Setting up Anaconda, Eclipse and PyDev and Lab 1

In this course, we will be using **Python 3** [1]and a number of its packages. The easiest way to install it all is by installing **Anaconda**. Anaconda is a Python distribution, which includes the python interpreter, the packages that we'll need and a lot more (e.g. the R programming language, Jupiter Notebooks, Spyder development environment, etc.) stuff that you might find useful now or later.

You can use any editor, as simple as Notepad, to develop Python code. However, there are several development environments that make it easier to write, maintain and debug Python code. We will be using **Eclipse** IDE (Integrated Development Environment) equipped with the **PyDev** plugin for Python.

This document provides links and instructions to the installation process. All operations are described for a Windows-based installation with significant differences for Mac installations noted within text. Software is upgraded to newer versions very frequently, so the latest version available on the referenced websites may not be the one referenced in this handout. Please, use the most recent version numbers and adjust the instructions below according to those numbers.


1. Setting up Anaconda

Anaconda is a free open source Python distribution

Step 1. Go to the Conda Installation page https://docs.anaconda.com/anaconda/install/, read and follow the instructions for **Installing on Windows** or **Installing on macOS** using the appropriate links.

Windows: Download the **Anaconda installer.** file, with the name that looks like `Anaconda3-2023.09-0-Windows-x86_64.exe`

macOS: Download the **graphical macOS installer** file, , with the name that looks like `Anaconda3-2023.09-0-MacOSX-x86_64.pkg`.

Step 2. Execute the installer file, follow the instructions for installation, **record the path to the folder where anaconda3 is installed** – your python executable is located there and you will need it for further set up. On Windows, it is likely to be within the ProgramData folder on your C drive, while on a macOS, it is likely in the Users/<username> subfolder on your mac's Hard drive.

Location of anaconda3 : _____

[1] Please note that Python versions that are numbered 2.x and those numbered 3.x are not compatible. We will be using Python 3, i.e. versions numbered 3.x

2. Setting up Eclipse with PyDev

Eclipse is the development environment that will be used in this class.

Step 1- Download and install Eclipse: Eclipse is available for free from https://www.eclipse.org/downloads/packages/installer; Use the **Eclipse Installer 2023- 12 R** to set up the latest version of **Eclipse IDE for Java Developers** by following the instructions on https://www.eclipse.org/downloads/packages/installer

Step 2 –Run Eclipse: Eclipse starts by asking you to specify the location for your projects, a.k.a. the **workspace**. Accept the default setting or specify the location of your choice (if you need to switch the workspace at some later time, select File > Switch Workspace from within Eclipse). Next, you should see the *Welcome* window, which you can close.
For now, proceed to set up the PyDev plugin in the following step.

Step 4 –Download and install PyDev: go to https://marketplace.eclipse.org/content/pydev-python-ide-eclipse and find the Install button. With your Eclipse running, **drag and drop** from the Install button to the open Eclipse editor window. This process will activate the Eclipse Marketplace dialog box, shown in Figure 1. Confirm the selection of PyDev for Eclipse and proceed.

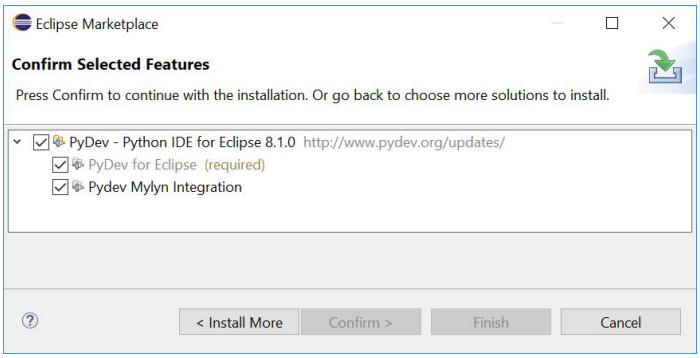
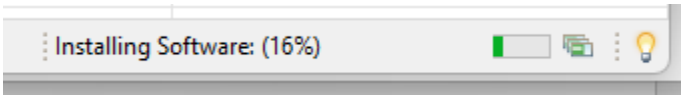


Figure 1. Installing PyDev plugin.

The Installation will take some time, wait until you see a dialog box suggesting to **Restart Now.**
In the meantime, you may see the following in the bottom right corner of the Eclipse window.



Step 5 – Verify the PyDev installation. To verify the installation is complete, select File-> New->Project from the menu. New Project window will show up, if you see PyDev as one of the options in the window, you have successfully installed PyDev.

Step 6 – configure PyDev to use Python 3 interpreter.

When you create your first PyDev project, you are asked to enter a Project name (your choice), then specify which python interpreter should be used by default (there might be multiple ones installed on one computer and this choice is essential). To configure PyDev to use Python 3, create a new PyDev project by selecting File-> New->Project-> PyDev -> PyDev Project. You will see the **PyDev Project** window, shown in Figure 2 below.

Click on the blue line in the middle of the window, stating **Please configure an interpreter before proceeding**. In the window that shows up, click on the **Manual Config** (shown in Figure 2),

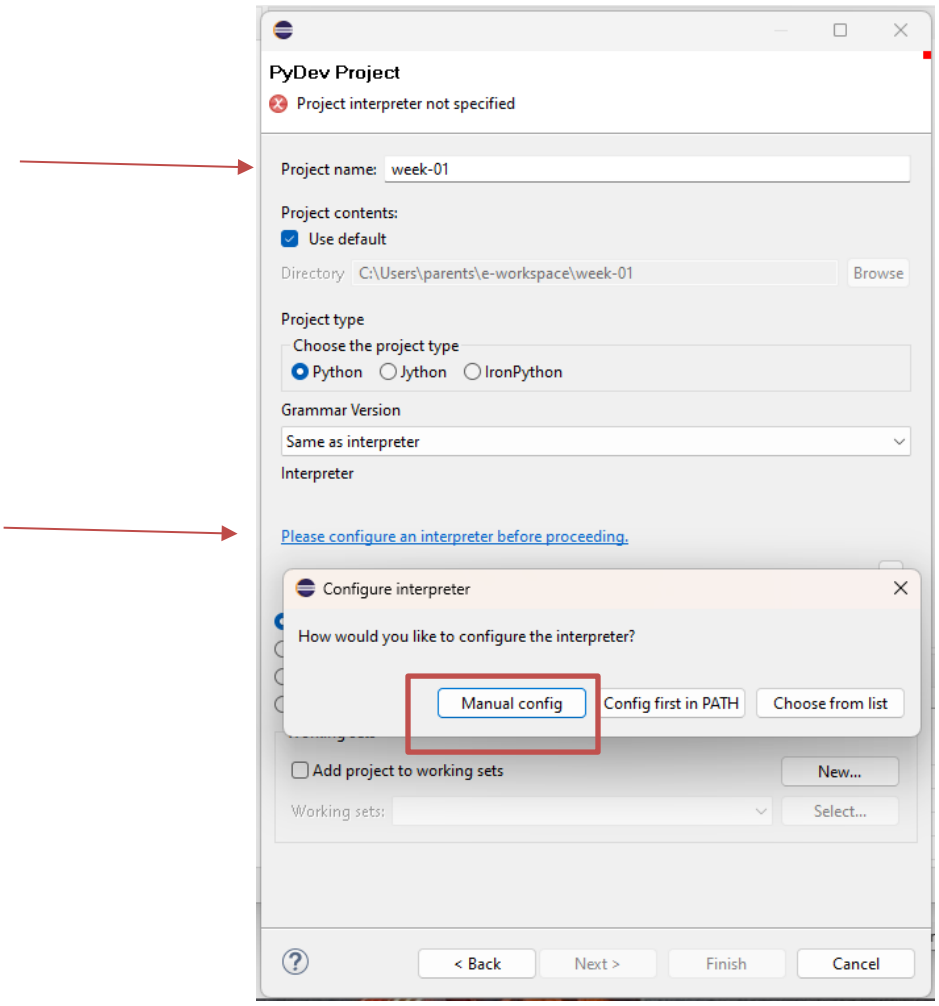


Figure 2. PyDev Project interpreter configuration.

Then, in a window shown in Figure 3, click on **New->Browse for python/pypy.exe** and navigate and select

- your **anaconda3** folder **(Windows), or**
- your **anaconda3/bin** folder **(macOS)**,

where python.exe /python.app is located.

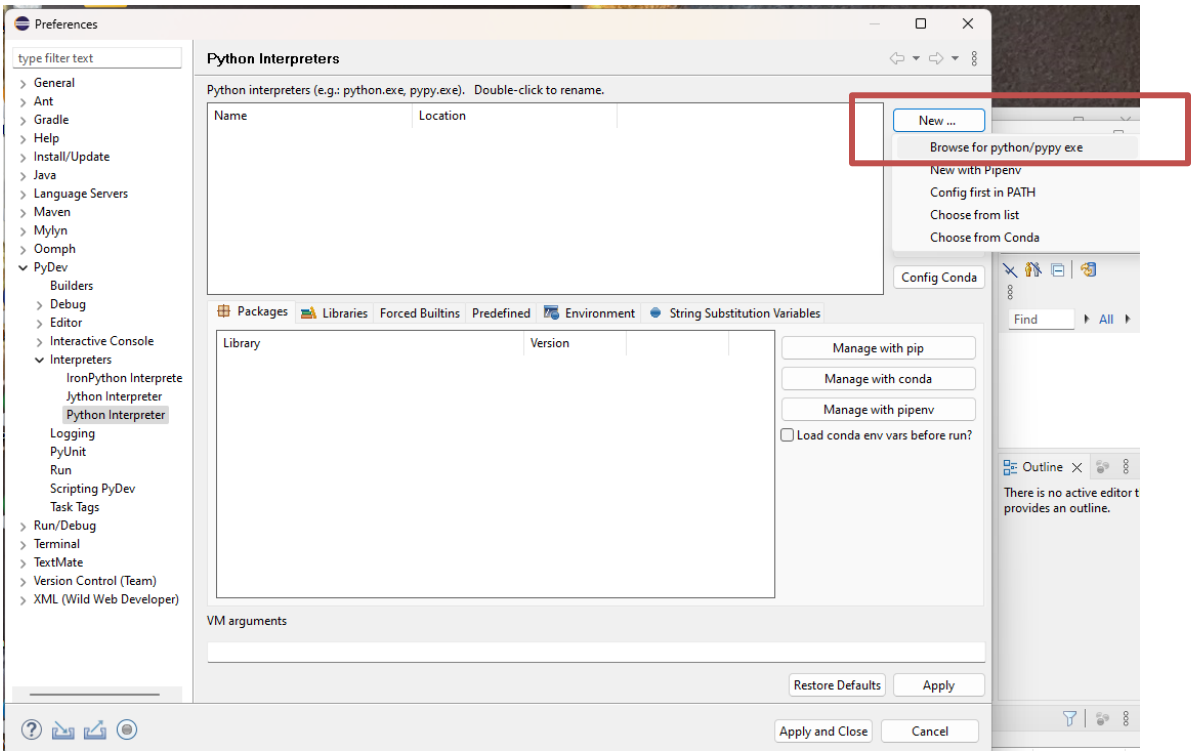


Figure 3. Configuring/Selecting Python Interpreter

Eclipse may in the process present a **Selection needed** window (shown in Figure 4), and you should you click on the OK button to proceed.

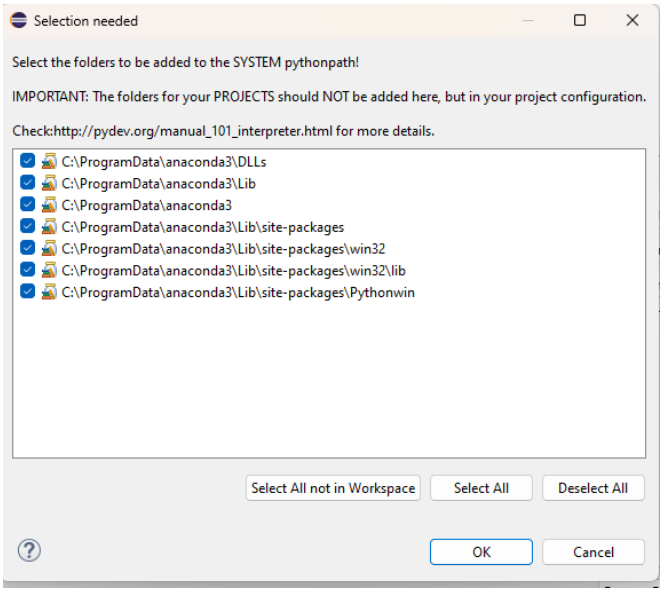


Figure 4. Selection needed window

Eclipse **will take some time to configure PyDev** with all package paths located within Anaconda distribution, while keeping the PyDev Project window up. Wait until the configuration is. You will see a message in Eclipse "Configuring ", and then "Sync System PYTHONPATH", The messages will disappear when config is completed.

When the process is completed, the default interpreter will be displayed in the Pydev Project window (Figure 2). Press on the **Finish** button and your newly created project should show up in the window pane on the left side.

Step 7 – check that you are able to use the *numpy* and *pandas* packages.

These packages will be used later in the course, but you should verify that you have them properly set up and visible to Eclipse at this point. To do that, you will need to access the PyDev Console:

1. If the Console tab (Figure 5) is not available, bring it up by selecting the menu option Window -> Show View -> Console.
2. Go to the Console tab and click on an icon with a yellow plus sign. Select PyDev Console, as shown in Figure 5. In the menu window that appears, choose **Python Console**, and then select the right interpreter, if needed.

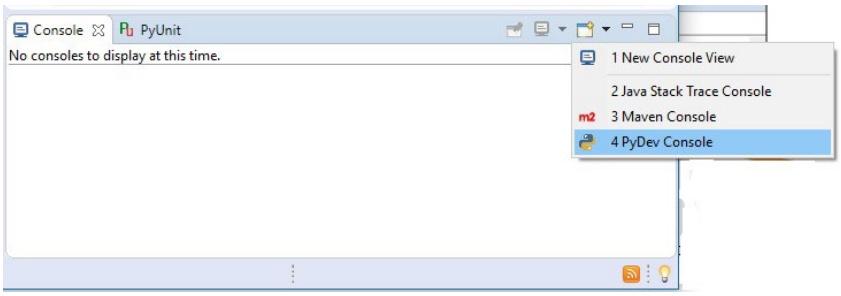


Figure 5. Console tab; bringing up the PyDev Console

That should result in the PyDev Console becoming available to you; the second line that shows up specifies the reference to the python interpreter used– verify that it has **Anaconda3** in the path. As shown in Figure 6, type the following into the console window:

```
import numpy
import pandas
```

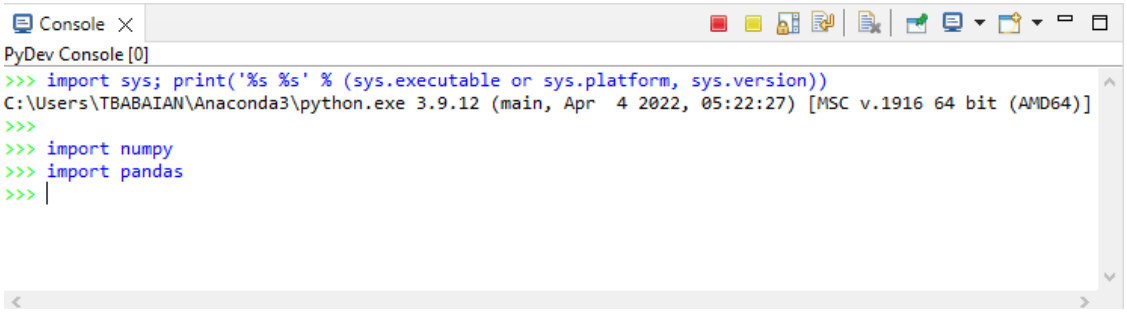


Figure 6. Checking installation of numpy and pandas packages through the PyDev Console window.

If no message appears stating that these packages are not found, then the installation was executed correctly and has worked. Otherwise, you may need to adjust it. A failure in importing the numpy/pandas it is most likely due to a mistake in choosing the python from the **anaconda3** installation, done in Step 6.

A separate handout contains instructions on using Eclipse/PyDev to create your first Python program.

Lab 1: Questions and Practice:

In a separate document or here, provide the answers to the following questions, then submit:

1. What is the complete path to your cs230 workspace?
   Enter it here _____
2. What is the complete path to your python interpreter within the anaconda3 installation?
   Enter it here _____
3. Create 3 PyDev projects: week-01, hw-01, and week-02 for future use. Make a screenshot of the Eclipse environment showing these projects and paste it here.