

Astronomy 400B: Homework 1

Github Repo Name Due: January 21, 2025 by 5 PM

Full Homework Due: January 23, 2025 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 and your password is your student ID. If you previously had an account, your password has been reset.

1. In order to log in to nimoy, you'll need to be on a secure network. When working from home you will need VPN access (log in will use your netid) - UA provides Cisco AnyConnect software here:
<https://it.arizona.edu/remote-work>
After starting up VPN go on to the next step.
2. Log in to nimoy by opening a terminal on your laptop 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 Himansh Rathore immediately.

3. After logging in, change your password by typing *passwd* in the command line and follow the prompts.
4. Next, navigate from your home directory on nimoy to 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.

5. 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
```

6. Open the symbolically linked file with your favorite editor (vi, emacs, etc). Symbolic links create 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 and you don't want to store them on your computer.

Copy the first 3 lines in the file MW_000.txt and store them in a new .txt file called “myfirstcommit.txt”

7. There is also a README in the directory that explains the file organization. It says:
 - First Row is the time in units of Myr (equivalent to SnapNumber*10/0.7)
 - 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 you need to make yourself an account: <https://github.com/>

2. **Create a github repository for the class.** Pick any name for the repository you wish. Email TA Himansh Rathore with a link to the github repository. The subject of the email should be "ASTR400B Homework 1". Deadline to do this is Jan 21 2025 (note the earlier deadline for this component).
3. Try the tutorials: <https://docs.github.com/en/get-started/start-your-journey/hello-world> , 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 23.

1. Initialize your repo with a README file that lists "Astronomy 400B" and explains that this repo is where you will be storing all homeworks and assignments.
2. Create a personal access token, following the instructions given in: <https://docs.github.com/en/authentication/keeping-your-account-and-data-secure/managing-your-personal-access-tokens#creating-a-personal-access-token-classic> . This personal access token will help you to clone the repository to your computer (personal computer or nimoy) using the command line/terminal. Please copy the token and save it somewhere secure.
3. In a terminal, clone your repository somewhere on your computer (git clone url). Refer to <https://docs.github.com/en/authentication/keeping-your-account-and-data-secure/managing-your-personal-access-tokens#using-a-personal-access-token-on-the-command-line> . You will need to enter your personal access token when it asks for password.
4. From the command line, create a directory called Homeworks in your cloned repo
5. Within Homeworks create a directory called Homework1
6. Copy your file "myfirstcommit.txt" into the Homework1 directory.
7. 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
```