8th Assignment – Graphs: Maximum flow in transport networks

Instructions

- Download the zipped file **TP8_unsolved.zip** from the course's Moodle area and unzip it. It contains a .cpp file for each exercise, each with the respective unit tests, and the file **Graph.h** (based on the previous classes).
- In the CLion IDE, open the project used in the previous lessons and add the folder TP8, selecting the folder that contains the files mentioned in the previous bullet point.
- Update the *CMakeLists.txt* file by copying, pasting, and adapting the three lines of code of TP8: file, add_executable and target_link_libraries.
- Do "*Load CMake Project*" over the file *CMakeLists.txt*
- Run the project (**Run**)
- Please note that the unit tests of this project may be commented. If this is the case, uncomment the tests as you make progress in the implementation of the respective exercises.
- You should implement the exercises following the order suggested.
- Implement your solutions in the respective .cpp file of each exercise.
- Important note: in case you need to read text files in I/O mode, you should tell CLion where such files are, by redefining the IDE environment variable "Working Directory", through menu Run > Edit Configurations… > Working Directory.

Exercises

You should edit the classes in *Graph.h* in order to complete the exercises below.

a) Implement the following method in the **Graph** class:

```
void fordFulkerson (T source, T target)
```

This method implements the Ford-Fulkerson algorithm to find the maximum flow from the source vertex *source* to the sink vertex *target* in the graph. Hint: See the pseudo-code and explanation about the needed data structures in the slides of the theoretical classes.