Introduction to Scientific Computing
Meeting 25
Programming with Python
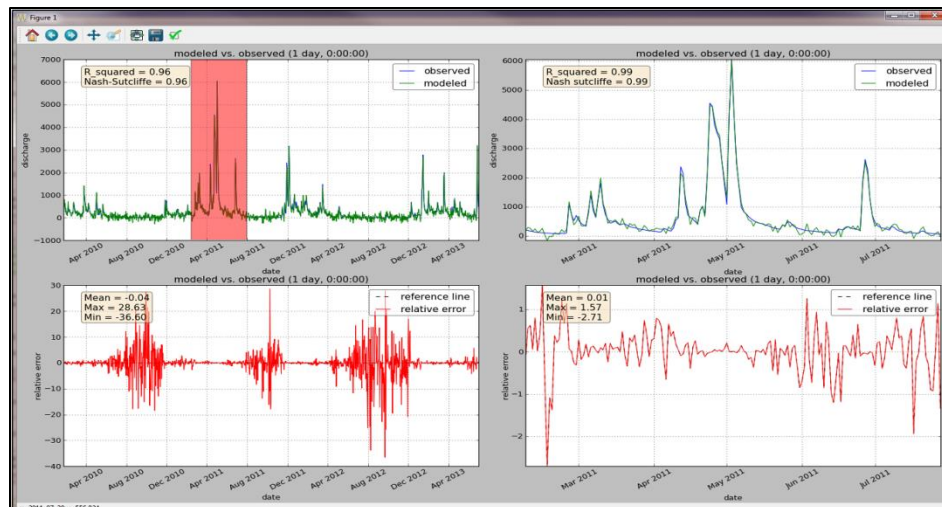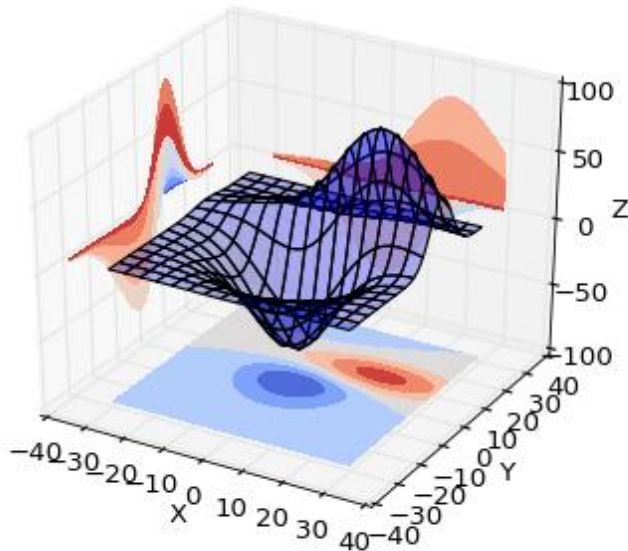
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Last Meeting

- Discussed SciPy2014.

- Discussed some resources to use

- Discussed modules we will be using in the near future

- Discussed Integrated Development Environments (IDEs)
    - Wing IDE - https://wingware.com/
    - PyCharm - http://www.jetbrains.com/pycharm/

Today's Objective

- Write a python script to read a sample data file using sys.argv and display simple statistics to the screen.

- Keep the script under version control using Git and create a repo on Bitbucket or GitHub.

Challenge

Input

```
date      discharge (cfs) stage (ft)  temperature (celsius)
01/05/2014  100 12.2      5
02/08/2014  110 12.8      3
03/07/2014  105 12.5      10
04/01/2014  98  11.9      20
05/04/2014  92  11.5      25
06/01/2014  104 12.3      28
07/02/2014  97  11.8      32
08/03/2014  95  11.7      33
09/04/2014  96  11.7      27
10/05/2014  101 12.0      20
11/02/2014  112 13.2      15
12/03/2014  109 12.8      7
```
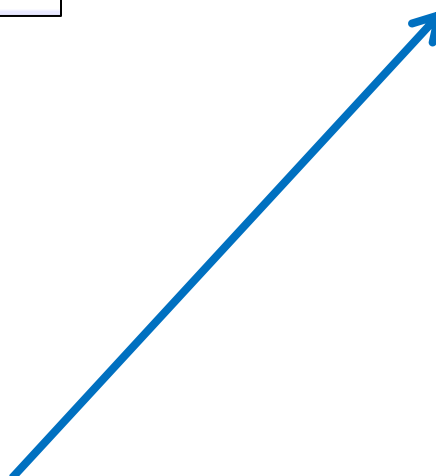
2014_measurements_bob.txt

Output

```
$ python read_measurements.py 2014_measurements_bob.txt
2014_measurements_bob.txt

    discharge (cfs):
        Average: 101.583
        Maximum: 112.0 occurred on 11/02/2014
        Minimum: 92.0 occurred on 05/04/2014

    stage (ft):
        Average: 12.200
        Maximum: 13.2 occurred on 11/02/2014
        Minimum: 11.5 occurred on 05/04/2014

    temperature (celsius):
        Average: 18.750
        Maximum: 33.0 occurred on 08/03/2014
        Minimum: 3.0 occurred on 02/08/2014
```

- Read file
- Parse data
- Print the following output:

filename

   parameter_name

      average: <value>

         maximum: <value> occurred on <date>

Recall Version Control with git

Working files	Staging Area	Local repository
somefile.txt	somefile.txt	somefile.txt

git add
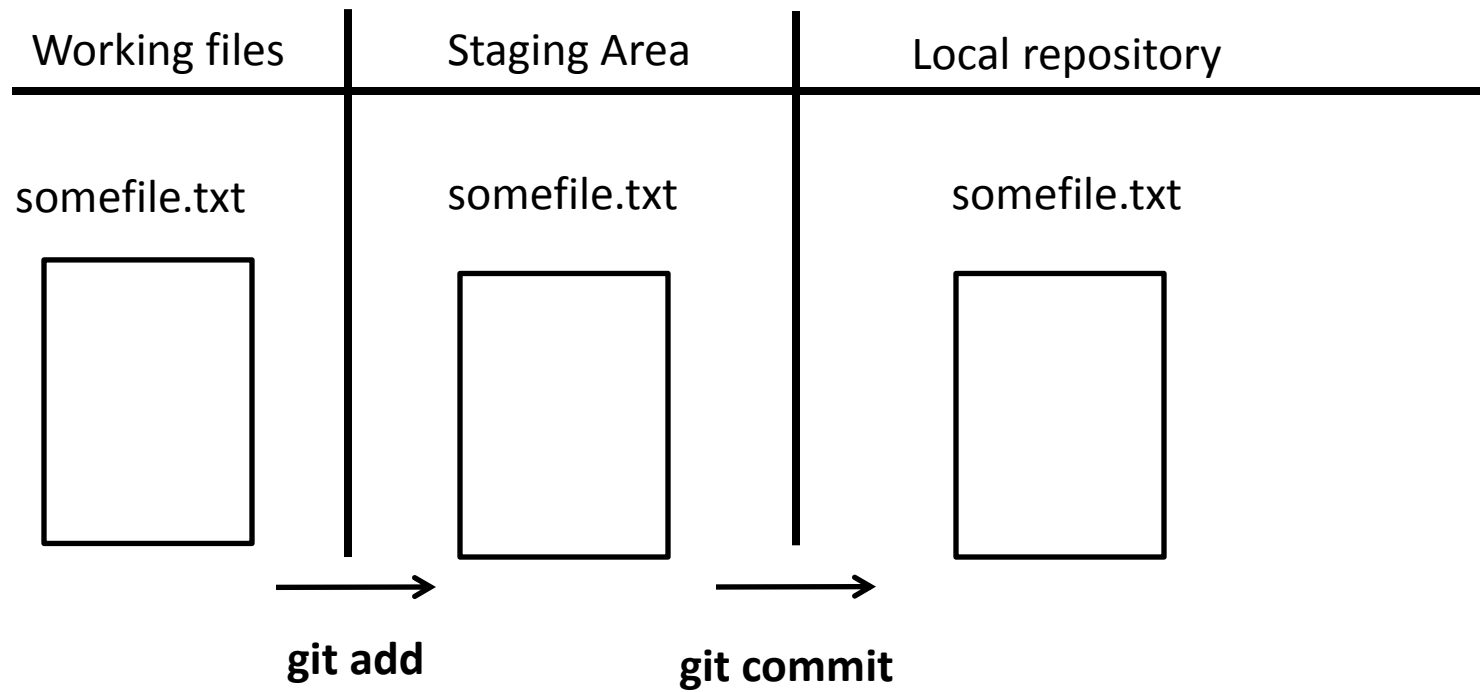
git commit

Set up a local git repository for reading the measurements file.

$ cd path/to/directory/of/your/choice

$ mkdir readmeasurements

$ cd readmeasuresments

$ git init

- Create the following:

readmeasurements/

    2014_measurements_bob.txt

    read_measurements.py ⟶ *add*

```
# Author: <fill me>
# Purpose: <fill me>
```

Commit these initial files

$ git status

$ git add .

$ git status

$ git commit -m "initial datafile and python file"

$ git status

$ git log

Your best friends:
git status
git add
git commit
git log

Set up a remote repository for readmeasurements directory

- Sign up with a hosting site:
  - **GitHub (https://github.com/) or**
  - **Bitbucket (https://bitbucket.org/)**
- Go to hosting site and create a new repository called **readmeasurements**

Set up a remote repository for readmeasurements directory

- Add your remote repository to your local repository
  - **git remote add origin** https://your-bitbucket-address/your-repo-name.git

$ git remote add origin https://jlant@bitbucket.org/jlant/readmeasurements.git

Set up a remote repository for readmeasurements directory

- Copy changes and push your local repository up to your remote repository
  - **git push** *name_of_remote_repo name_of_branch*

$ git push origin master

- Note: The name "origin" is a local nickname for your remote repository

Let's start coding!

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05/04/2014	92	11.5	25
06/01/2014	104	12.3	28
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