console.WriteLine("Tetë");
                    break;
                case 9:
                    Console.WriteLine("Nëntë");
                    break;
                default:
                    Console.WriteLine("Error");
                    break;
            }
        }
    }
}
```

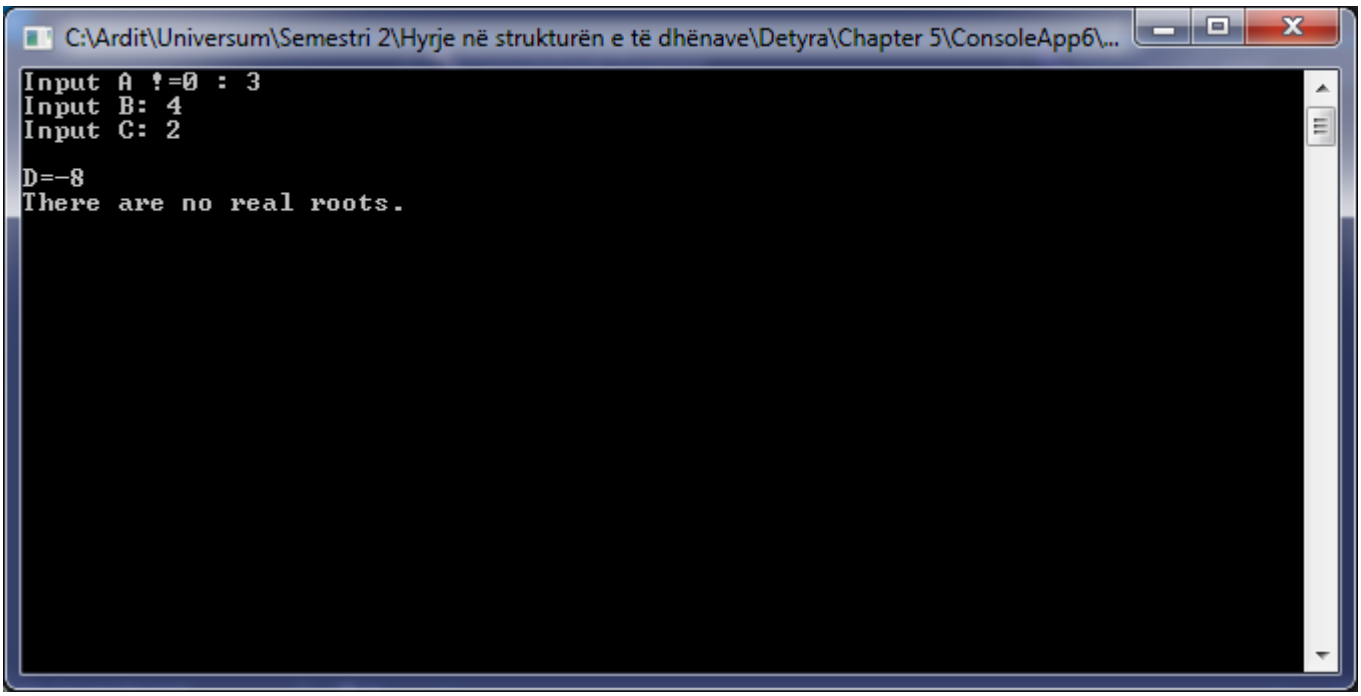

Microsoft Visual Studio Debug Console
Vendose nje number: 7
Shtatë
C:\Ardit\Universum\Semestri 2\Hyrje në strukturën e të dhënave\Detyra\Chapter 5\ConsoleApp5\ConsoleApp5\bin\Debug\netcoreapp3.1\ConsoleApp5.exe (process 1692) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .

6. Write a program that gets the coefficients ***a***, ***b*** and ***c*** of a quadratic equation: $ax^2 + bx + c$, calculates and prints its real roots (if they exist). Quadratic equations may have 0, 1 or 2 real roots.

```
using System;

namespace ConsoleApp6
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.Write("Input A !=0 : ");
            sbyte a = Convert.ToSByte(Console.ReadLine());
            Console.Write("Input B: ");
            sbyte b = Convert.ToSByte(Console.ReadLine());
            Console.Write("Input C: ");
            sbyte c = Convert.ToSByte(Console.ReadLine());

            sbyte d = (sbyte)(b * b - 4 * a * c);
            if (d < 0)
                Console.WriteLine("\nD={0}\nThere are no real roots.", d);
            else if (d == 0)
            {
                sbyte x1 = (sbyte)(-b / 2 * a);
                Console.WriteLine("\nX={0}", x1);
            }
            else
            {
                sbyte x1 = (sbyte)((-b + Math.Sqrt(d)) / (2 * a));
                sbyte x2 = (sbyte)((-b - Math.Sqrt(d)) / (2 * a));
                Console.WriteLine("\nX1={0}\nX2={1}", x1, x2);
            }
            Console.ReadLine();
        }
    }
}
```



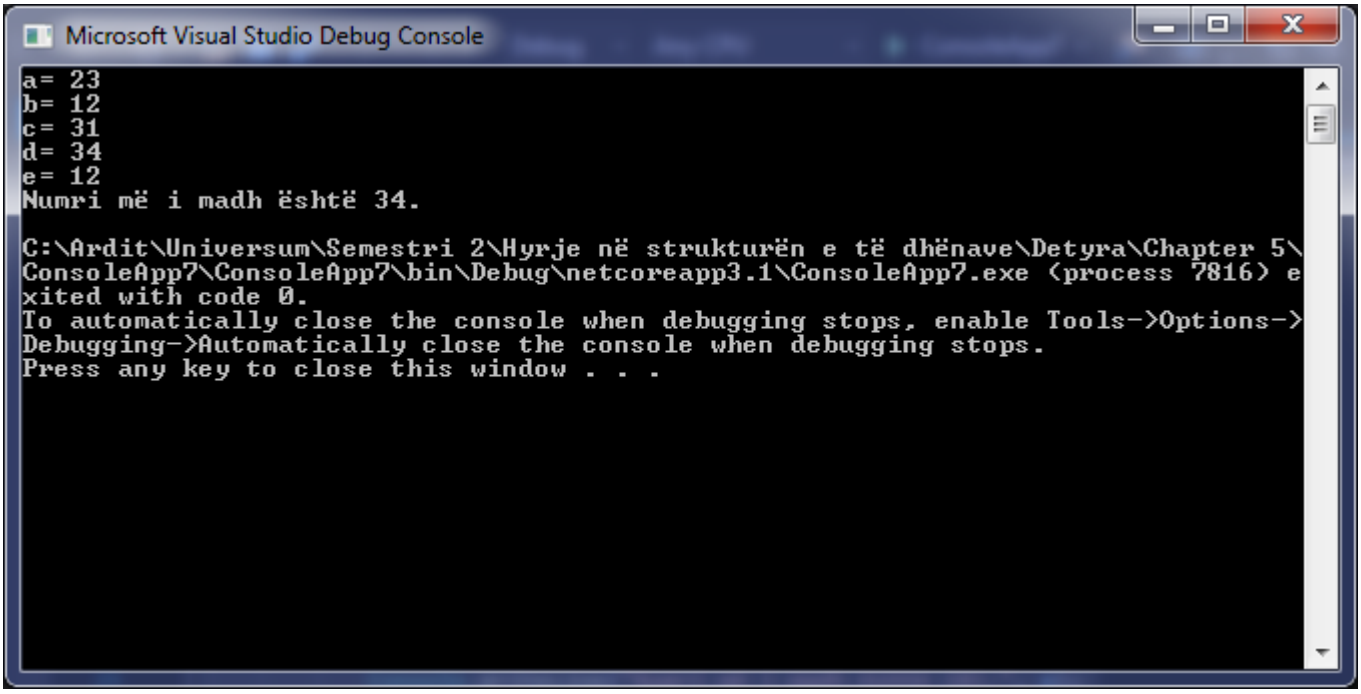
7. Write a program that finds the **greatest of given 5 numbers**.

```
using System;

namespace ConsoleApp7
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.Write("a= ");
            int a = Int32.Parse(Console.ReadLine());
            Console.Write("b= ");
            int b = Int32.Parse(Console.ReadLine());
            Console.Write("c= ");
            int c = Int32.Parse(Console.ReadLine());
            Console.Write("d= ");
            int d = Int32.Parse(Console.ReadLine());
            Console.Write("e= ");
            int e = Int32.Parse(Console.ReadLine());

            if (a < b) a = b;
            if (a < c) a = c;
            if (a < d) a = d;
            if (a < e) a = e;

            Console.WriteLine("Numri më i madh është {0}.", a);
        }
    }
}
```

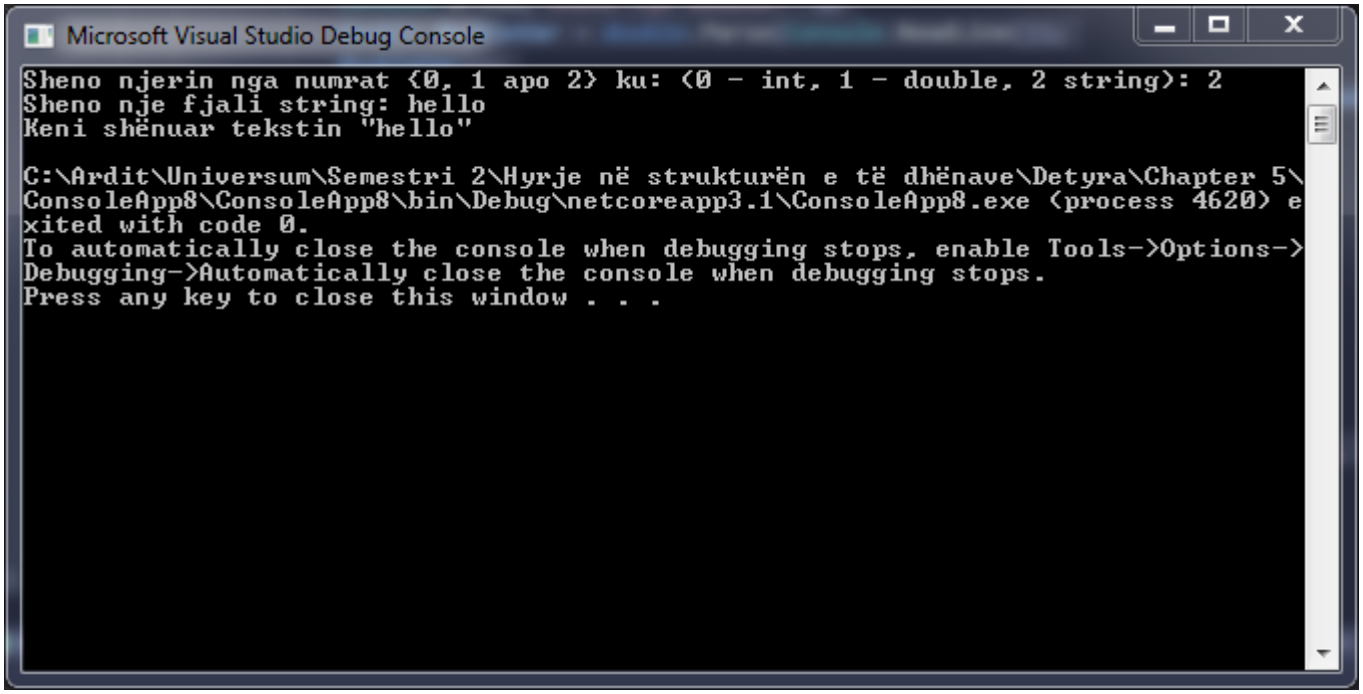


8. Write a program that, depending on the user's choice, inputs **int**, **double** or **string** variable. If the variable is **int** or **double**, the program increases it by 1. If the variable is a **string**, the program appends "*****" at the end. Print the result at the console.
Use **switch** statement.

```
using System;

namespace ConsoleApp8
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.Write("Sheno njerin nga numrat {0, 1 apo 2} ku: (0 - int, 1 - double, 2 string):
");
            int intVar = Int32.Parse(Console.ReadLine());

            switch (intVar)
            {
                case 0:
                    {
                        Console.Write("Sheno nje integjer: ");
                        intVar = Int32.Parse(Console.ReadLine());
                        intVar++;
                        Console.WriteLine("Int variable +1 = {0}", intVar);
                        break;
                    }
                case 1:
                    {
                        Console.Write("Sheno nje double: ");
                        double doubleVar = double.Parse(Console.ReadLine());
                        doubleVar++;
                        Console.WriteLine("Variables së dhënë ju eshte shtuar  \"+1\" = {0}",
doubleVar);
                        break;
                    }
                case 2:
                    {
                        Console.Write("Sheno nje fjali string: ");
                        string stringVar = Console.ReadLine();
                        stringVar = '"' + stringVar + '"';
                        Console.WriteLine("Keni shënuar tekstin {0}", stringVar);
                        break;
                    }
                default: Console.WriteLine("Keni shtypur numër gabim. Provo njerin nga numrat 0, 1,
2"); break;
            }
        }
    }
}
```


Microsoft Visual Studio Debug Console
Sheno njerin nga numrat (0, 1 apo 2) ku: (0 - int, 1 - double, 2 string): 2
Sheno nje fjali string: hello
Keni shënuar tekstin "hello"
C:\Ardit\Universum\Semestri 2\Hyrje në strukturën e të dhënave\Detyra\Chapter 5\ConsoleApp8\ConsoleApp8\bin\Debug\netcoreapp3.1\ConsoleApp8.exe (process 4620) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .

9. We are given 5 integer numbers. Write a program that finds those **subsets whose sum is 0**. Examples:
   - If we are given the numbers {3, -2, 1, 1, 8}, the sum of -2, 1 and 1 is 0.
   - If we are given the numbers {3, 1, -7, 35, 22}, there are no subsets with sum 0.

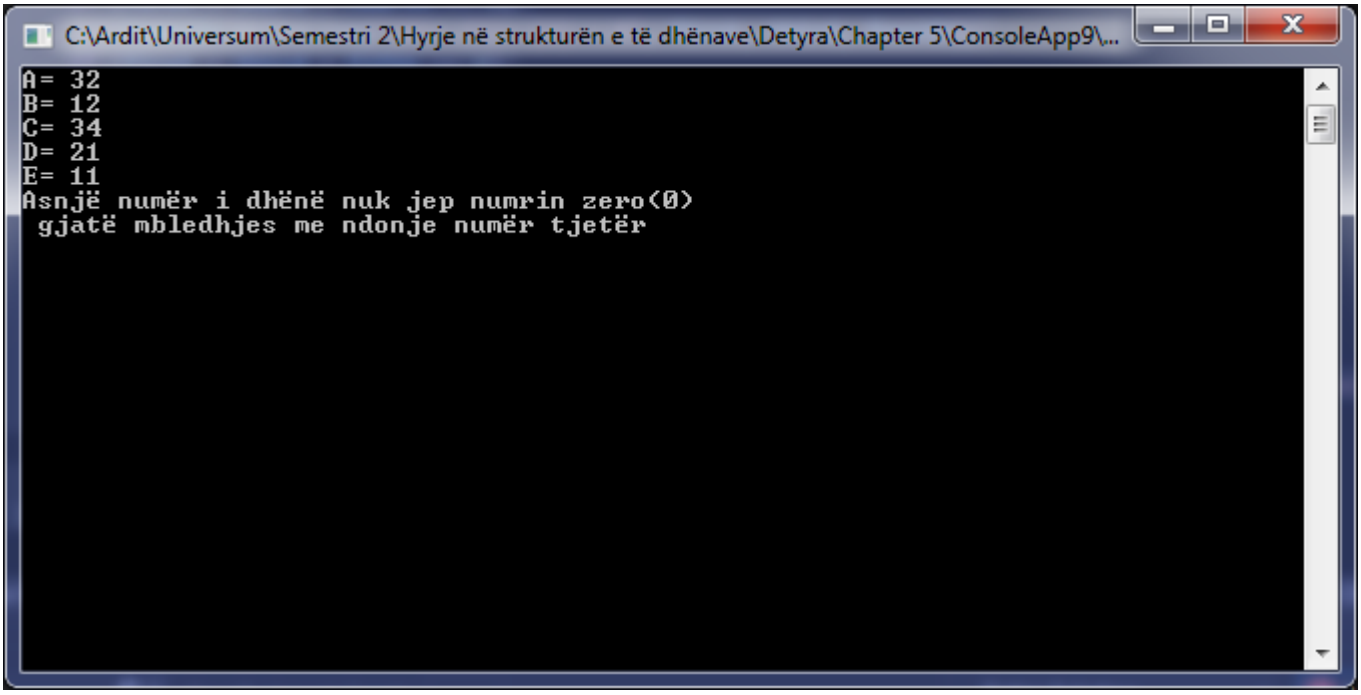
```
using System;

namespace ConsoleApp9
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.Write("A= ");
            sbyte first = Convert.ToSByte(Console.ReadLine());
            Console.Write("B= ");
            sbyte second = Convert.ToSByte(Console.ReadLine());
            Console.Write("C= ");
            sbyte third = Convert.ToSByte(Console.ReadLine());
            Console.Write("D= ");
            sbyte fourth = Convert.ToSByte(Console.ReadLine());
            Console.Write("E= ");
            sbyte fifth = Convert.ToSByte(Console.ReadLine());

            if (first + second == 0)
                Console.WriteLine("{0}+ {1} = 0", first, second);
            if (first + third == 0)
                Console.WriteLine("{0}+ {1} = 0", first, third);
            if (first + fourth == 0)
                Console.WriteLine("{0}+ {1} = 0", first, fourth);
            if (first + fifth == 0)
                Console.WriteLine("{0}+ {1} = 0", first, fifth);
            if (second + third == 0)
                Console.WriteLine("{0}+ {1} = 0", second, third);
            if (second + fourth == 0)
                Console.WriteLine("{0}+ {1} = 0", second, fourth);
            if (second + fifth == 0)
                Console.WriteLine("{0}+ {1} = 0", second, fifth);
            if (third + fourth == 0)
                Console.WriteLine("{0}+ {1} = 0", third, fourth);
            if (third + fifth == 0)
                Console.WriteLine("{0}+ {1} = 0", third, fifth);
            if (fourth + fifth == 0)
                Console.WriteLine("{0}+ {1} = 0", fourth, fifth);
            if (first + second + third == 0)
                Console.WriteLine("{0}+ {1}+ {2} = 0", first, second, third);
            if (first + second + fourth == 0)
                Console.WriteLine("{0}+ {1}+ {2} = 0", first, second, fourth);
            if (first + second + fifth == 0)
                Console.WriteLine("{0}+ {1}+ {2} = 0", first, second, fifth);
            if (first + third + fourth == 0)
                Console.WriteLine("{0}+ {1}+ {2} = 0", first, third, fourth);
            if (first + third + fifth == 0)
                Console.WriteLine("{0}+ {1}+ {2} = 0", first, third, fifth);
            if (second + third + fourth == 0)
                Console.WriteLine("{0}+ {1}+ {2} = 0", second, third, fourth);
            if (second + third + fifth == 0)
                Console.WriteLine("{0}+ {1}+ {2} = 0", second, third, fifth);
            if (third + fourth + fifth == 0)
                Console.WriteLine("{0}+ {1}+ {2} = 0", third, fourth, fifth);
            else
            {
```

```
                Console.WriteLine("Asnjë numër i dhënë nuk jep numrin zero(0) \n gjatë mbledhjes me
ndonje numër tjetër");
            }

            Console.ReadLine();
        }
    }
}
```



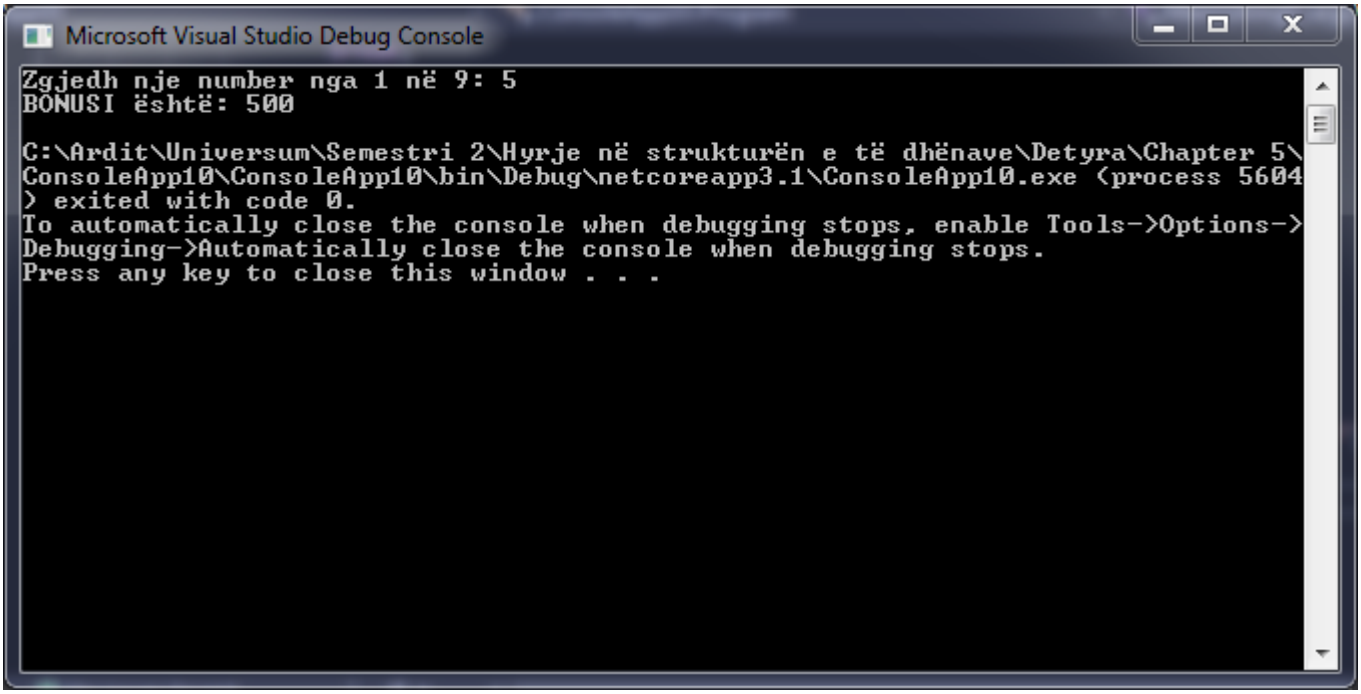
10. Write a program that applies **bonus points** to given scores in the range [1…9] by the following rules:
    - If the score is between 1 and 3, the program multiplies it by 10.
    - If the score is between 4 and 6, the program multiplies it by 100.
    - If the score is between 7 and 9, the program multiplies it by 1000.
    - If the score is 0 or more than 9, the program prints an error message.

```
using System;

namespace ConsoleApp10
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.Write("Zgjedh nje number nga 1 në 9: ");
            int a = int.Parse(Console.ReadLine());

            switch (a)
            {
                case 1:
                case 2:
                case 3:
                    Console.WriteLine("BONUSI është: " + (a * 10));
                    break;
                case 4:
                case 5:
                case 6:
                    Console.WriteLine("BONUSI është: " + (a * 100));
                    break;
                case 7:
                case 8:
                case 9:
                    Console.WriteLine("BONUSI është: " + (a * 1000));
                    break;
                default:
                    Console.WriteLine("Ke dhënë numrin gabim! \n Provo një number nga 1 në 9");
                    break;

            }
        }
    }
}
```


Microsoft Visual Studio Debug Console
Zgjedh nje number nga 1 në 9: 5
BONUSI është: 500
C:\Ardit\Universum\Semestri 2\Hyrje në strukturën e të dhënave\Detyra\Chapter 5\ConsoleApp10\ConsoleApp10\bin\Debug\netcoreapp3.1\ConsoleApp10.exe (process 5604) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .

11. * Write a program that **converts a number in the range [0…999] to words**, corresponding to the English pronunciation. Examples:
    - 0 --> "Zero"
    - 12 --> "Twelve"
    - 98 --> "Ninety eight"
    - 273 --> "Two hundred seventy three"
    - 400 --> "Four hundred"
    - 501 --> "Five hundred and one"
    - 711 --> "Seven hundred and eleven"

```
using System;

namespace ConsoleApp11
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.Write("Enter a number between 0 and 999: ");
            short number = Convert.ToInt16(Console.ReadLine());

            byte hundreds = (byte)(number / 100 | 0);
            byte tensAndOnes;

            if (number > 99) tensAndOnes = (byte)(number % 100);
            else tensAndOnes = (byte)(number * 1);

            byte ones = (byte)(number % 10);

            switch (hundreds)
            {
                case 1: Console.Write("One hundred "); break;
                case 2: Console.Write("Two hundred "); break;
                case 3: Console.Write("Three hundred "); break;
                case 4: Console.Write("Four hundred "); break;
                case 5: Console.Write("Five hundred "); break;
                case 6: Console.Write("Six hundred "); break;
                case 7: Console.Write("Seven hundred "); break;
                case 8: Console.Write("Eight hundred "); break;
                case 9: Console.Write("Nine hundred "); break;
            }

            if (hundreds >= 1 && tensAndOnes >= 1) Console.Write("and ");

            if (tensAndOnes >= 20 && tensAndOnes < 30) Console.Write("Twenty");
            else if (tensAndOnes >= 30 && tensAndOnes < 40) Console.Write("Thirty");
            else if (tensAndOnes >= 40 && tensAndOnes < 50) Console.Write("Fourty");
            else if (tensAndOnes >= 50 && tensAndOnes < 60) Console.Write("Fifty");
            else if (tensAndOnes >= 60 && tensAndOnes < 70) Console.Write("Sixty");
            else if (tensAndOnes >= 70 && tensAndOnes < 80) Console.Write("Seventy");
            else if (tensAndOnes >= 80 && tensAndOnes < 90) Console.Write("Eighty");
            else if (tensAndOnes >= 90 && tensAndOnes < 100) Console.Write("Ninety");

            switch (tensAndOnes)
            {
                case 1: Console.Write("One"); break;
                case 2: Console.Write("Two"); break;
                case 3: Console.Write("Three"); break;
                case 4: Console.Write("Four"); break;
                case 5: Console.Write("Five"); break;
```

```
                case 6: Console.Write("Six"); break;
                case 7: Console.Write("Seven"); break;
                case 8: Console.Write("Eight"); break;
                case 9: Console.Write("Nine"); break;
                case 10: Console.Write("Ten"); break;
                case 11: Console.Write("Eleven"); break;
                case 12: Console.Write("Twelve"); break;
                case 13: Console.Write("Thirteen"); break;
                case 14: Console.Write("Fourteen"); break;
                case 15: Console.Write("Fifteen"); break;
                case 16: Console.Write("Sixteen"); break;
                case 17: Console.Write("Seventeen"); break;
                case 18: Console.Write("Eighteen"); break;
                case 19: Console.Write("Nineteen"); break;
            }
            if (tensAndOnes > 20)
            {
                switch (ones)
                {
                    case 1: Console.Write("-one"); break;
                    case 2: Console.Write("-two"); break;
                    case 3: Console.Write("-three"); break;
                    case 4: Console.Write("-four"); break;
                    case 5: Console.Write("-five"); break;
                    case 6: Console.Write("-six"); break;
                    case 7: Console.Write("-seven"); break;
                    case 8: Console.Write("-eight"); break;
                    case 9: Console.Write("-nine"); break;
                }
            }
            if (number == 0) Console.Write("Zero");
            Console.ReadLine();
        }
    }
}
```