

IDCE 302

Python Programming

Jie Tian, PhD
Clark University



Agenda

- Welcome!!
- Course Information
- Software Introduction



Instructor's Info

- Dr. Jie Tian
- Assistant Professor of GIS
- Office: 303 IDCE House
- Email: JieTian@clarku.edu
- Tel: (508) 793-7527
- Office hours: Wednesday 12-2pm

TA's Info

- Zehan Li
- MS Candidate in GISDE
- Office: 41 IDCE House
- Email: ZeLi@clarku.edu
- Office hours:
1:00 – 2:30PM Monday and Wednesday?

Course Info

- Lecture time: Monday 2:50—5:50PM
- Lab time: Friday 2:50— 4:05AM
- Lectures: **JC 103**
- Labs: **JC 105**
- 7 weeks
- 0.5 Credits



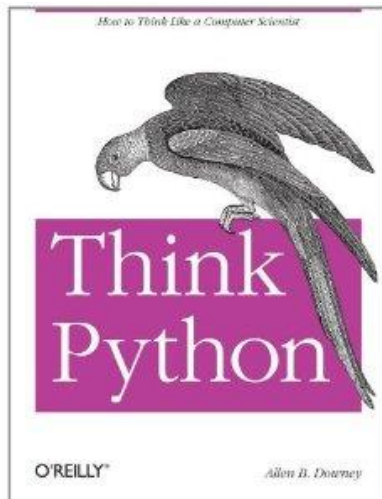
Textbook

Think Python

- <http://www.greenteapress.com/thinkpython/html/index.html>

Official Python Tutorial

- <http://docs.python.org/tutorial/>



Syllabus

Please read very carefully!

- Topics and objectives
- Schedule and important dates
- Policies and my expectations
- Grading scale
- More...



Class Materials

Available online

- Lecture notes
- Assignments
- Grades
- Announcements
- Code samples
- Discussion
- etc



Evaluation

- Lecture Attendance (10%)
- Lab Attendance (5%)
- Assignments (40%)
- Final Exam (45%)

Grading

A+: 97 - 100% **A:** 92 - 96% **A-:** 88 - 91%
B+: 85 - 87% **B:** 81 - 84% **B-:** 78 - 80%
C+: 75 - 77% **C:** 71 - 74% **C-:** 68 - 70%
D: 60 - 67% **F:** < 60%



No make-up exam/lab will be given without a legitimate excuse accompanied by proper formal documentation (e.g. doctor's notes)

Communication Channels

- In class discussion or Q&A
- Online discussion or Q&A (on Moodle)
- Emails
- Office hours
- Together, we learn more!



Course Related Emails

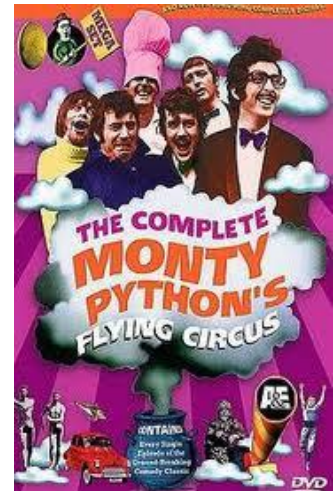
- Please put [IDCE302] before your email subject
e.g. [IDCE302] Lab 1 questions
- Send your lecture related questions to me
- Send your lab related questions to the TA
- Email response ASAP and normally within 48 hours.
- It's OK to remind us if not hearing back





What is Python?

- A high-level programming language
- Freely available
- The “mysterious” name?
 - Given by the designer Guio Van Rossum
 - He was a fan of “Monty Python’s Flying Circus”



Why Python

- Easy to learn
- Excellent for beginners and experts
- Scripting language designed to automate the execution of tasks.
- Suitable for projects, large or small
- Cross-platform (Windows, Mac OS, Unix)

Why not to use Python

- Most scripting languages share these:
 - not as efficient as C/C++
 - but sometimes has better built-in algorithms (e.g. sorting)
- Lack of profiling tools
 - program profiling is a form of dynamic program analysis that measures the usage of memory, the usage of particular instructions, or frequency and duration of function calls.

The Benefit to Know Python

A useful tool for your academic/professional career!

- A very useful complementary tool for other programming languages (if you know C++, C#, Java already)
- GIS professionals need this tool
 - Development with ESRI products (ArcPy)
 - Many open source GIS resources (APIs)

Python Programmers Wanted at..

- Google (Google Earth)
- Apple (Geo Team)
- ESRI (Geoprocessing)
- Many other smaller GIS companies...
- Many geospatial research groups...

Advice

- Be prepared for hard work!
- Programming can be fun, but it takes time and needs effort.
- Most assignments should be completed in 2-4 hours.
- Ask for help after you have spent hours on a single issue.
- Your hard work will pay off!

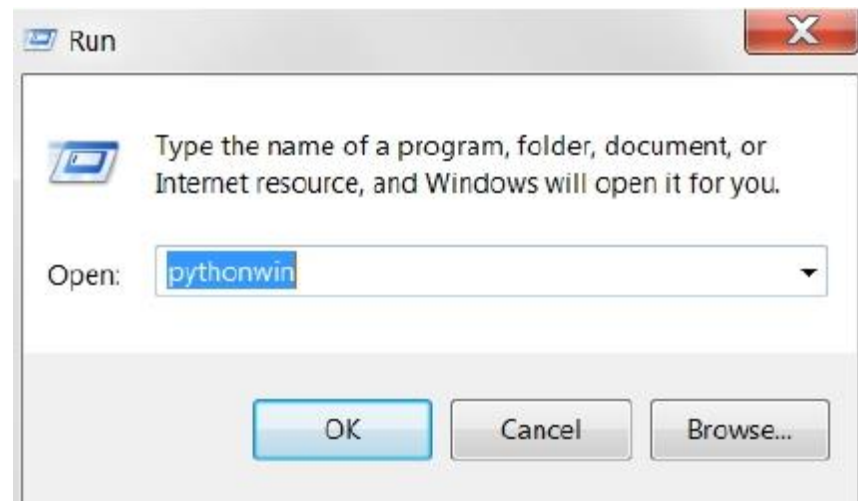
What we do NOT cover:

- We do not cover graphical user interface related features in Python
- We do not cover site packages for Python, such as web, database, internet.
- We only focus on the fundamental elements in Python programming (those most needed for GIS).

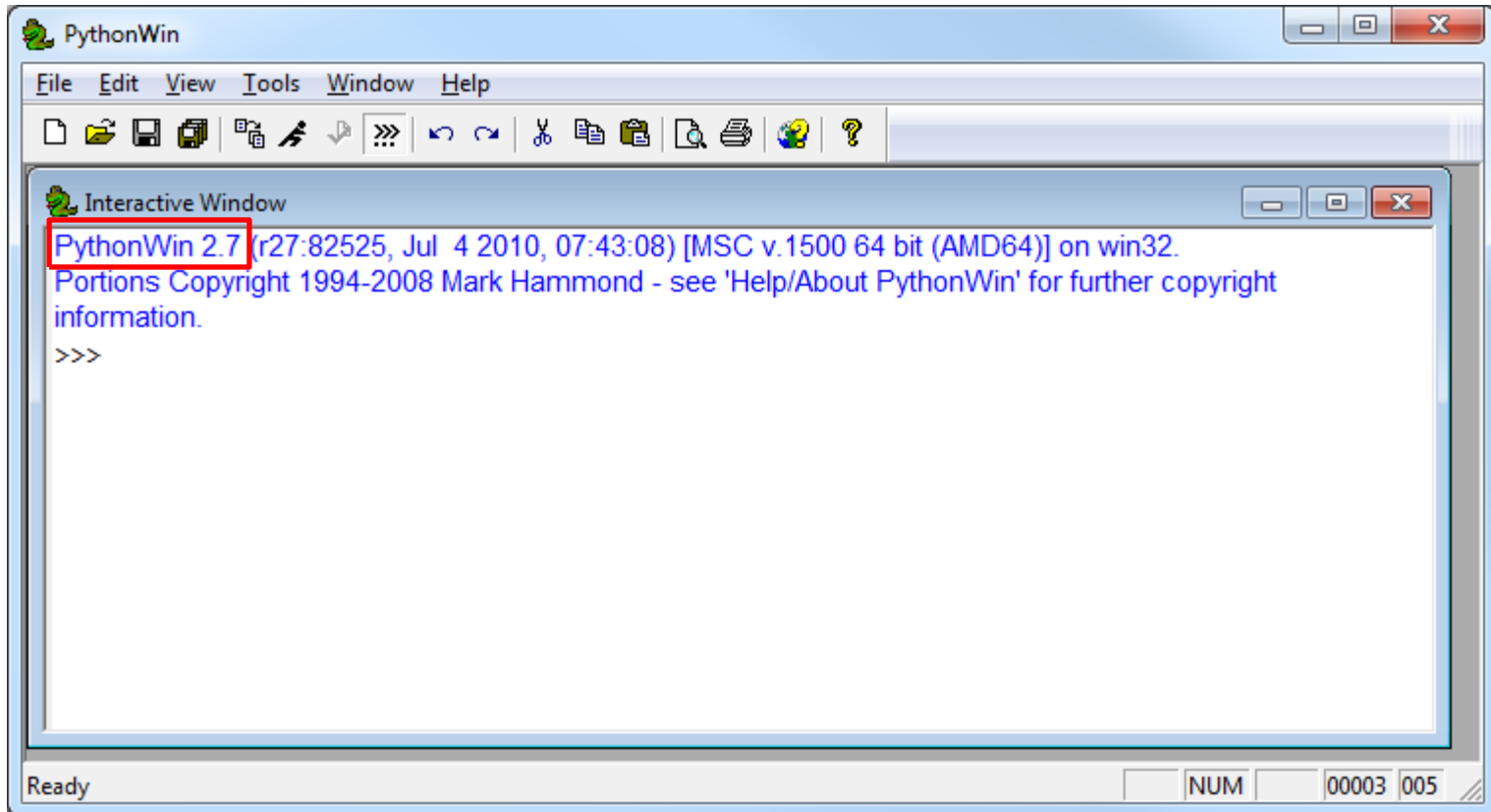
Check Work-Environment

Check PythonWin:

- Log onto your Clark account
- Choose the Run... Menu item
- Check PythonWin program



PythonWin (2.7) should show up as:



Install PythonWin

Step 1) Go to URLs: for Python and PythonWin:

<http://www.python.org/getit/releases/2.7/> and

<http://sourceforge.net/projects/pywin32/files/pywin32/Build%20214/>

Step 2) Choose the proper format for your machine
(32bit or 64bit) from the pages

Step 3) Download the packages

Step 4) Install the package for Python and then for
PythonWin

Note:

If your machine has ArcGIS 10.1 installed, you should have Python27 installed already. If this is the case, you only need to install PythonWin.

Python and PythonWin

- **Python** is the package for the programming language.
- **PythonWin** is a simple graphical-user-interface (GUI). It makes Python programming a little easier.
- There are other GUI packages for Python (e.g. IDLE, PyScripter).
- This class is going to use PythonWin.
- Browser-based interactive Python interpreters.