- SDSS Data Access
- NYU astro directories
- Web portal (rsync, wget)
- API
- CASJobs
- SkyServer

- NYU astro directories
- Account on astro.physics.nyu.edu
  - `http://howdy.physics.nyu.edu/index.php/Computers`
- If your dot files are set up, then in Unix you can do:
  - `setup tree dr9`
- Then you have "environmental variables" set up properly:
  - `echo $BOSS_PHOTOOBJ`
  - `echo $SPECTRO_REDUX`
- So you can get to the data "locally"
- Good to use env. variables instead of hard-coded paths
- Variables correspond to datamodel directory tree

- Getting data off of web data tree
- Browsing and clicking is annoying!
- Can use wget and rsync (single or multiple):
  - http://www.sdss3.org/dr9/data_access/bulk.php
  - `rsync -v rsync://data.sdss3.org/dr9/sdss/spectro/redux/plates-dr9.fits .`
  - `rsync -v rsync://data.sdss3.org/dr9/env/SPECTRO_REDUX/plates-dr9.fits .`

- The API is another way.
  - `http://api.sdss3.org`
- In most cases it is drawing material from a database.
- Very useful for programming web tools, also can be used for science

- CASJobs
- The flat file catalog information has been loaded into a big database, and can be accessed using database techniques: `http://skyserver.sdss3.org/casjobs`
- Requires an account.
- Let us try:
  - *a simple SQL query*
  - *submitting a job to a queue*
  - *downloading results*
  - *examining the schema*
  - *looking at examples*

http://skyserver.sdss3.org/public/en/help/howto/search/

```
SELECT TOP 1000 *
FROM specObj
WHERE z between 0.10 and 0.11
```

```
SELECT TOP 1000 ra, dec, z
FROM specObj
WHERE z between 0.10 and 0.11
```

```
SELECT ra, dec, plate, mjd
FROM plateX
WHERE dec > 30.
```

```
SELECT TOP 100 specObj.ra, specObj.dec,
  photoObj.ra as pra, photoObj.dec as pdec
FROM specObj
JOIN photoObj ON specObj.bestobjid = photoObj.objid
```

- SkyServer
- Visual tools
- Explore page
- Query forms
- Sample queries

Afternoon Activity

- Use CASJobs to select these galaxies, but grab the spectra from data.sdss3.org
- Select up to 100 Legacy Main sample galaxies within a 1 degree and +/- 2000 km/s of the center of the Coma cluster
- Select 100 random galaxies in the same redshift range but not near Coma cluster
- Are the spectra different in any systematic way
- Stack two sets of spectra and plot together to compare