Instructions for the laboratory of Economics and Computation

During the lab sessions we will use the software AMPL, GUROBI and BARON, you have to install them on the laptop you are going to bring in class. It's possible to download the software from the course webpage:

http://www.gametheory.polimi.it/economics-and-computation.html

The license expires at the end of September.

It's recommended to download the file "AMPL_Cheat_Sheet.pdf" from the course webpage, to print it and bring it in class.

Installation of AMPL, GUROBI and BARON

Installation with graphical user interface GUSEK (recommended)

NOTE: GUSEK runs on Windows only, but you may be able to run it on other OS through emulation.

Download the file *ampl_win_32.zip* or *ampl_win_64.zip* respectively if you have installed Windows 32-bit or Windows 64-bit (if you don't know what this mean, follow the guide on the course webpage) from the course webpage and extract the content of the zip file in a directory of your choice.

To test the software, run GUSEK double clicking on the file *gusek.exe* within the folder. Load the files *test.mod*, *test.dat* and *test.run* using the menu "File -> Open…" (or by drag-and-drop in GUSEK window). Select the tab corresponding to the file *test.run* and click button "Go" represented by the blue footprints (or selection the menu "Tools -> Go" or pressing F5). The outcome should be the same as in the picture below:
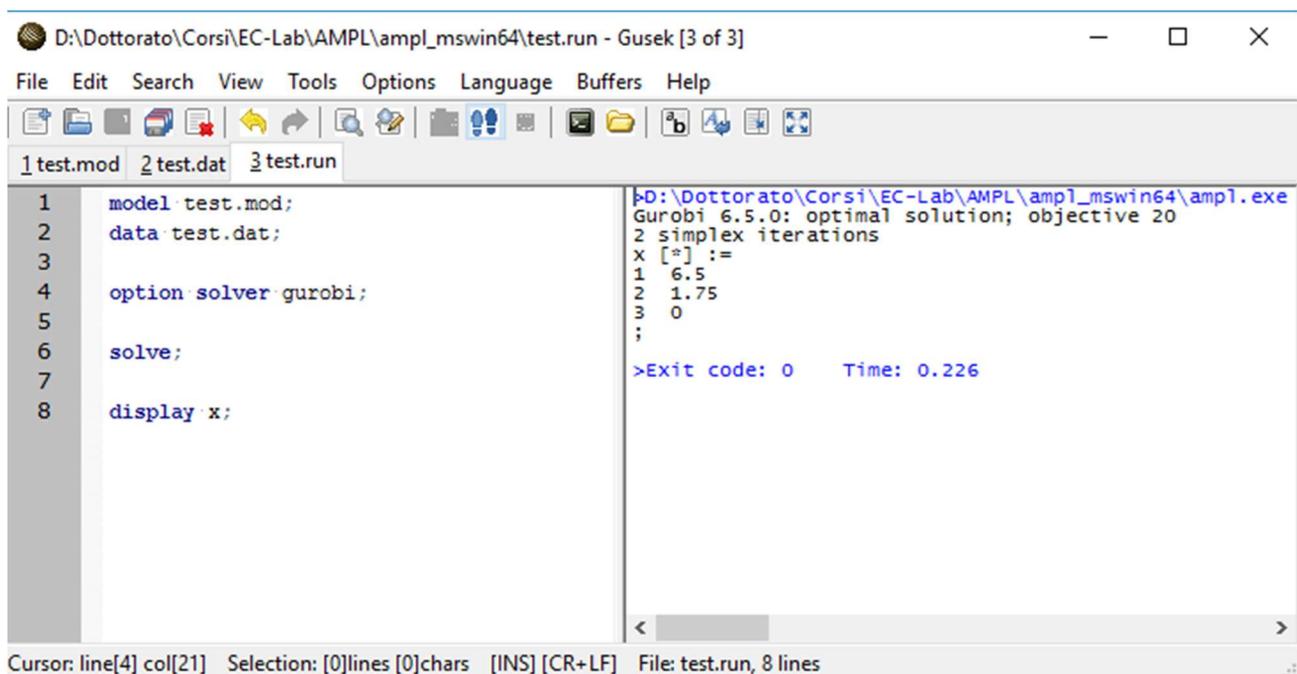
Installation without graphical user interface

Download, according to your operative system, the file *ampl_win_32.zip*, *ampl_win_64.zip*, *ampl_macosx_64.zip*, *ampl_linux_32.zip*, or *ampl_linux_64.zip* from the course webpage and extract the content of the zip file in a directory of your choice.

To test the software, open a shell (command prompt or terminal, depending on your OS), go to the directory in which you have extracted the zip file and type `ampl` (or `ampl.exe` or `./ampl`, depending on your OS). Now you are in the AMPL shell, the word "ampl" with a blinking cursor should appears. Type these commands one by one followed by enter:

```
model test.mod;

data test.dat;

option solver gurobi;

solve;

display x;
```

The outcome should be similar to the picture below:
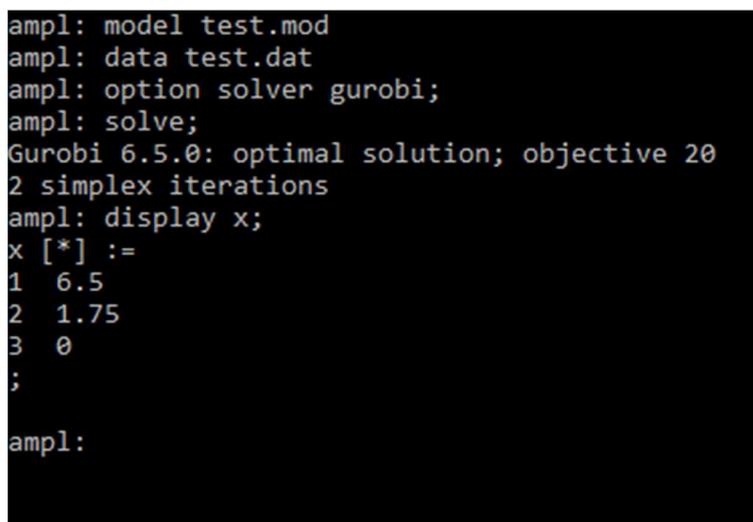
Instruction for running AMPL from any folder

Now you have installed AMPL on your laptop, but you can only run *.mod*, *.dat* and *.run* files which are inside the directory in which you have extracted the zip file. To avoid this limitation, it is necessary to add the absolute path of the AMPL directory to the system's PATH variable. This means that your system will know where AMPL is located. In order to do so, you need to modify the PATH variable following these instructions.

Windows

1. Open "Control Panel"
2. Go to "System and Security" and then "System"
3. In "Advanced System Settings", click on "Environment Variables…"
4. Under "System Variables", select "PATH" variable and click "Edit…"
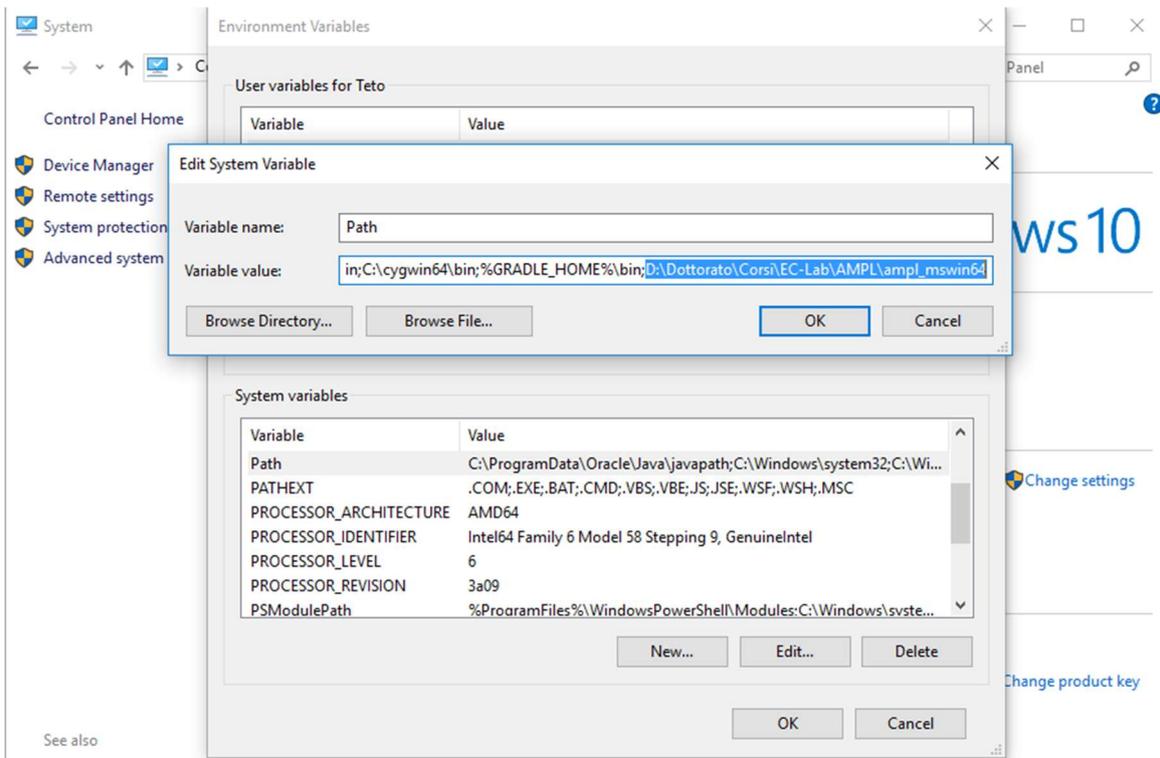5. In the variable value, append the absolute path to the folder where you extracted AMPL, followed by a semicolon (;)

    For example, I have appended: *D:\Dottorato\Corsi\EC-Lab\AMPL\ampl_mswin64;*

6. Try to move the *.mod*, *.dat* and *.run* files in another folder and to run them following the previous instructions.
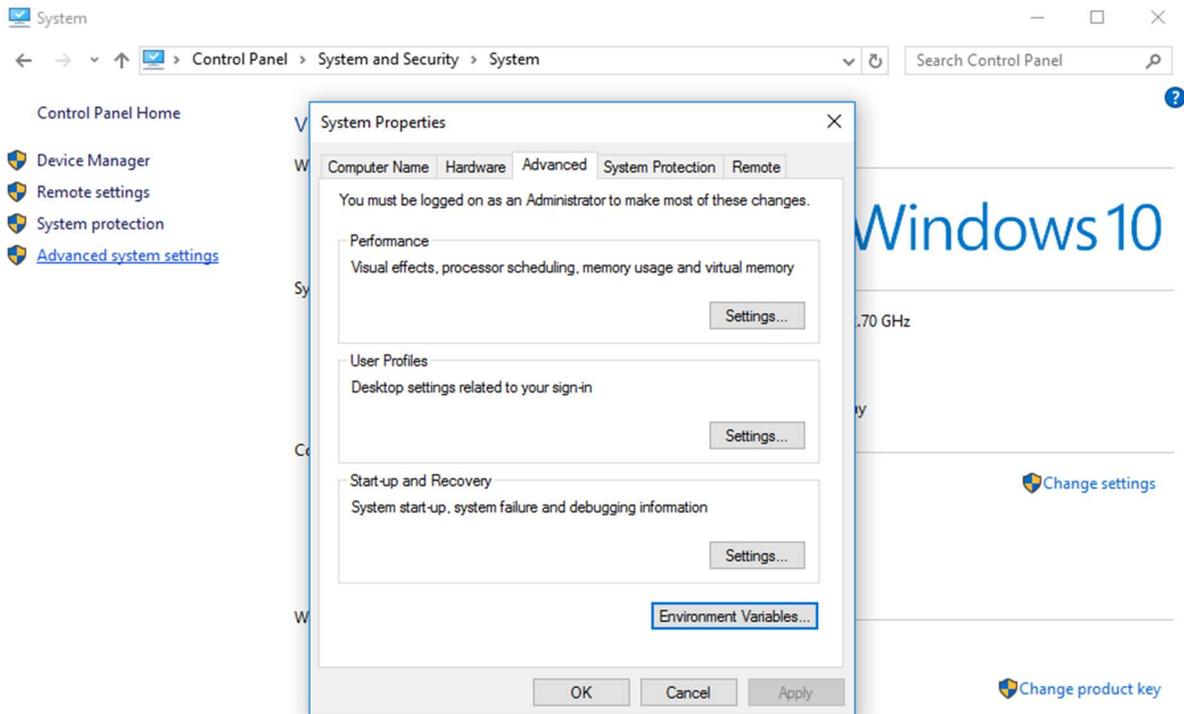
Linux

1. Open a terminal
2. Change the permission of all the files inside the folder you have extracted AMPL
   a. Move to the folder you have extracted AMPL
   b. Execute: `chmod u+x *`
3. Execute the following command from the terminal: `nano ~/.bashrc`
4. Copy and paste the following lines to the end of the file:
   a. export PATH=$PATH:"*YOUR_PATH_TO_AMPL_FOLDER*"
   b. export LD_LIBRARY_PATH=${LD_LIBRARY_PATH}:"*YOUR_PATH_TO_AMPL_FOLDER*"
5. Press "CTRL+X" to close the file and "Y" when asked to save it (if asked for the file name, just press "Enter")
6. Restart the terminal
7. Try to move the *.mod*, *.dat* and *.run* files in another folder and to run them following the previous instructions.

Mac OS

(Following this guide http://sites.fas.harvard.edu/~apm121/resources/amplstudentOSXfull.pdf)

1. Open a terminal
2. Execute echo $0 to figure out your type of shell:
   a. For Bash shells: Execute `nano ~/.bash_profile`
   b. For Tcsh shells: Execute `nano ~/.tcshrc`
3. Copy and paste the following lines to the end of the file:
   a. export PATH=$PATH:"*YOUR_PATH_TO_AMPL_FOLDER*"
   b. export LD_LIBRARY_PATH=${LD_LIBRARY_PATH}:"*YOUR_PATH_TO_AMPL_FOLDER*"
4. Press "CTRL+X" to close the file and "Y" when asked to save it (if asked for the file name, just press "Enter")
5. Restart the terminal
6. Try to move the *.mod*, *.dat* and *.run* files in another folder and to run them following the previous instructions.

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