**Exercises**

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

namespace detyra1

{

class Program

{

public 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 detyra2

{

class Program

{

public 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 detyra3

{

class Program

{

public static void Main(string[] args)

{

//Console.Write("Shkruaj nje numer hexadecimal: ");

//string nrHexa = Console.ReadLine();

//int nrDecimal = Convert.ToInt32(nrHexa, 16);

//Console.WriteLine("Numri hexadecimal {0} ne decimal eshte {1}", nrHexa, nrDecimal);

Console.Write("Shkruaj nje numer hexadecimal: ");

string nrHexa = Console.ReadLine();

int hex = Convert.ToInt32(nrHexa, 16);

string nrBinar = Convert.ToString(hex, 2);

Console.WriteLine("Numri hexadecimal {0} ne numer binare eshte {1}", nrHexa, nrBinar);

}

}

}

//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 detyra4

{

class Program

{

public static void Main(string[] args)

{

Console.Write("Enter decimal number: ");

int deci= Int32.Parse(Console.ReadLine());

Console.WriteLine("{0} to binary is {1}.",deci , deci.ToString(deci, 2));

}

}

}

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

namespace detyra5

{

class Program

{

public static void Main(string[] args)

{

Console.Write("Enter binary number: ");

string binary = Console.ReadLine();

Console.WriteLine("{0} to decimal is {1}.",binary, Convert.ToInt32(binary, 2));

}

}

}

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

namespace detyra6

{

class Program

{

public static void Main(string[] args)

{

Console.WriteLine("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 detyra7

{

class Program

{

public static void Main(string[] args)

{

Console.WriteLine("enter a hexadecimal number:");

string hexa = Console.ReadLine();

Console.WriteLine("{0} is decimal to {1}", hexa, Convert.ToInt32(hexa, 16));

}

}

}

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

using System;

namespace detyra8

{

class Program

{

public static void Main(string[] args)

{

Console.WriteLine("enter hexadecimal number");

string hexa = Console.ReadLine();

Console.WriteLine("{0} is hexadecimal to {1}.", hexa, (Convert.ToInt32(hexa, 16), 2));

}

}

}

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

namespace detyra9

{

class Program

{

public static void Main(string[] args)

{

Console.WriteLine("enter a binary number");

string binary = Console.ReadLine();

Console.WriteLine("{0} is hexadecimal to {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;

using System.Collections.Generic;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

namespace detyra9

{

class Program

{

public 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.

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

13.   Write a program that by given **N**, **S**, **D** (**2** **≤** **S**, **D** **≤** **16**) converts the number **N** from an **S**-based numeral system to a **D**based numeral system.

14.   Try **adding up 50,000,000 times the number 0.000001**. Use a loop and addition (not direct multiplication). Try it with **float** and **double** and after that with **decimal**. Do you notice the **huge difference in the results** and speed of calculation? Explain what happens.

15.   \* Write a program that prints the value of the **mantissa**, the **sign of the mantissa** and **exponent** in **float** numbers (32-bit numbers with a floating-point according to the **IEEE 754** standard). Example: for the number **-27.25** should be printed: **sign** = **1**, **exponent** = **10000011**, **mantissa** = **10110100000000000000000**.