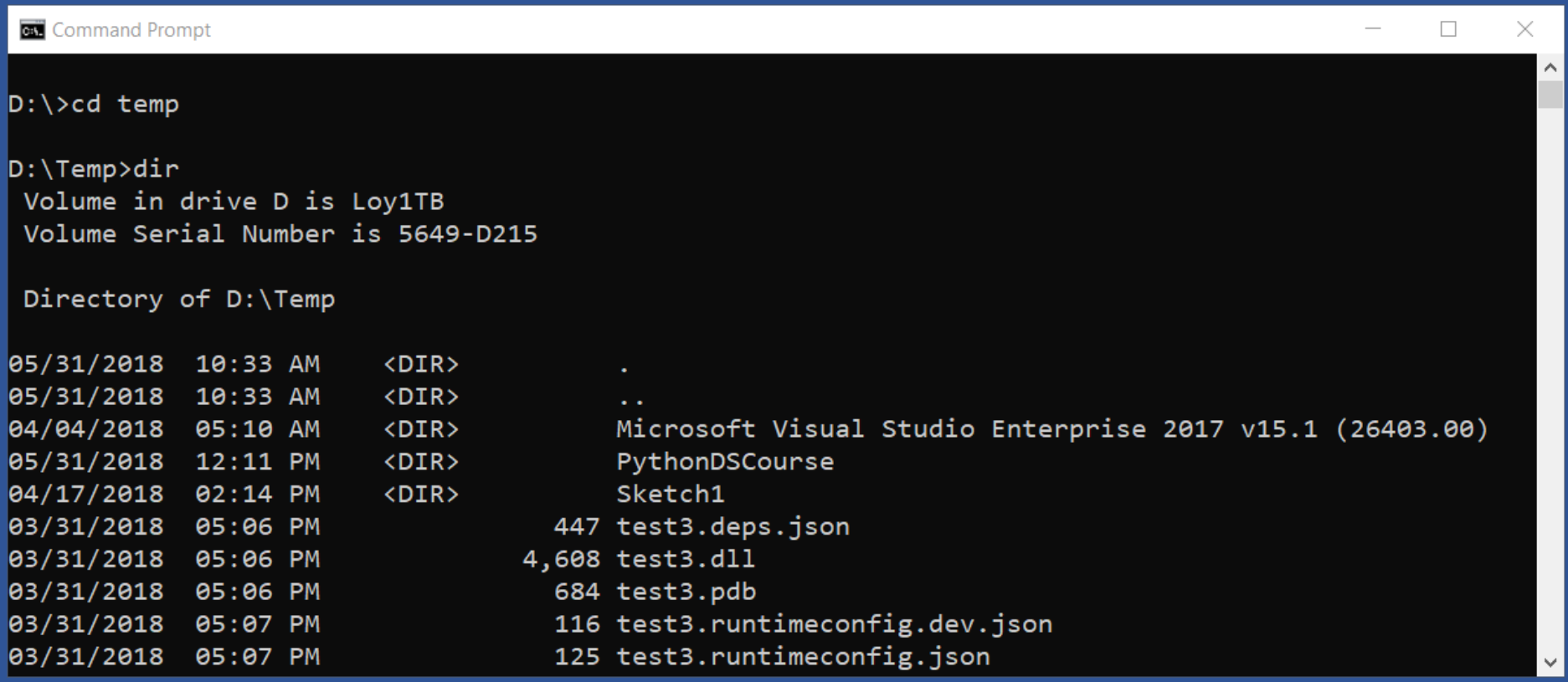
Console Input and Output

Invoking console



Basic commands

Command	Description
`dir`	Displays the content of the current directory.
`cd <directory name>`	Changes the current directory.
`mkdir <directory name>`	Creates a new directory in the current one.
`rmdir <directory name>`	Deletes an existing directory.
`type <file name>`	Prints file content.
`copy <src file> <destination file>`	Copies one file into another.

Console.Write

```
Console.Out.WriteLine("Hello World");
// Print String
Console.WriteLine("Hello World");
// Print int
Console.WriteLine(5);
// Print double
Console.WriteLine(3.14159265358979);
// multiple line / new line
Console.WriteLine("I love");
Console.Write("this ");
Console.Write("Book!");
// String concat
string age = "twenty six";
string text = "He is " + age + " years old.";
Console.WriteLine(text);
Console.WriteLine("He is " + age + " years old.");
string s = "Four: " + 2 + 2;
Console.WriteLine(s);
// Four: 22
string s1 = "Four: " + (2 + 2);
Console.WriteLine(s1);
// Four: 4
```

String formatting

```
string str = "Hello World!";
// Print (the normal way)
Console.Write(str);
// Print (through formatting string)
Console.Write("{0}", str);
string name = "John";
int age = 18;
string town = "Seattle";
Console.Write("{0} is {1} years old from {2}!\n", name, age, town);
Console.Write("{1} is {0} years old from {3}!", 18, "John", 0, "Seattle");
// Alignment Component
Console.WriteLine("{0,6}", 123);
Console.WriteLine("{0,6}", 1234);
Console.WriteLine("{0,6}", 12);
Console.Write("{0,-6}", 123);
Console.WriteLine("--end");
```

Numbers formatting

```
// StandardNumericFormats
Console.WriteLine("{0:C2}", 123.456);
//Output: 123,46 лв.
Console.WriteLine("{0:D6}", -1234);
//Output: -001234
Console.WriteLine("{0:E2}", 123);
//Output: 1,23E+002
Console.WriteLine("{0:F2}", -123.456);
//Output: -123,46
Console.WriteLine("{0:N2}", 1234567.8);
//Output: 1 234 567,80
Console.WriteLine("{0:P}", 0.456);
//Output: 45,60 %
Console.WriteLine("{0:X}", 254);
//Output: FE
```

Custom numeric format

```
// CustomNumericFormats
Console.WriteLine("{0:0.00}", 1);
//Output: 1.00
Console.WriteLine("{0:#.##}", 0.234);
//Output: .23
Console.WriteLine("{0:#####}", 12345.67);
//Output: 12346
Console.WriteLine("{0:(0#) ### ## ##}", 29342525);
//Output: (02) 934 25 25
Console.WriteLine("{0:%##}", 0.234);
//Output: %23
DateTime d = new DateTime(2012, 02, 27, 17, 30, 22);
Console.WriteLine("{0:dd/MM/yyyy HH:mm:ss}", d);
Console.WriteLine("{0:d.MM.yy}", d);
Console.WriteLine("{0:G}", DayOfWeek.Wednesday); // Wednesday
Console.WriteLine("{0:D}", DayOfWeek.Wednesday); // 3
Console.WriteLine("{0:X}", DayOfWeek.Wednesday); // 00000003
```

ReadLine()

```
Console.Write("Please enter your first name: ");
string firstName = Console.ReadLine();
Console.Write("Please enter your last name: ");
string lastName = Console.ReadLine();
Console.WriteLine("Hello, {0} {1}!", firstName, lastName);
// Output: Please enter your first name: John
// Please enter your last name: Smith
// Hello, John Smith!
```

Read()

```
// using read()
int codeRead = 0;
do
{
    codeRead = Console.Read();
    if (codeRead != 0)
    {
        Console.Write((char)codeRead);
    }
}
while (codeRead != 10);
```

Reading Number

```
// reading number
Console.Write("a = ");
int a = int.Parse(Console.ReadLine());
Console.Write("b = ");
int b = int.Parse(Console.ReadLine());
Console.WriteLine("{0} + {1} = {2}", a, b, a + b);
Console.WriteLine("{0} * {1} = {2}", a, b, a * b);
Console.Write("f = ");
double f = double.Parse(Console.ReadLine());
Console.WriteLine("{0} * {1} / {2} = {3}",a, b, f, a * b / f);
//a = 5
//b = 6
//5 + 6 = 11
//5 * 6 = 30
//f = 7.5
//5 * 6 / 7.5 = 4
```

Pars input

```
// pars string to double
Console.Write("Enter a floating-point number: ");
string line = Console.ReadLine();
double number = double.Parse(line);
Console.WriteLine("You entered: {0}", number);
// Parsing Numbers Conditionally
string str = Console.ReadLine();
int intValue;
bool parseSuccess = Int32.TryParse(str, out intValue);
Console.WriteLine(parseSuccess ?
"The square of the number is " + intValue * intValue + "."
: "Invalid number!");
```

ReadKey()

```
// Reading by Console.ReadKey()
ConsoleKeyInfo key = Console.ReadKey();
Console.WriteLine();
Console.WriteLine("Character entered: " + key.KeyChar);
Console.WriteLine("Special keys: " + key.Modifiers);
//A
//Character entered: A
//Special keys: Shift
```

Example 1

```
// print out letter from book publisher to reader
Console.Write("Enter person name: ");
string person = Console.ReadLine();
Console.Write("Enter book name: ");
string book = Console.ReadLine();
string from = "Authors Team";
Console.WriteLine(" Dear {0},", person);
Console.Write("We are pleased to inform " +
"you that \"{1}\" is the best Bulgarian book. {2}" +
"The authors of the book wish you good luck {0}!{2}",
person, book, Environment.NewLine);
Console.WriteLine(" Yours,");
Console.WriteLine(" {0}", from);
//Enter person name: Readers
//Enter book name: Introduction to programming with C#
//Dear Readers,
//We are pleased to inform you that "Introduction to programming
//with C#" is the best Bulgarian book.
//The authors of the book wish you good luck Readers!
//Yours,
//Authors Team
```

Example 2

```
Console.WriteLine("This program calculates " +
"the area of a rectangle or a triangle");
Console.WriteLine("Enter a and b (for rectangle) " +
"or a and h (for triangle): ");
int a = int.Parse(Console.ReadLine());
int b = int.Parse(Console.ReadLine());
Console.WriteLine("Enter 1 for a rectangle or " +
"2 for a triangle: ");
int choice = int.Parse(Console.ReadLine());
double area = (double)(a * b) / choice;
Console.WriteLine("The area of your figure is " + area);

//This program calculates the area of a rectangle or a triangle
//Enter a and b(for rectangle) or a and h(for triangle):
//5
//4
//Enter 1 for a rectangle or 2 for a triangle:
//2
//The area of your figure is 10
```

Exercises

1. Write a program that reads from the console three numbers of type int and prints their sum.

2. Write a program that reads from the console the radius "r" of a circle and prints its perimeter and area.

3. A given company has name, address, phone number, fax number, web site and manager. The manager has name, surname and phone number. Write a program that reads information about the company and its manager and then prints it on the console.

4. Write a program that prints three numbers in three virtual columns on the console. Each column should have a width of 10 characters and the numbers should be left aligned. The first number should be an integer in hexadecimal; the second should be fractional positive; and the third – a negative fraction. The last two numbers have to be rounded to the second decimal place.

5. Write a program that reads from the console two integer numbers (int) and prints how many numbers between them exist, such that the remainder of their division by 5 is 0. Example: in the range (14, 25) there are 3 such numbers: 15, 20 and 25.

6. Write a program that reads two numbers from the console and prints the greater of them. Solve the problem without using conditional statements.

7. Write a program that reads five integer numbers and prints their sum. If an invalid number is entered the program should prompt the user to enter another number.

8. Write a program that reads five numbers from the console and prints the greatest of them.

9. Write a program that reads an integer number n from the console. After that reads n numbers from the console and prints their sum.

10. Write a program that reads an integer number n from the console and prints all numbers in the range [1…n], each on a separate line.

11. Write a program that prints on the console the first 100 numbers in the Fibonacci sequence: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, …

12. Write a program that calculates the sum (with precision of 0.001) of the following sequence: 1 + 1/2 - 1/3 + 1/4 - 1/5 +