

# Introduction to Programming for Scientists

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Lecture 3:  
A few last things before Lab 1

# ERRORS!

- Read them, don't ignore them!
- At the very least, they will tell you the line number where your program failed.
- If you read more carefully, you may get useful information.

# try, except

- A way to avoid having errors crash your program
- An alternative to lots of 'if' statements
- try: - try to do something
- except <exception>: - if something specific fails, do this
- except: - if anything else fails, do this
- <http://docs.python.org/library/exceptions.html>

# Arguments

- `myprogram.py file1.txt file2.txt`
- `python myprogram.py file1.txt file2.txt`
  
- `from sys import argv`
- `len(argv) -> 3`
- `argv[0] -> myprogram.py`
- `argv[1] -> file1.txt`

Note: Can't do this if you start by clicking on the program

# Read/write files

- `handle=open(<filename>,<mode>)` -or- `file(<filename>,<mode>)`
- Valid modes: `[r|w|a|U][+][b]`
  - `r` - open file for reading
  - `w` - truncate file and open for writing
  - `a` - open file for appending (writing at end of file, platform dependent)
  - `U` - Universal text file support
  - `+` - in addition to basic mode, permit writing
  - `b` - open in binary mode (default is text mode)
- Different platforms do a newline differently:
  - Unix - `'\n'`
  - Old mac - `'\r'`
  - Windows - `'\r\n'`

# File Methods

- `string=file.read([len])` - Reads whole file (or [len] bytes)
- `string=file.readline()` - Read a single line of text
- `stringlist=file.readlines()` - Read whole file as a list of lines
- `file.write(<string>)` - Write <string> to file (no automatic /n)
- `file.close()` - Close the file (automatic when file object freed)
- `file.flush()` - Write output to file immediately (no buffering)
- `int=file.tell()` - Current location in the file (use binary mode!)
- `file.seek(<loc>)` - Move to a specific position in the file
- `for line in file: print line` - File acts as an iterator for lines
  
- `sys.stdin, stdout, stderr` - Automatic file handles

# Lab 1

Alvarez-Urena	Pedro	H
Cao	Wenjian	D
Chang-Graham	Alexandra	D
Chmielewski	David	C
Green	Nathanael	C
Jiang	Xiqian	B
Lewis	Andrew	H
Lucero	Rocco	F
Lurie	Eugene	A
Meyer	Kristen	E
Mlotshwa	Busisiwe	A
Mwesigwa	Savannah	E

Noel	Dwight	G
Pohodich	Amy	E
Raveendran	Snekalatha	G
Reshabile	Gaone	A
Rosengarten	Rafael	B
Saltzman	Alex	G
SHENG	KUANWEI	H
Song	Xiaofei	F
Straker	Lauren	B
Tajhya	Rajeev	F
Williams	Lesedi	C
Zhao	Yanyan	D