

MATLAB LEP Tutorial

Step 1:

- Open chapter 12 and click on [LEP-T12-2.zip](#) under Matlab Code section.
- You should see that the file is downloaded in the bottom of the browser.
- Right click on the downloaded file and choose "Show in Folder". This will show the folder location where your zip file is downloaded

Elements of Chemical Reaction Engineering 5th Edition

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Essentials of Chemical Reaction Engineering

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Chapter 12: Steady-State Nonisothermal Reactor Design: Flow Reactors with Heat Exchange

Living Example Problems

The following examples can be accessed with Polymath™, MATLAB™, or Wolfram CDF Player™.

Living Example Problem	Polymath™ Code	Matlab Code	Wolfram CDF Code™	AspenTech™
LEP Table 12-2 computer experiment	LEP-T12-2.pdf	LEP-T12-2.zip	LEP-T12-2.cdf	--
a) Co-current: LEP-12-1a.pdf b) Countercurrent: LEP-12-1b.pdf c) Constant T_a : LEP-12-1c.pdf d) Adiabatic: LEP-12-1d.pdf	a) Co-current: LEP-12-1a.pdf b) Countercurrent: LEP-12-1b.pdf c) Constant T_a : LEP-12-1c.pdf d) Adiabatic: LEP-12-1d.pdf	a) Co-current: LEP-12-1a.zip b) Countercurrent: LEP-12-1b.zip c) Constant T_a : LEP-12-1c.zip d) Adiabatic: LEP-12-1d.zip	a) Co-current: LEP-12-1a.cdf b) Countercurrent: LEP-12-1b.cdf c) Constant T_a : LEP-12-1c.cdf d) Adiabatic: LEP-12-1d.cdf	--

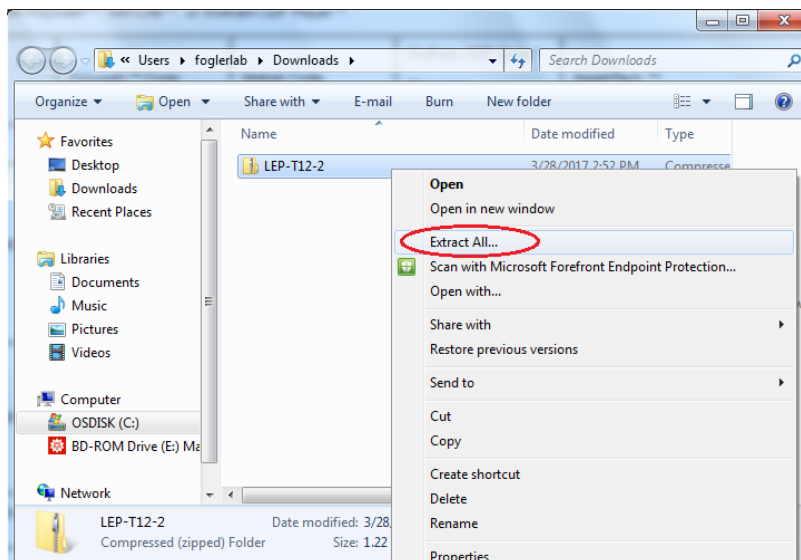
Open
Always open files of this type
Show in folder
Cancel

LEP-T12-2.zip

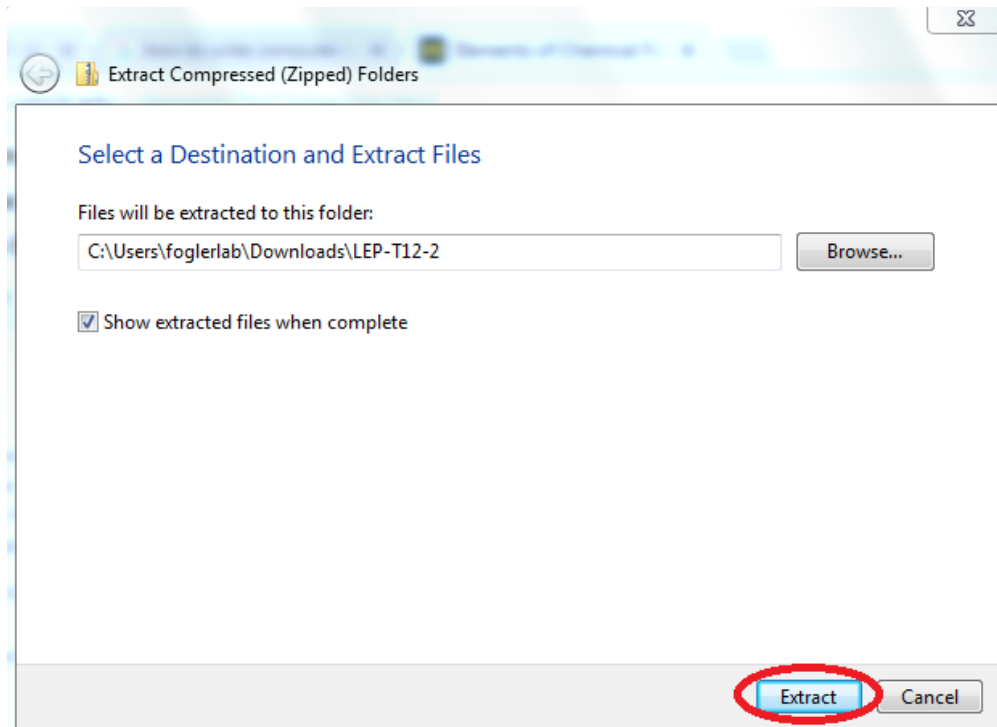
Show all X

d)

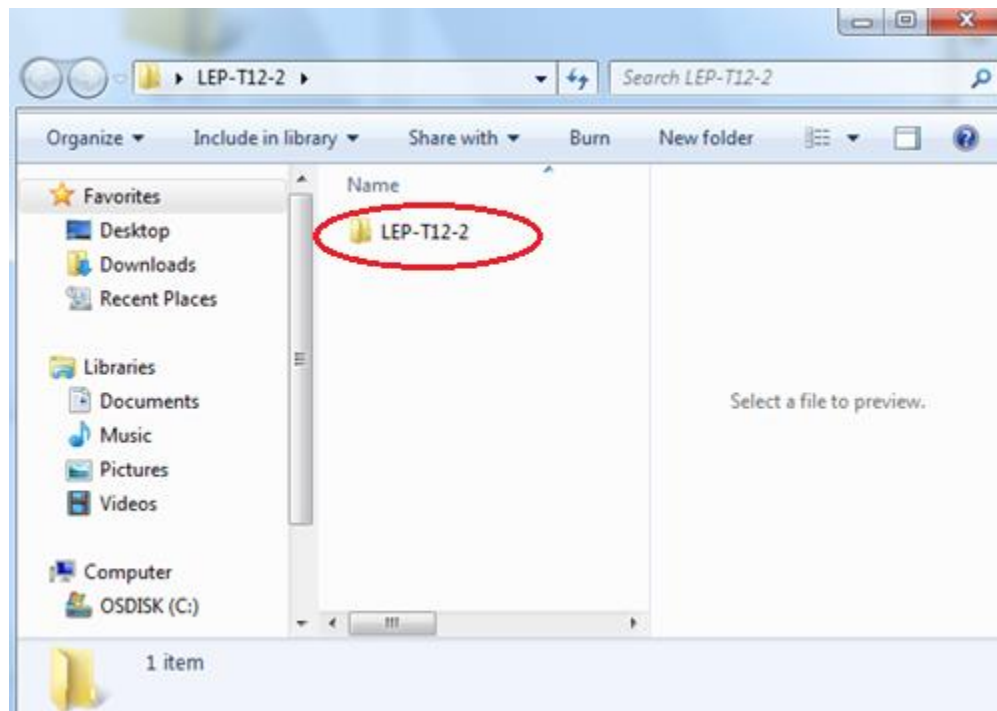
Step 2: The following folder will appear. Right click on the zip folder "LEP-T12-2" and select "Extract All...". This will extract the files from zip folder.



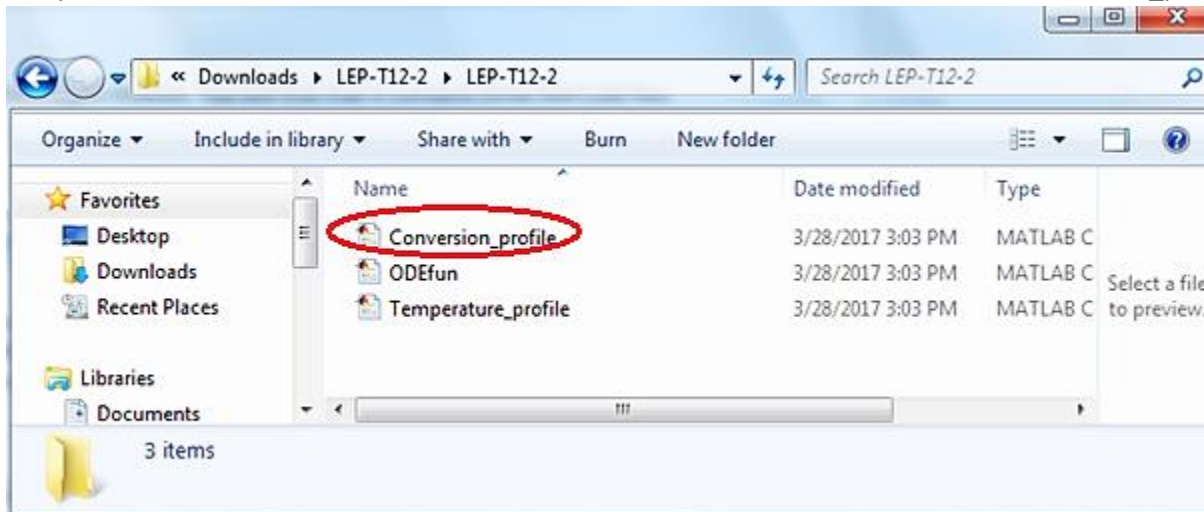
Step 3: A new window will open up where you can select the location you want the files to be extracted. By default, it will extract the contents to the same directory in which your zip file resides. Just click **Extract**



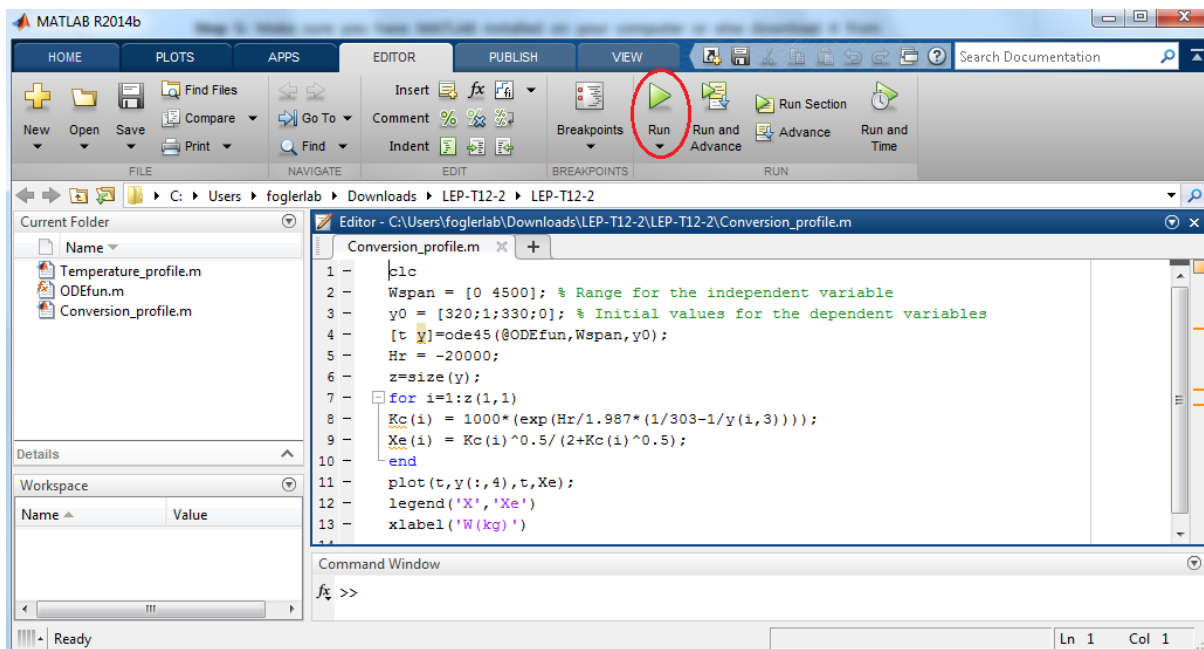
Step 4: Following folder will be created that has all of the MATLAB files in it. Click on the folder LEP-T12-2



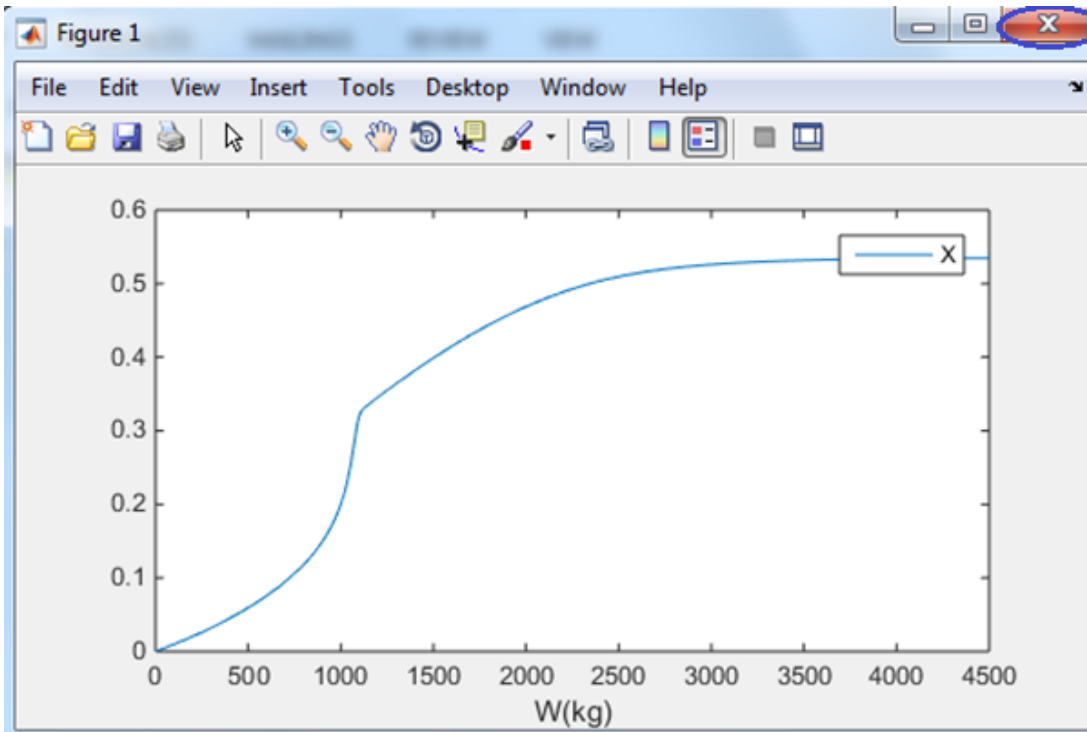
Step 5: You will find that it contains three MATLAB files. Make sure you have MATLAB installed on your computer or else download it from www.mathworks.com. Click on the “Conversion_profile”



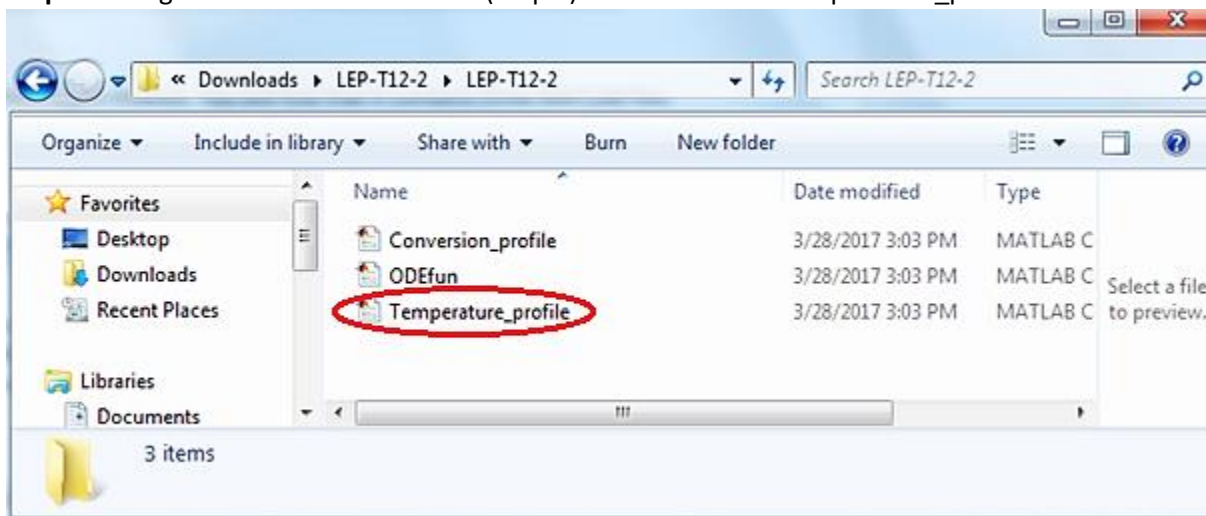
Step 6: You should see that following window appears. To run the file, click on Run button present on the menu bar



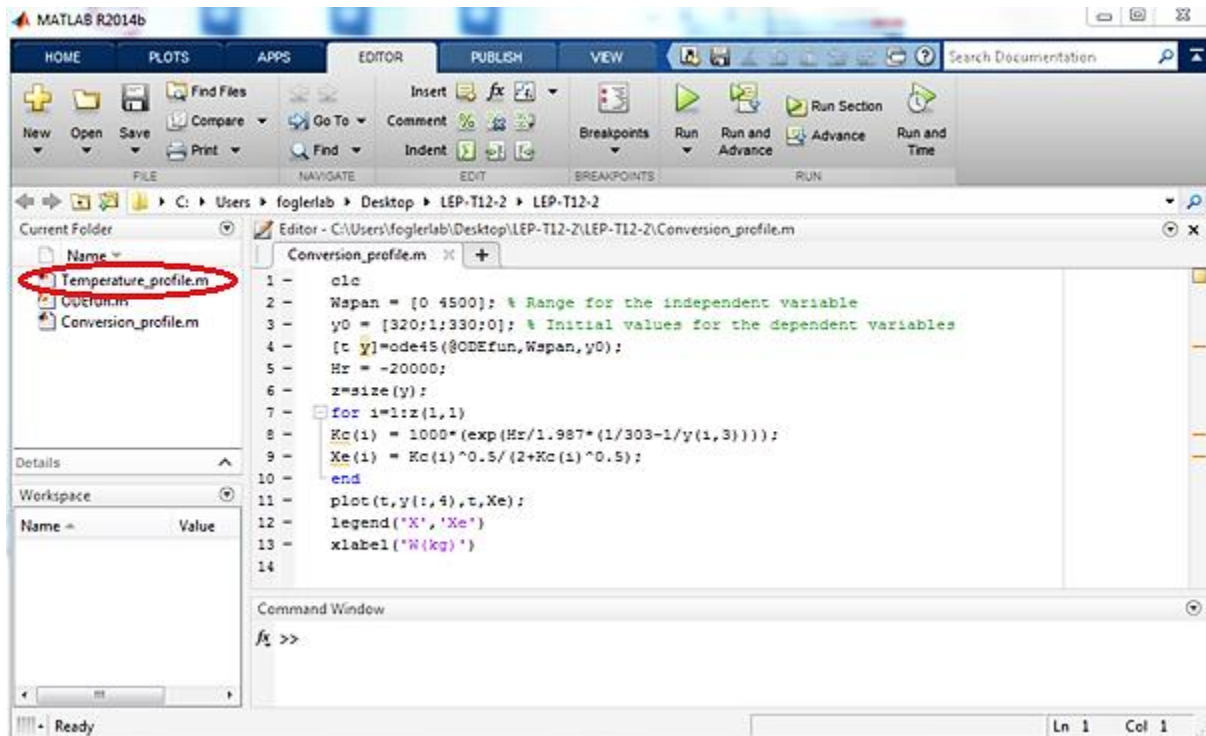
Step 7: A new window will open where you can see that graph is generated. Close the graph by clicking on X button



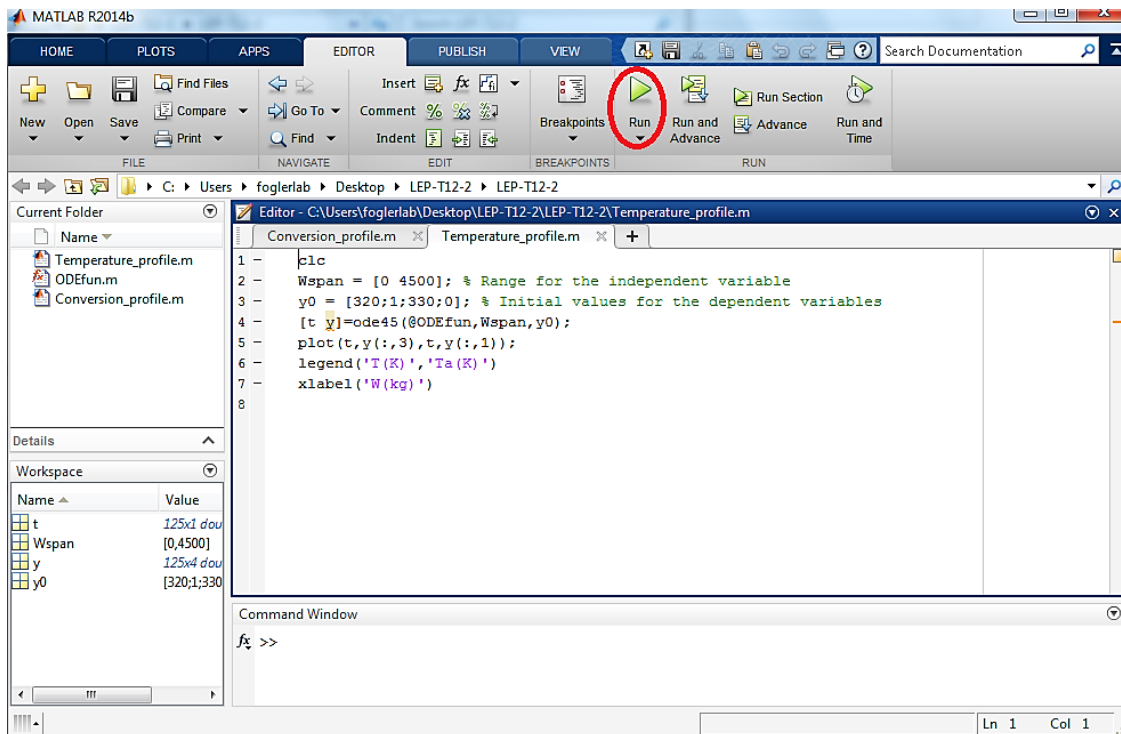
Step 8: Now go back to folder LEP-T12-2(Step 5) and click on the Temperature_profile



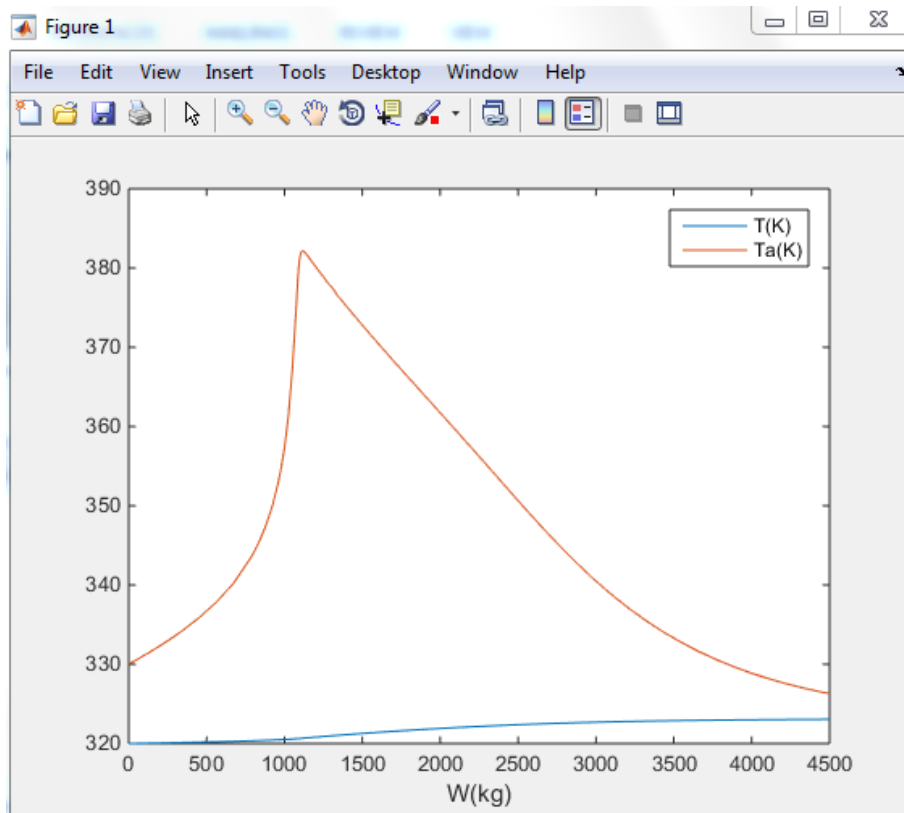
Alternatively, you can open the Temperature_profile file directly from the Current folder list by double-clicking . All the MATLAB files within a folder are shown in the MATLAB current folder list (shown by red circle).



Step 9: The following window will appear. Click on Run button

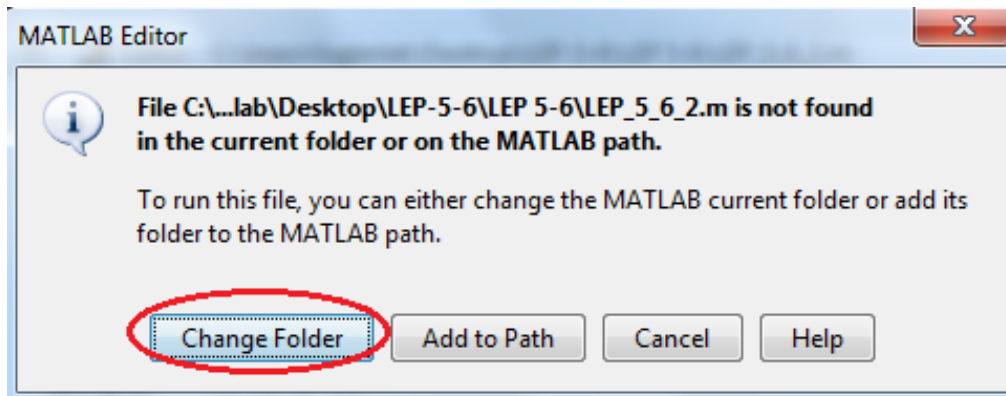


The following graph will be generated

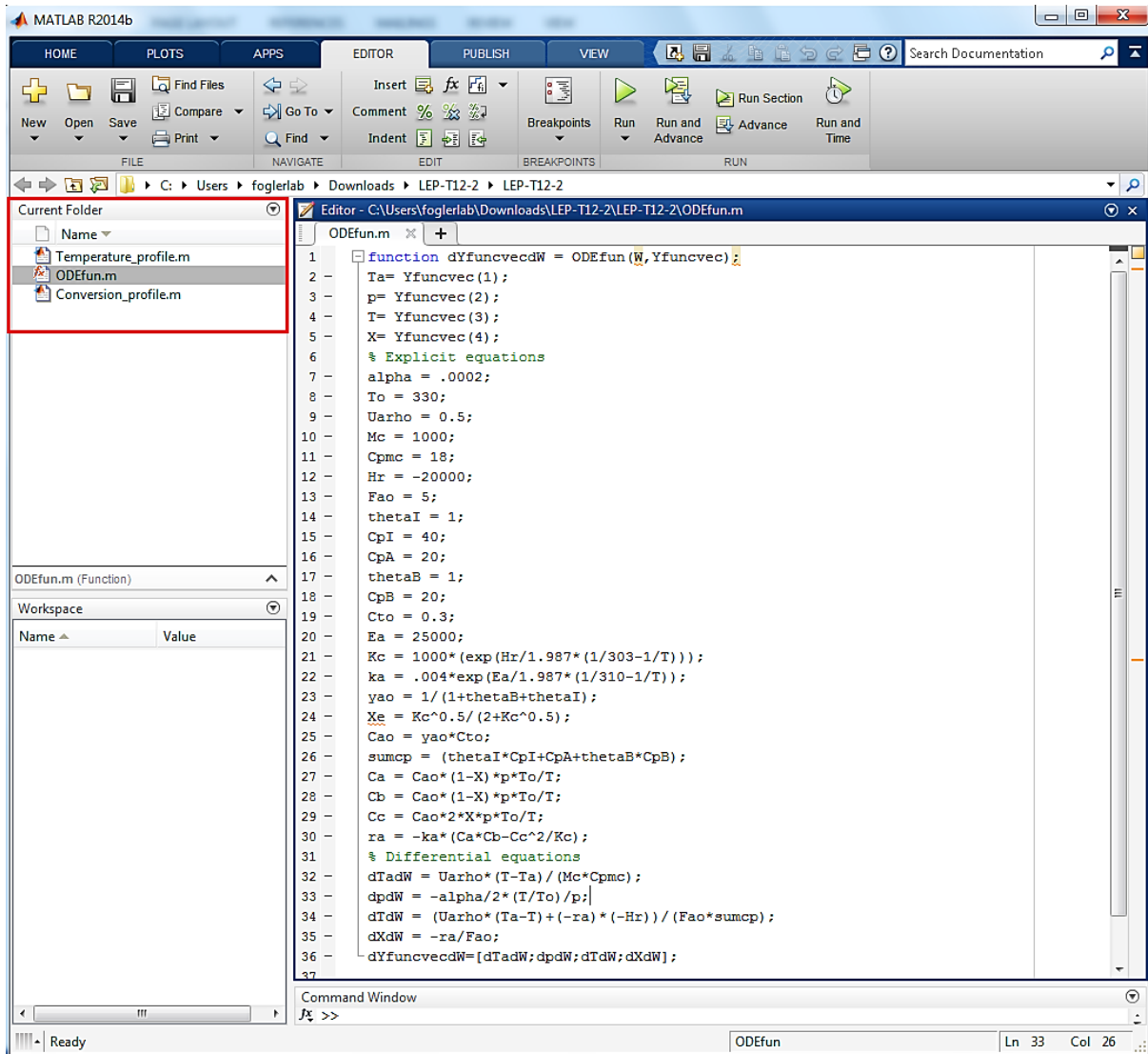


Troubleshooting:

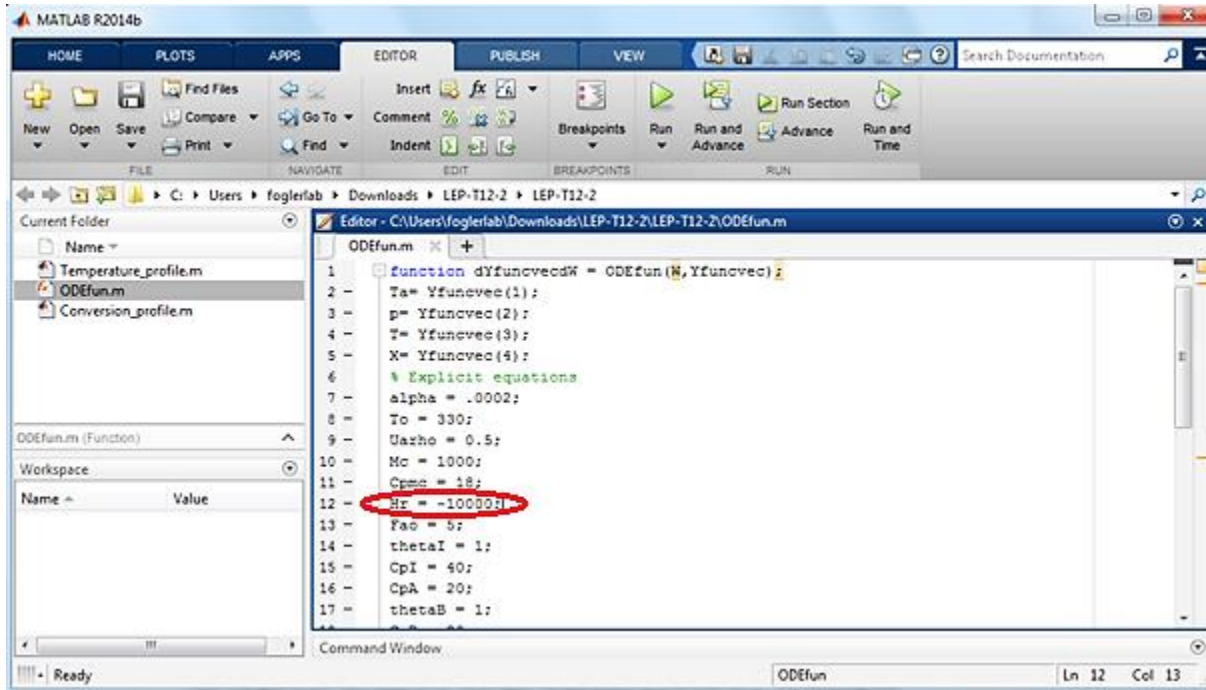
- Make sure all the files are at the same place as files are interlinked
- Don't run the ODEfun
- While running the file, if following pop-up generates, then select "ChangeFolder"



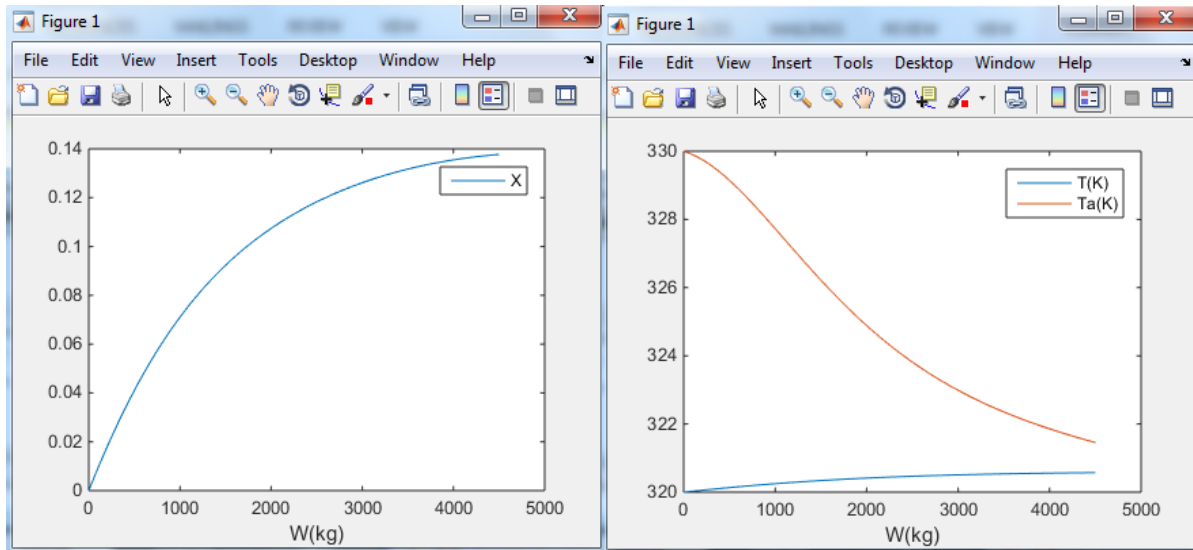
Step 10: If you want to change any parameter values to analyze its effect on profile, then you need to open and modify your “ODEfun” file. All the MATLAB files within a folder are shown in the MATLAB current folder list (shown by red rectangle). So you can open the ODEfun file directly from the Current folder list (by double-clicking) or alternatively from the folder which contains this file (Step 4). You should see that ODEfun contains all the parameter values and Differential equations



Step 11: Change any parameter values. Let's change Hr from -20000 to -10000. Save your file. Don't run your ODEfun file as it will give error.



Step 12: Now open `Conversion_profile` and run it to generate graph. You should see that your graph is now changed as per new value of Hr. Now open `Temperature_profile` and run it. The following two graphs should appear for Conversion and Temperature profiles



Step 13: Play with other parameters to analyze the change in conversion and temperature profiles. You will have to close the old graphs and run the program again each time you change a variable