Astronomy 400B: Homework 1

Due: January 19, 2023 by 5 PM

1 Get Set Up on Nimoy

We have set everyone up with an account on the undergrad computer *nimoy*. Your username is your netid. If you didn't previously have an account then your password is your student ID, otherwise the password has not been changed.

1. Log in to nimoy by opening a terminal and typing the following in the command line:

   ssh username@nimoy.as.arizona.edu

   Note, if you get the following message: WARNING: REMOTE HOST IDENTIFICATION HAS CHANGED you need to go into your ∼/.ssh/known_hosts file and delete the line with *nimoy* in it. Then try to ssh again.

   If you cannot log in, email Prof. Besla and TA Hayden Foote immediately.

2. After logging in, from your home directory on nimoy, access the directory for the class

   cd ../astr400b/

   The data files needed to complete most homeworks will be stored in this directory. In this directory there is a file called MW_000.txt. This file stores the data for a model of the Milky Way at the present day. 000 corresponds to time=0 and will be referred to as the SnapNumber. Other files will have different SnapNumbers, like 001, 002, etc to indicate future points in time.

3. Return to your home directory (command is *cd*)

   Create a symbolic link to copy the file MW_000.txt to your home directory.

   ln -s ../astr400b/MW_000.txt ./MW_000.txt

4. Open the symbolically linked file with your favorite editor (vi, emacs, etc). Symbolic links creates a link to the file without storing the data in your home directory. Symbolically linked files are needed for this class as these data files can be very large.
   Copy the first 3 lines of the file and store them in a new .txt file called

"myfirstcommit.txt"

5. There is also a README in the directory that explains the file organization. It says:

   - First Row is the time in units of 10 Myr (equivalent to SnapNumber/0.7)
   - Second Row is the total number of particles
   - Third Row describes the units of the columns that follows the fourth row
   - Fourth Row describes the header name for each column that follows
   - Remaining rows contain the particle data, which we will discuss in the next homework.

2 Installing Anaconda

On your own laptop or desktop, install Anaconda: https://www.anaconda.com/download/ choosing the version appropriate for your operating system. If you do not have a laptop or home computer then please email Dr. Besla.

3 Get Used to Python

Try out coding in python. An easy way to do this is Jupyter Notebooks. You can launch Jupyter Notebooks from the Anaconda interface. Note that you do not have to use the Jupyter Notebooks interface and can instead create your own scripts that run from the command line.

An example python tutorial site: https://www.learnpython.org/

4 GitHub Account

1. All assignments will be due on GitHub, so make yourself an account: https://github.com/
2. **Create a github repository with your last name called 400B_2023_yourlastname**
3. Try the tutorials: https://lab.github.com/ , or https://teamtreehouse.com/library/introduction-to-git

5 Updating Your GitHub Repo

This assignment is to learn to use your repo for this class to upload homework solutions, including the "myfirstcommit.tex" file. If you are having trouble with git, don't worry. There will be an in class tutorial on git on Jan 19.

1. Initialize your repo with a README file that lists this class and explains that this is where you will be storing all homeworks and assignments.

2. In a terminal, initialize git (git init) and clone your repository somewhere (clone url)

3. From the command line, create a directory called Homeworks in your cloned repo

4. Within Homeworks create a directory called Homework1

5. Copy your file "myfirstcommit.txt" into the Homework1 directory.

6. Commit the file "myfirstcommit.txt". Start within the Homework1 directory (at level with the myfirstcommit.txt file). The commands to do this are below. Note that you don't have to add the directories separately - Git will add the directories for you automatically (but only if the directories are not empty).

   ```
   git add myfirstcommit.txt
   git commit -m "DESCRIBE HERE YOUR COMMIT"
   git push
   ```