

National Research University Higher School of Economics
Faculty of Computer Science
Bachelor's Program "HSE University and University of London Double Degree
Program in Data Science and Business Analytics"

Introduction to Programming

Workshop #5

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This week's outline

- **Workshop 5 27.01.2021**
 - Practice with strings
 - Stringstream
- **Workshop 6 29.01.2021**
 - Functions
 - Files

Outline

- 0) Read a whole line with spaces in-between.
- 1) Exercise 1: Extend a code to concatenate strings and print a name in a simple format.
- 2) Exercise 2: Split an input string by spaces.
- 3) Exercise 3: Split an input string by a given delimiter.
- 4) Library stringstream
- 5) Approach to split an string with a given delimiter using the library stringstream.

cin input stopping at the next whitespace character

- The cin function reads a string until the next whitespace character.
- For reading a full line with spaces in-between you should use the function `cin.getline()`
- <http://www.cplusplus.com/reference/istream/istream/getline/>

Exercise 1 – Warm-up

Modify the file `0-line.cpp` so that:

1. Read the first name and the last name in two steps.
2. Concatenate the first name and the last name, and print.
3. Print again the first name and last name in the following format:

`lastName + “,” + firstName` (example: Ivanov, Ivan)

Exercise 2

Read a string containing spaces and outputs individual words of the string, **one word per line**.

Input: Pokrovsky Boulevard Moscow Russia

Output: Pokrovsky

Boulevard

Moscow

Russia

Exercise 2 – Hint: use of isspace method

- The isspace method detects a group of white-space characters (new lines, simple spaces, tabs, etc.)
- Check www.cplusplus.com/reference/cctype/isspace/

Splitting strings using delimiters

- When processing strings, a very common task is to *split* the string into several pieces (*tokens*), separated by some *delimiter*.

Example: `this#is#an#example`, `delimiter = #`

Exercise 3

Read a string **s**, that consist of a sequence of words separated by a delimiter character **x** (read also **x** by console).

Print out the individual words of the string **s**, separated by the character **x**.

Input: **s** = Pokrovsky#Boulevard#Moscow#Russia

x = #

Output: Pokrovsky

Boulevard

Moscow

Russia

stringstream library

The stringstream object works like a container of characters for different purposes:

- Like a *temporary file*, that is a sequence of characters that later on will be print or read in files.
- A container where different data types can be re-written as strings.

Exercise 4

Create a program in C++ that:

- Read a string and a delimiter by console.
- Count the number of words in the string that are separated by the delimiter.
- Create an array of strings and put the individual words in the array. Finally, print the elements of the array.

Notes:

Use `istringstream` objects (be aware of their multiple use?)

Declare an array of strings `std::string myStrings[numberOfStrings]`

How to know the number of strings?