

LARSON—INFO 790—CLASSROOM WORKSHEET 07

A Modified Example

We will modify the Titanic example on a new data set.

1. Log in to VCU’s Athena cluster.

The following directions assume you have an Athena account, that you have set up Sage, and that you have set up (using `make`) the CONJECTURING program.

- (a) Start the Chrome browser.
- (b) If you are off-campus, you’ll need to connect to the VPN first.
- (c) Then go to `https://athena3.hprc.vcu.edu`
- (d) Login using your VCU EID as your username, and your corresponding VCU password.
- (e) Click the Apps button and a Sage session. The default options are fine. This will take a couple of minutes.
- (f) Click the Apps button and start an “athena shell access” session (this will give you a terminal window, where we can issue commands).
- (g) Your Sage session will first say “Queued”, then “Starting”. When it is ready you will see a button that says, “Connect to Sage”. Click that.
- (h) You should then get an “untitled” interactive-Python notebook (ipy nb), or the last file you had open the previous time you used Athena.
- (i) When your notebook opens look on the upper-right to make sure the SageMath kernel is running (if it isn’t you can change the *kernel*).

2. **Reminders for setting up Expressions and Conjecturing.** In each case, for each experiment, we will make a folder in your root directory; we will need a copy of the “expressions” compiled executable in that folder; and we will use an `.ipy nb` located in that notebook. When we call the CONJECTURING program we will use the version in the `~/conjecturing` folder downloaded from github (what you did with the github command; if there are ever new files on github, using the command `git pull` will update your files).

3. Setting up the c07 example on Athena

- (a) In your Athena shell tab, make a `C07_experiment` directory; run: `mkdir C07_experiment`
- (b) Check that you have this directory by running the directory command: `ls`
- (c) Change into your `C07_experiment` directory: `cd C07_experiment`
- (d) Copy the expressions file to your `C07_experiment` directory:
`cp /conjecturing/c/build/expressions ./`

4. Getting the c07 data and worksheet.

- (a) Go to <https://mathlum.github.io/Teaching/>
- (b) Scroll down and find the INFO 790 files. Download the c07_data.xlsx (excel) and .ipynb (script) files.
- (c) These two files need to be in your C07_experiment directory on Athena. On your Athena Jupyter notebook, there is a button for *uploading* files. Upload the c07 .xlsx and .ipynb files. Check that they are in the C07_experiment directory.

5. Loading the c07 script

- (a) In your open Sage session tab, you will see a list of files on the left. Double-click on your C07_experiment folder, then double click on `c07_experiment.ipynb`.
- (b) Check on the upper-right that Sage is the kernel. If not, change it to Sage.
- (c) Run the commands one cell at a time (go to the first cell, and click RUN, or SHIFT-ENTER).

6. Test Data

- (a) Note something new at the end of this worksheet: we name and evaluate a specific conjecture for all of the testing data.
- (b) What is the name of the testing examples?
- (c) Where are the invariant conjectures stored?
- (d) Where are the property conjectures stored?
- (e) Only the 0th conjecture is investigated. Now investigate the 1th conjecture.

Final Note

Dr Brooks wrote this file so that it could be easily imitated for a wide-variety of tabular data-files. You should read each cell carefully and **ask questions** about what the commands do. **You will be doing this with your own data files.**