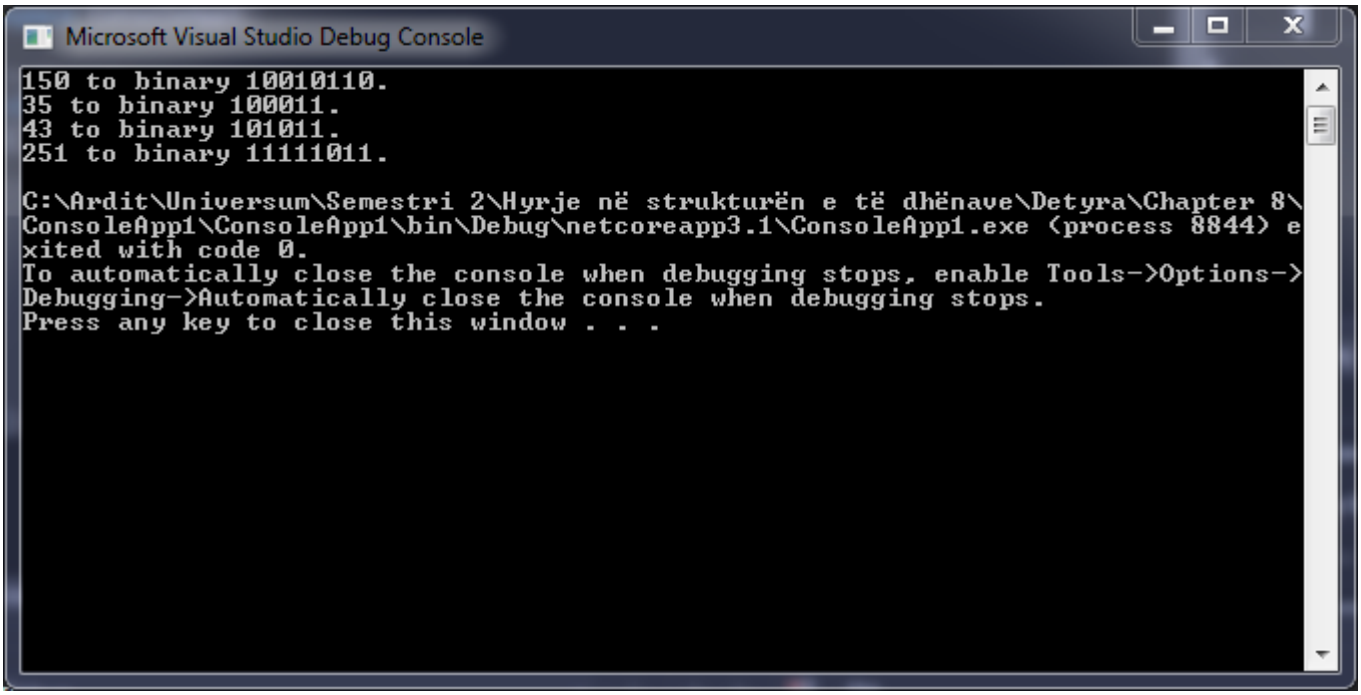
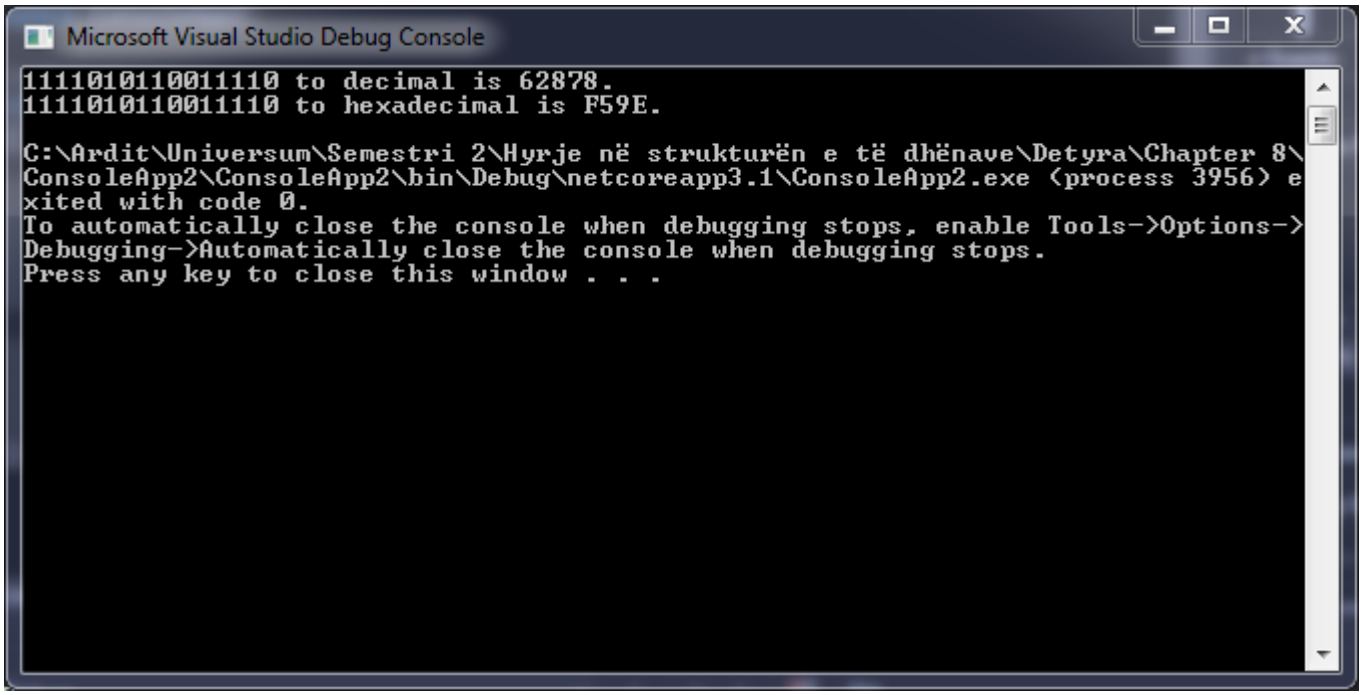
1. Convert the numbers 151, 35, 43, 251, 1023 and 1024 to the **binary numeral system**.

```
using System;

namespace ConsoleApp1
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine("150 to binary {0}.", Convert.ToString(150, 2));
            Console.WriteLine("35 to binary {0}.", Convert.ToString(35, 2));
            Console.WriteLine("43 to binary {0}.", Convert.ToString(43, 2));
            Console.WriteLine("251 to binary {0}.", Convert.ToString(251, 2));
        }
    }
}
```



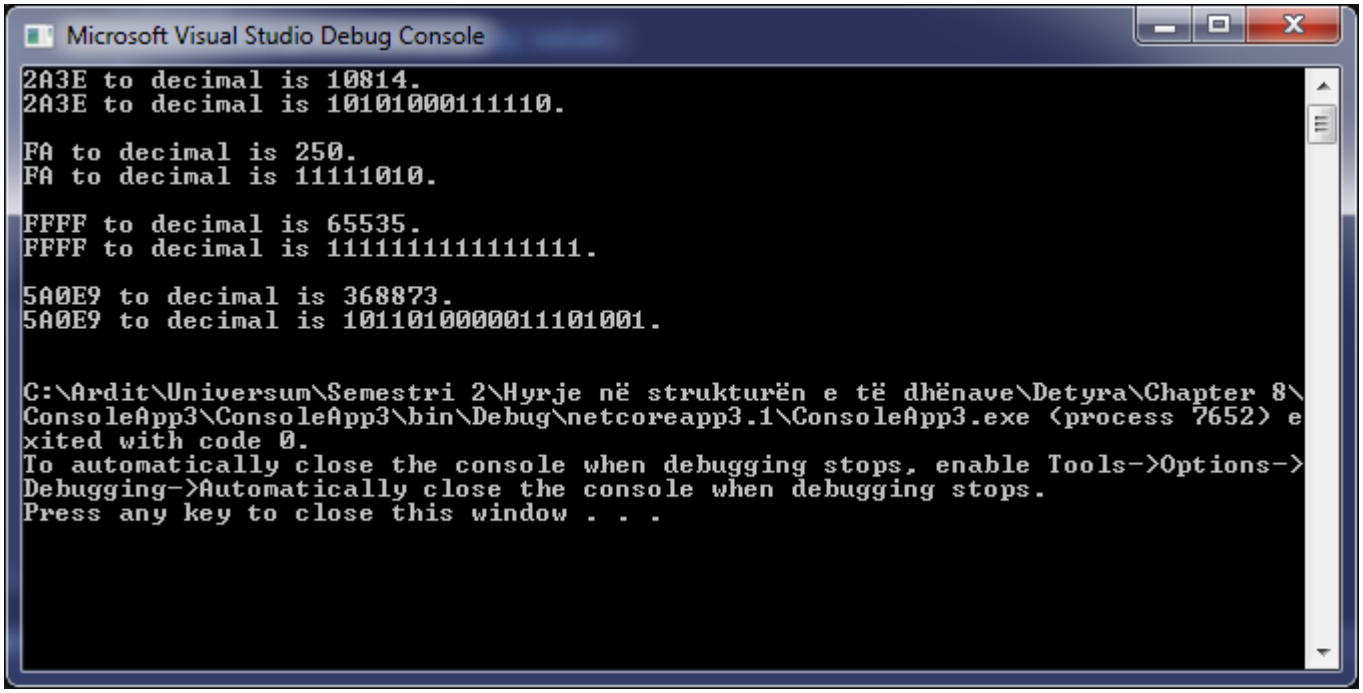
2. Convert the number 1111010110011110(2) to **hexadecimal** and **decimal** numeral systems.

```
using System;

namespace ConsoleApp2
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine("1111010110011110 to decimal is {0}.",
                Convert.ToInt64("1111010110011110", 2));

            Console.WriteLine("1111010110011110 to hexadecimal is {0}.",
                Convert.ToInt64("1111010110011110", 2).ToString("X"));
        }
    }
}
```



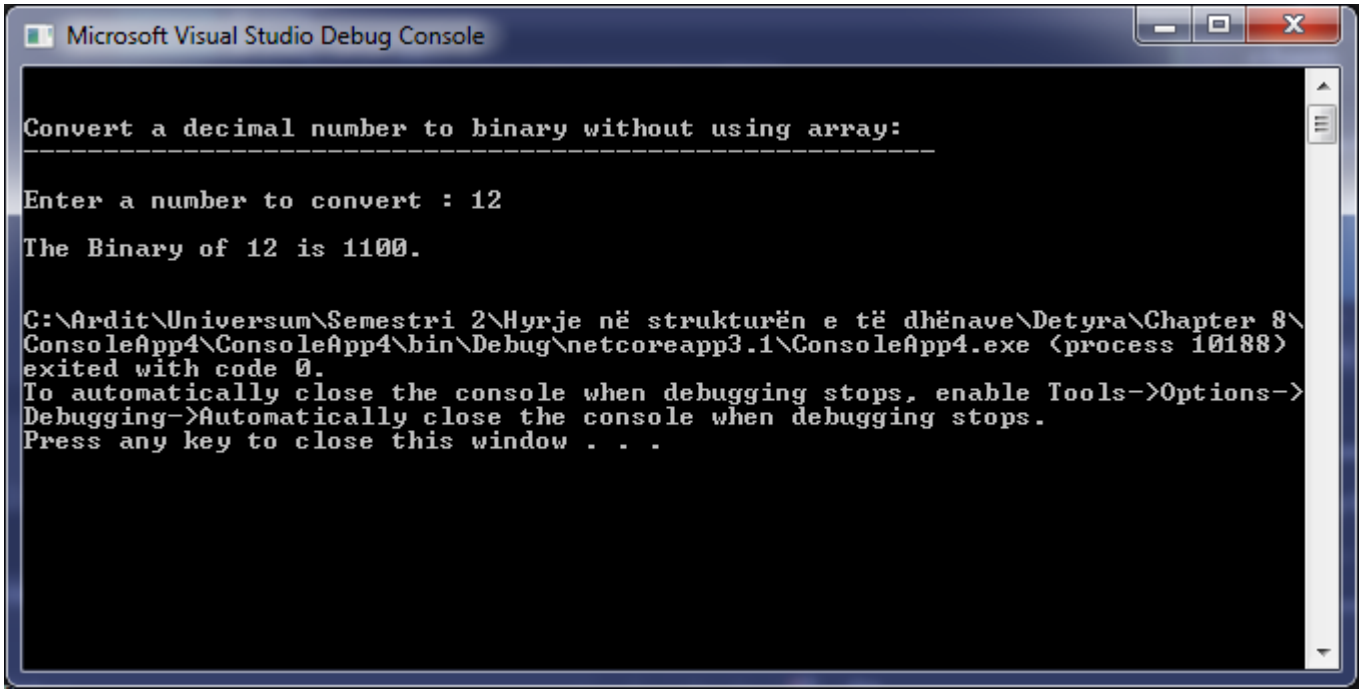
3. Convert the hexadecimal numbers FA, 2A3E, FFFF, 5A0E9 to **binary** and **decimal** numeral systems.

```
using System;

namespace ConsoleApp3
{
    class Program
    {
        static void conversion(string value)
        {
            Console.WriteLine("{0} to decimal is {1}.",
                value, Convert.ToInt32(value, 16));
            Console.WriteLine("{0} to decimal is {1}.\n", value,
                Convert.ToString(Convert.ToInt32(value, 16), 2));
        }

        static void Main(string[] args)
        {
            conversion("2A3E");
            conversion("FA");
            conversion("FFFF");
            conversion("5A0E9");
        }
    }
}
```



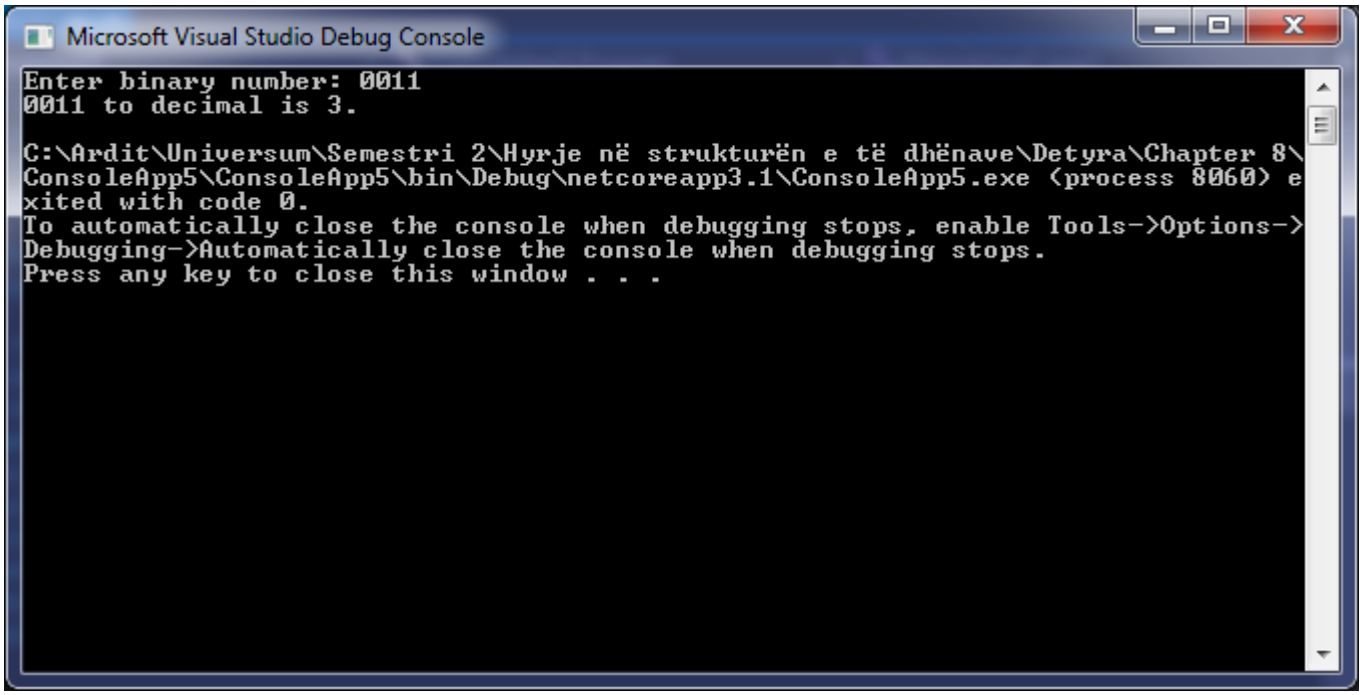
4. Write a program that converts a **decimal number to binary one**.

```
using System;

namespace ConsoleApp4
{
    class Program
    {
        public static void Main()
        {
            int n, i, j, binno = 0, dn;
            Console.Write("\n\n");
            Console.Write("Convert a decimal number to binary without using array:\n");
            Console.Write("-------------------------------------------------------------");
            Console.Write("\n\n");
            Console.Write("Enter a number to convert : ");
            n = Convert.ToInt32(Console.ReadLine());
            dn = n;
            i = 1;
            for (j = n; j > 0; j = j / 2)
            {
                binno = binno + (n % 2) * i;
                i = i * 10;
                n = n / 2;
            }

            Console.Write("\nThe Binary of {0} is {1}.\n\n", dn, binno);
        }
    }
}
```



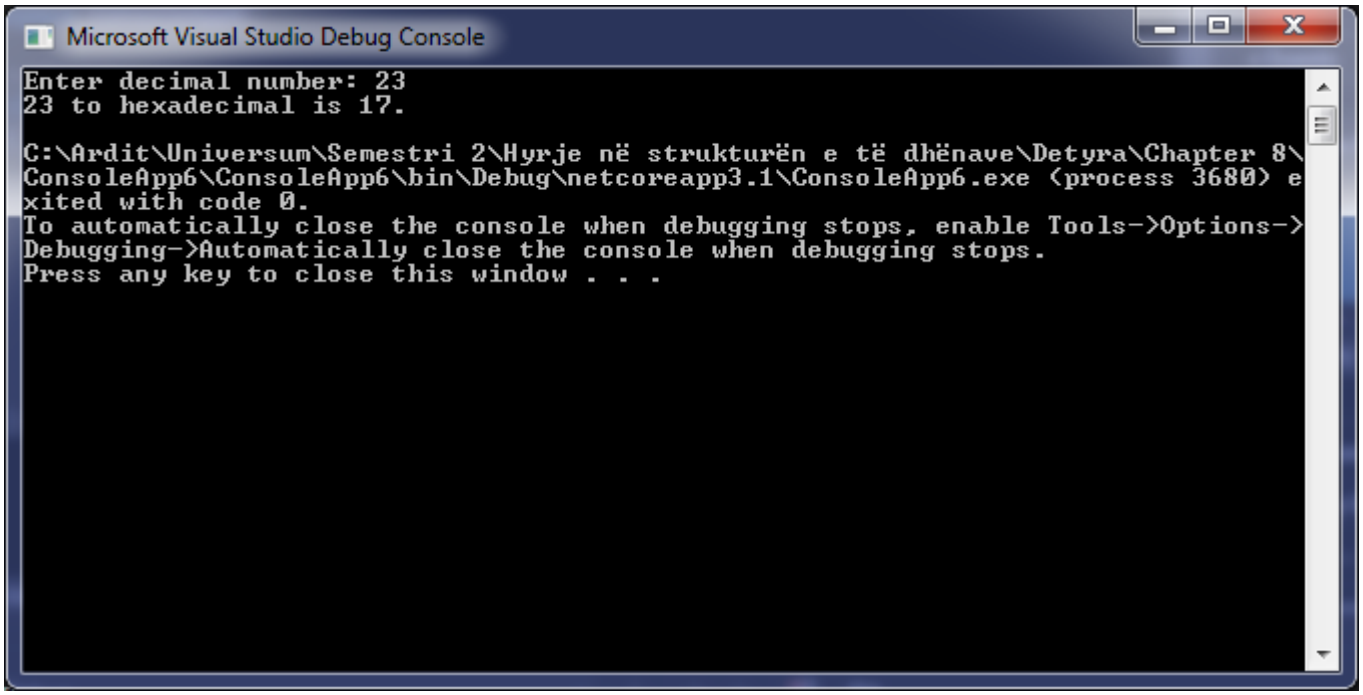
5. Write a program that converts a **binary number to decimal one**

```
using System;

namespace ConsoleApp5
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.Write("Enter binary number: ");
            string binary = Console.ReadLine();
            Console.WriteLine("{0} to decimal is {1}.",
                binary, Convert.ToInt64(binary, 2));
        }
    }
}
```



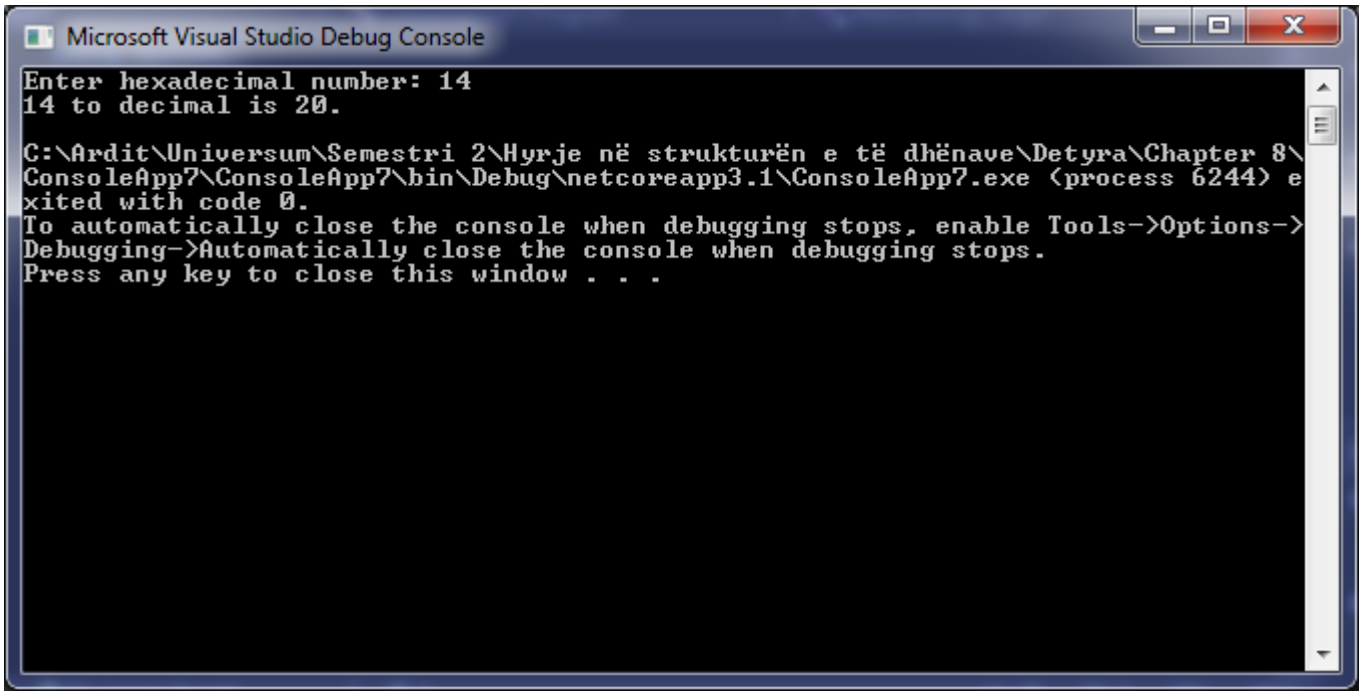
6. Write a program that converts a **decimal number to hexadecimal one**.

```
using System;

namespace ConsoleApp6
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.Write("Enter decimal number: ");
            int deci = Int32.Parse(Console.ReadLine());
            Console.WriteLine("{0} to hexadecimal is {1}.",
                deci, deci.ToString("X"));
        }
    }
}
```



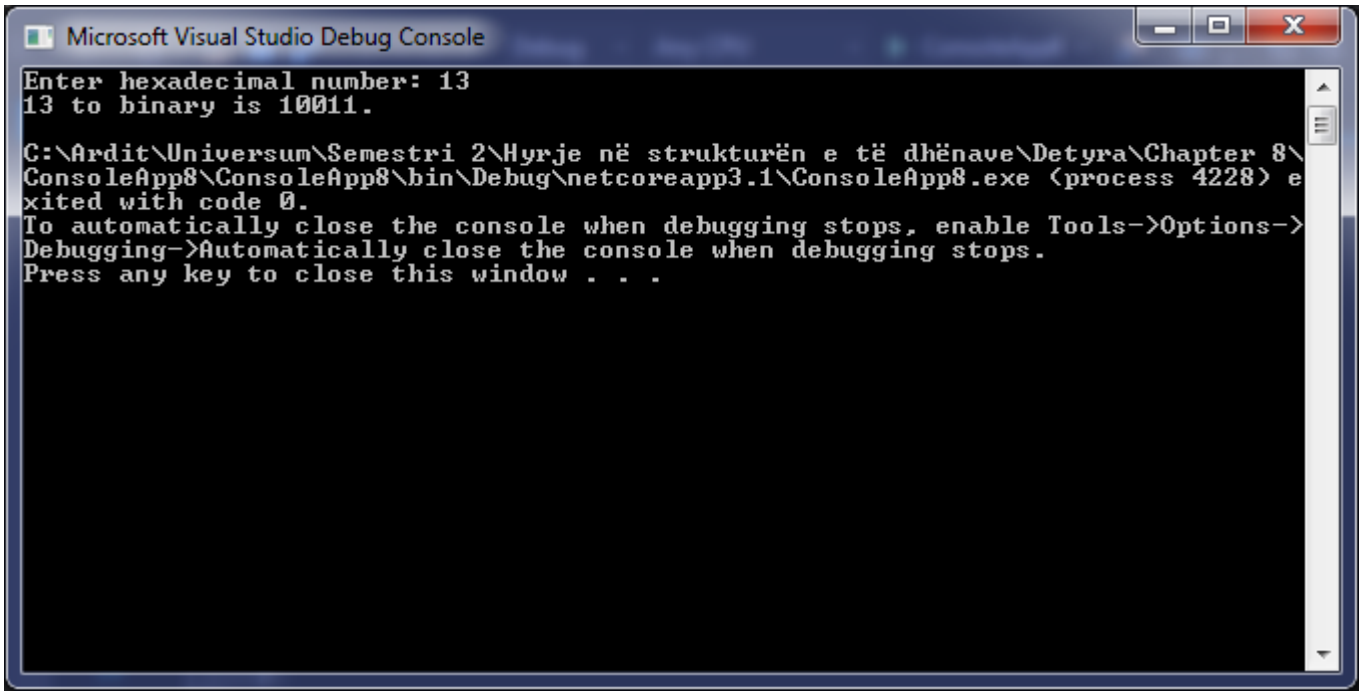
7. Write a program that converts a **hexadecimal number to decimal one**.

```
using System;

namespace ConsoleApp7
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.Write("Enter hexadecimal number: ");
            string hexa = Console.ReadLine();
            Console.WriteLine("{0} to decimal is {1}.",
                hexa, Convert.ToInt32(hexa, 16));
        }
    }
}
```



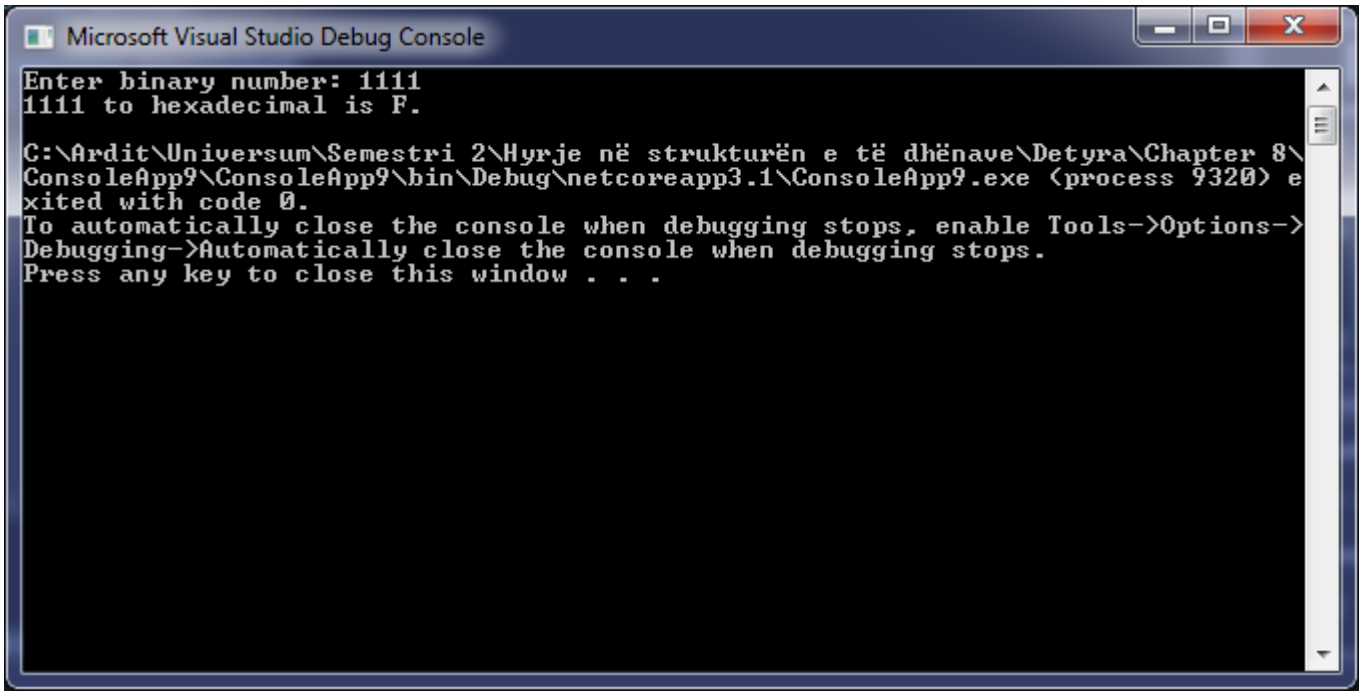
8. Write a program that converts a **hexadecimal number to binary one.**

```
using System;

namespace ConsoleApp8
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.Write("Enter hexadecimal number: ");
            string hexa = Console.ReadLine();
            Console.WriteLine("{0} to binary is {1}.",
                hexa, Convert.ToString(Convert.ToInt32(hexa, 16), 2));
        }
    }
}
```



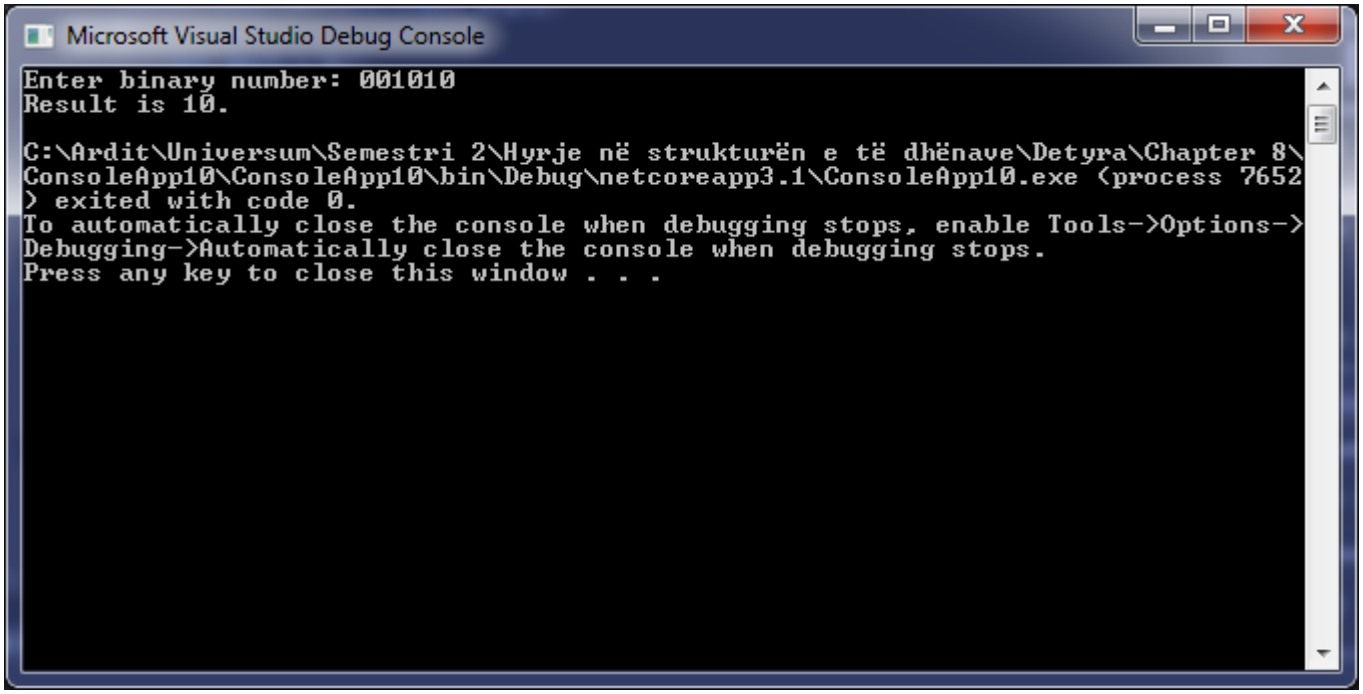
9. Write a program that converts a **binary number to hexadecimal one**.

```
using System;

namespace ConsoleApp9
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.Write("Enter binary number: ");
            string binary = Console.ReadLine();
            Console.WriteLine("{0} to hexadecimal is {1}.",
                binary, Convert.ToInt32(binary, 2).ToString("X"));
        }
    }
}
```



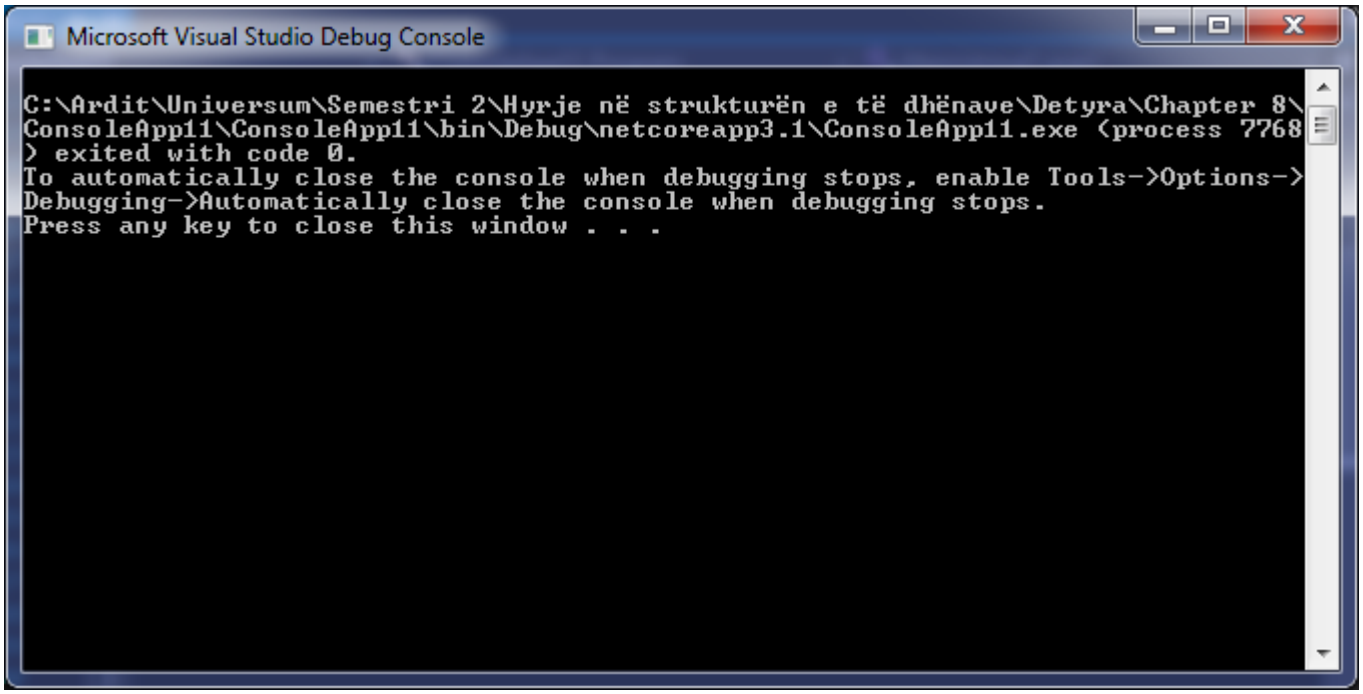
10. Write a program that converts a **binary number to decimal** using the Horner scheme.

```
using System;

namespace ConsoleApp10
{
    class Program
    {
        static void Main(string[] args)
        {
            int deci = 0;

            Console.Write("Enter binary number: ");
            string binary = Console.ReadLine();
            int length = binary.Length;
            int power = length - 1;

            for (int i = 0; i < length; i++)
            {
                deci += (int)(int.Parse(binary[i].ToString()) * Math.Pow(2, power));
                power--;
            }

            Console.WriteLine("Result is {0}.", deci);
        }
    }
}
```



11. Write a program that converts **Roman digits to Arabic** ones.

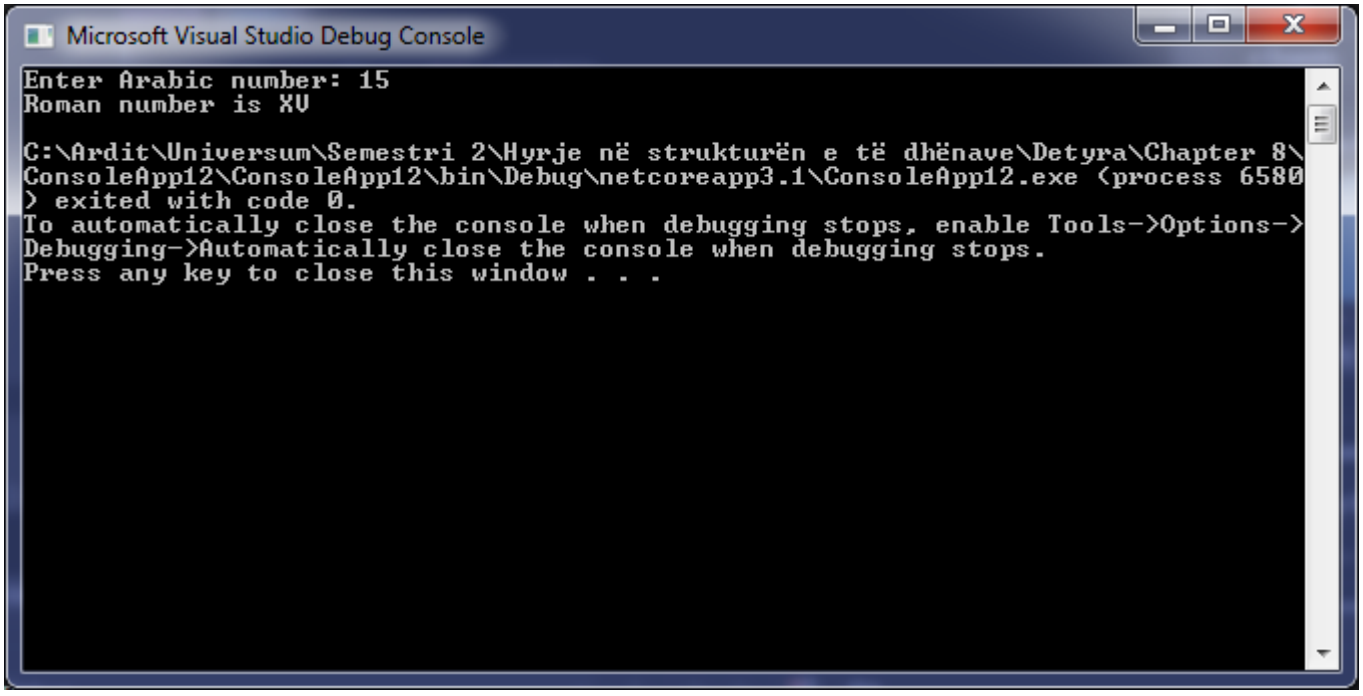
```
using System;

namespace ConsoleApp11
{
    class Program
    {
        static void Main(string[] args)
        {
            static string ToRoman(int number)
            {
                if ((number < 0) || (number > 3999)) throw new ArgumentOutOfRangeException("insert
value betwheen 1 and 3999");
                if (number < 1) return string.Empty;
                if (number >= 1000) return "M" + ToRoman(number - 1000);
                if (number >= 900) return "CM" + ToRoman(number - 900);
                if (number >= 500) return "D" + ToRoman(number - 500);
                if (number >= 400) return "CD" + ToRoman(number - 400);
                if (number >= 100) return "C" + ToRoman(number - 100);
                if (number >= 90) return "XC" + ToRoman(number - 90);
                if (number >= 50) return "L" + ToRoman(number - 50);
                if (number >= 40) return "XL" + ToRoman(number - 40);
                if (number >= 10) return "X" + ToRoman(number - 10);
                if (number >= 9) return "IX" + ToRoman(number - 9);
                if (number >= 5) return "V" + ToRoman(number - 5);
                if (number >= 4) return "IV" + ToRoman(number - 4);
                if (number >= 1) return "I" + ToRoman(number - 1);
                throw new ArgumentOutOfRangeException("something bad happened");
            }
        }
        }
}
```



12. Write a program that converts **Arabic digits to Roman ones**.

```
using System;

namespace ConsoleApp12
{
    class Program
    {
        static void Main(string[] args)
        {
            String result = "";
            Console.Write("Enter Arabic number: ");
            int i = Convert.ToInt32(Console.ReadLine());
            int thousands = i / 1000, hundreds = (i / 100) % 10, tens = (i / 10) % 10, ones = i % 10;

            switch (thousands)
            {
                case 1: result += "M"; break;
                case 2: result += "MM"; break;
                case 3: result += "MMM"; break;
            }

            switch (hundreds)
            {
                case 1: result += "C"; break;
                case 2: result += "CC"; break;
                case 3: result += "CCC"; break;
                case 4: result += "CD"; break;
                case 5: result += "D"; break;
                case 6: result += "DC"; break;
                case 7: result += "DCC"; break;
                case 8: result += "DCCC"; break;
                case 9: result += "CM"; break;
            }

            switch (tens)
            {
                case 1: result += "X"; break;
                case 2: result += "XX"; break;
                case 3: result += "XXX"; break;
                case 4: result += "XL"; break;
                case 5: result += "L"; break;
                case 6: result += "LX"; break;
                case 7: result += "LXX"; break;
                case 8: result += "LXXX"; break;
                case 9: result += "XC"; break;
            }

            switch (ones)
            {
                case 1: result += "I"; break;
                case 2: result += "II"; break;
                case 3: result += "III"; break;
                case 4: result += "IV"; break;
                case 5: result += "V"; break;
                case 6: result += "VI"; break;
                case 7: result += "VII"; break;
                case 8: result += "VIII"; break;
                case 9: result += "IX"; break;
            }

            Console.WriteLine("Roman number is " + result);
        }
```

```
    }
}
```


Microsoft Visual Studio Debug Console
Enter Arabic number: 15
Roman number is XV
C:\Ardit\Universum\Semestri 2\Hyrje në strukturën e të dhënave\Detyra\Chapter 8\ConsoleApp12\ConsoleApp12\bin\Debug\netcoreapp3.1\ConsoleApp12.exe (process 6580) 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 . . .

13. Write a program that by given N, S, D converts the number N from an S-based numeral system to a D based numeral system.

```
using System;

namespace ConsoleApp13
{
    class Program
    {
        static void Main(string[] args)
        {
            int s, d;

            Console.Write("Enter N: ");
            string n = Console.ReadLine();

            do
            {
                Console.Write("Enter S (S == 2, 8, 10 or 16): ");
                s = Int32.Parse(Console.ReadLine());
            } while (s != 2 && s != 8 && s != 10 && s != 16);

            do
            {
                Console.Write("Enter D (D == 2, 8, 10 or 16): ");
                d = Int32.Parse(Console.ReadLine());
            } while (d != 2 && d != 8 && d != 10 && d != 16);

            n = Convert.ToString(Convert.ToInt32(n, s), d);

            Console.WriteLine("Result is {0}.", n);
        }
    }
}
```