

# HCI 558 X

## Lecture 13:

April. 10, 2007

- last 3 talks
- Python scripting: regular grids

```
Python Shell
File Edit Shell Debug Options Windows
Python 2.3.4 (#1, Sep 26 2006, 17:23:01)
[GCC 3.4.6 20060404 (Red Hat 3.4.6-3)] on linux2
Type "copyright", "credits" or "license()" for more

*****
Personal firewall software may warn about the
makes to its subprocess using this computer's
interface. This connection is not visible on
interface and no data is sent to or received :
*****

IDLE 1.0.3
>>> ===== RESTART =====
=
>>>
2Dgrid_example.txt
>>>
```

```
echo1.py - /lockers/hci558/python
File Edit Format Run Options Windows
#!/usr/bin/env python

# HCI python scripting intro
# echo - copy input file to terminal

# name of the file to work on (could be an argument)
filename = "2Dgrid_example.txt"

print filename
```

- delete the python folder from last week
- I made improvements/corrections for this week
- copy hci558/new\_python folder to your folder
- cd to this folder
- run: *idle* <.py file>
- edit file - save (Ctrl-S) - run in python interpreter (F5)

# Read in textfile

- Reading in text files - readlines() method:
  - first read in all lines into a list of strings: [ " 0 3 0", "4 5 6", "7 5 3" ]
  - go through each line in that list: "0 3 0"
  - split each line into "letters" (numbers)
  - do something with each number
- echo1.py: print each line and count them
- (why do we get an extra empty line?)
- echo2.py: split single line into list of numbers [ '0', '3', '0' ]
- echo3.py: make list numbers using + [ '0', '3', '0', '4', '5', '6', ..... ]
- print 15. number using [14] (why not 15?)

```
0 0 0 0 0 0 0 0 3 3 3 3 3 0
0 3 0 0 0 0 3 0 3 0 0 0 0 3
0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 7 7 7 7 7 0 0 7 0 7 0 7
7 0 7 0 7 0 0 7 0 0 0 7 0 0
0 0 0 0 0 0 0 0 0 0 0 0 11 11
11 0 0 11 0 11 0 11 0 0 11 0 11
0 11 0 0 0 11 0 0 0 0 0 0 0 0
0 0 0 0 0 0 15 15 15 15 15 0 0
0 0 0 0 15 0 15 0 0 0 0 15 15
0 0 0 0 0 0 0 0
```

- Different approach: use `readline()` (`echo4.py`)
- read one line at a time until end of file
- "empty" line has 1 character (linebreak)
- use `append` to make a list of lists [ [...] [...] ... ]
- `len` is now number of lists (lines)
- sort of 2D array with 2 indices `lines[4][1] = 5.`  
line, 2. number

- `echo6.py`:
- look at `2Dgrid_w_header.txt`
- skip certain lines (1. and 3.) with `continue`
- in 2. line: get width and height of 2D grid
- write into output file
- `' '.join(list)` : create space sep. string from list
- `['1', '2', '3']` is joined to `"1 2 3"`
- look in `out.txt`

- 2D\_gridA.py
- write a dx 2D grid header first
- use width and height in gridpositions and gridconnection object
- warning about order of dimensions:
- .dx file: <slow varying>, <fast varying> !!!
- here: height, width (Y dimension, X dimension)
- 2D\_gridB.py: print cell values as 2D array indices
- try 2Dgrid.net

- bigger example: pic.py (pic.dx)
- How would you do 3D grids?
- Multiple input files?
- questions?
- lab: HW6 - wrap up
- next lecture: DX triangle import ?
- grades for: quiz 3 + reports (comments)
- super important!: I need to make copies of Quiz 2  
- please give your original back to my ASAP