HIGHER SCHOOL OF ECONOMICS

NATIONAL RESEARCH UNIVERSITY

**Introduction to Programming**

# Workshop Notes # 5

**Jan 24, 2022**

# TASKS

# *Example*: Reading *n* tuples

- A program reads $n$ pairs $(x, y)$ of real numbers, and calculates the average of the sum of all $x^y$.
- **Input**:
  - first line contains an integer $n \geq 0$;
  - next $n$ lines contain pairs $(x, y)$ separated by spaces.
- **Output**: the average above, or "NaN" if $n = 0$.

**Example input**

```
3
1.1 2
2.2 3
3.3 2
```

**Example output**

```
7.58267
```

# *Example*: Reading unknown number of values

A program reads from the standard input (`cin`) a set of real numbers, whose count is not known in advance. The program filters the input, namely outputs to the standard output (`cout`) positive numbers only.

**Example input**

```
1
-1
1.1
2.
-2.1
3
```

**Example output**

```
1
1.1
2
3
```

# *Example*: Passing text file to standard input

The standard input (`cin`) and output (`cout`) streams can be reassigned to an external source, such as a text file.

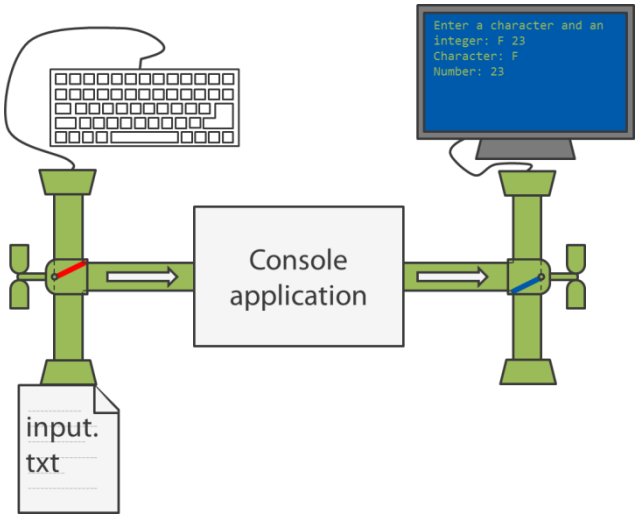
The application from the previous example can be run in a terminal with a text file passed as the standard input:

```
$ filter_input.exe < input.txt
```

Name of the executable file of a program

Control symbol reassigning the standard input to a file

Name of a text file with numbers



# *Example*: Reading strings with numbers

A program reads from the standard input (`cin`) a sequence of strings, one by one. Each string consists of a sequence of integers separated by spaces. Neither the number of strings, nor the number of integers are known in advance. The program sums numbers in a single line and prints the sum to the standard output (`cout`), until the first empty line goes.

**Example input**

```
1 2 3
1
5 6 -1
7 0
0
```

**Example output**

```
6
1
10
7
0
```

# NOTES