

5 student:

Working with files

1. [st5-task-01.cs] {0.8 points or 1.5} Download the `in.txt` file and paste it into directory of your project (~\bin\Debug) or some folder you can read from. Create a program to print out all even numbers from the file which are **less than 6 and greater than 0** (range [1;5]) into the console window. You should use the `BinaryReader` class and `PeekChar()` method. Make a program using `try..catch` block. You shouldn't use here `Lists` and lambda expressions.

Expected output:

Even numbers in the range [1;5]:

4 2 4

The similar tasks you can find here: <https://labs-org.ru/c-sharp14-eng/>

Classes

2. [st5-task-02.cs] {1.6 points or 2.5}

1). Create a class with a name `PhysicalCulture` to manage the information about the pupils' achievements in Physical Culture lessons. The fields of the class are:

- pupil's **surname** (of `string` type)
- **sex** (of `char` type: letters `f` or `m`)
- length of the long **jump** (in centimeters, of `double` type)
- number of **push-ups** (of `integer` type)
- 100 meters **running** (in seconds, of `double` type)

2). Create auto read- and write- properties for all the fields (setters and getters).

3). Define a *constructor* with the initializations of the fields and add the `Print` method for the class to output all the information about pupil.

4). Within the `Main` function initialize two instances of the class. Print out the information about those two pupils using `Print` method.

5). Create a `PlanIsNotDone` method (returns `True` if the plan of at least one of the achievements is not done:

Plan is done:

For **boys**: push-ups - must be greater than 20; jump - must be greater than 170 centimeters; running - must be less than 13.8 seconds.

For **girls**: push-ups - must be greater than 16; jump - must be greater than 150 centimeters; running - must be less than 16.3 seconds.

Call the method for the pupils within the `Main` function.

Note: Specify the meaningful names for the class, its fields, and methods.

Expected output:

Pupil's info:

surname: Ivanov, sex: male, jump length: 175 cm, push-ups: 35, running: 12.5

Pupil's info:

surname: Kruglova, sex: female, jump length: 145 cm, push-ups: 6, running: 18.5

Ivanov: plan is done well – false

Kruglova: plan is done well - true

The similar tasks you can find here: <https://labs-org.ru/c-sharp17-eng/>

Lists

3. [st5-task-03.cs] {1.6 points or 2} Download file `in.txt` and place it into the folder of your project executable files (~\bin\Debug) or some folder you can read from. Create the program to read numbers from the file and to add them to a variable of `List` type. To add the numbers into the list variable (`L1` is a variable of `List` type):

```
while (br.PeekChar() != -1)
{
    L1.Add(br.ReadInt32());
}
```

1. Create a function to output **all the elements in the power of 3** (cubed). You should use LINQ `Select` method. To calculate the power of a number it is better to use `Math.Pow` method.

2. Create a function to return **the greatest (max) of all the positive elements** from the file. You should use LINQ `Where` and `Max` methods (`...Where(...).Max();`).

Note: You should use `FileMode.Open` mode and `BinaryReader` class to read from a file.

Expected output:

// Cubed:

-1 343 -216 -125 -64 64 0 8 729 -64 512 64 -216 729 -343 729 1 -1000 27 -512

// max of positives: 9