ENGR 102 – Fall 2022
Lab Assignment #1a
0 points

Deliverables.
There are no deliverables (submission) for Lab Assignment#1a. Please complete the activities described below. If you have trouble completing any of the activities, please ask a member of the Teaching Team for assistance.

Activity #1: Getting Set Up – To Do in Lab (Individual)
For this course, we will be using Python 3 (via Spyder) or PyCharm/ Anaconda. Y Your initial task is to install PyCharm or Spyder on your BYOD device. There are pluses and minuses in each of them. It is personal preference, pick one you like. Spyder is easier to install, but PyCharm has more capabilities, for example using a game module.

See instructions on our Canvas/ week 1 module

A) For Spyder: Download and install Spyder
   1) Visit: https://www.spyder-ide.org/
   2) Click the Download button
   3) Install the downloaded program
   4) Consult "Check Getting started with Python_ No PyCharm" presentation and/or video for Windows and Mac
   5) Do not use Anaconda/Spyder 5.5 version.

Very Important

- If you want to use Spyder, you should not use Anaconda's current distribution Spyder 5.1.5. It has a MAJOR bug where the input() function doesn't work. So, if you plan to use Spyder, download the standalone version directly from Spyder's website. If you currently have Anaconda on your device, **DO NOT UPDATE SPYDER TO 5.1.5!**

B) For PyCharm

   1. Download and install the Anaconda distribution of Python.
   2. Install Anaconda first. Visit: https://www.anaconda.com/distribution
   3. Select your operating system. It is available for Windows, MacOS, and Linux.
   4. Be sure to install the 3.7 or 3.8 version (not version 2.7). These are different languages.
   5. Install PyCharm. Consult" Getting Started with Python PyCharm" presentation and/or video
      a. Windows https://www.youtube.com/watch?v=1QqkaWvx_2M
      b. Mac https://www.youtube.com/watch?v=mHANnQIjMM0

C) Create a directory on your laptop that you will use for your ENGR 102 files. This directory should not be inside of your "My Downloads ". It is better to put it in MyDoc where you should have separate folders for all your classes.
   a. This will help ensure your programs are all in one place
   b. You may wish to create more organization later, but for now, create a single directory

Activity #2: Writing Your First Programs – To Do in Lab (Individual)
To ensure you've gotten everything set up correctly, you will write a simple, initial program.

A) Start your IDE (usually Spyder or PyCharm).
   a. Now create a new Python file
      i. From the file menu, select "New" then "Python File"
      ii. Pick a name (such as FirstProgram, or HowdyWorld) and save the file to your ENGR 102 directory from Activity #1-B above.
   b. You should now see a blank area with a tab labeled with the name you picked, followed by .py

B) Write the "Howdy, World!" program
   a. In the main window in Spyder or PyCharm, type the command:
      i. `print("Howdy, World!")`
      ii. You should notice that the IDE helps you by suggesting additional text, like matching quotation marks and parentheses.
   b. Run the program by clicking on the green arrow in the menu bar at the top of the screen or thorough top menu.
   c. By default, the Python console window is at the bottom right corner of the screen.
      i. Inside this window you should first see a line that shows what was executed: the Python interpreter command and the name of your Python file
      ii. Then, you should see the output of your code, the text: `Howdy, World!`
      iii. Finally, for PyCharm you should see a line saying something like "Process finished with exit code 0" – this is good, since it means that your program completed without an error. Note: If the code runs properly in Spyder, you will not see an exit code.
   d. Try changing the text within the quotation marks to print other things, and running again.

C) Ensure you have the Python system installed correctly.
   a. First, create another new Python File
      i. Go to the file menu, create a new Python File, and give it a new name, like "InstallTest".
      ii. You should see another new tab open in the main IDE window, with the name of your file in it, and a blank screen.
         1. Note: you can switch between these files by clicking the tabs.
   b. Create a simple program, with just two lines:
      i. `import numpy`
      ii. `import matplotlib`
   c. Run this program and ensure it works (i.e. that it gives a like "Process finished with exit code 0" output in PyCharm). If it does not, it means you do not have the full install of the Anaconda system. Note: If the code runs properly in Spyder, you will not see an exit code.

D) Write a simple program involving mathematical calculations
   a. First, create another new Python File
   b. Try writing the following program, with 3 lines:
      i. First, the line `from math import *`
      ii. Then, the line: `print(cos(0))`
      iii. Then, the line: `print(sin(0))`

   c. Now, run this new program.
   d. You should see two lines output, one with 1.0 (the cosine of 0), one with 0.0 (the sine of 0).

E) Now, intentionally create an error and see what happens.
   a. First, what is the result if you divide 1 by 0?
   b. Modify your previous program, to see what happens if you try computing this
      i. Add the line: `print(1/0)`
   c. What happens?
      i. This is the sort of error you will see if you have a bug, like dividing by 0.
      ii. What happens if the new line comes before the others in your program?
      iii. What happens if the new line comes after the others in your program?
   d. After experimenting a bit, remove this line, so you again have a working program
F) If you did not do so before, add the header comments to each file

Make sure that you have Python installed by our next class.

Activity 3.

Also, you need to buy ZyBook.

How to buy a ZyBook:

1. Sign in or create an account at https://learn.zybooks.com

2. Enter zyBook code: TAMUENGR102RitcheyFall2022

3. Subscribe for 1 semester only, unless you want to reread it. Usually, students buy it for 1 semester. **chose your session : ENGR 102-416, 516, 517 for example.** It will help me to find you there.

4. This is very important. Use the same name as you have on Canvas. Misspelling or using nick name will crate a problem with your grade.

Make sure that you have ZyBiik by the next lecture.