UPPSALA
UNIVERSITET

Welcome

Day 1 - Intro

Advanced Scientific Programming with Python

Some Facts About This Course

- Course credits: 3 hp
- The teachers:
  - Filipe Maia (filipe.maia@icm.uu.se)

  - Tomas Ekeberg (tomas.ekeberg@icm.uu.se)

- Course material: http://github.com/uu-python/
- Coding project at the end of the course

Why Did We Create This Course?

- Modern research involves a lot of programming
- Many of us use Python, Matlab, … to analyse data
- But, most of us are Researchers, not Programmers
- Software engineers over the years have developed many useful tools
- Most of them are quite simple to use (at least we think that)
- You might not agree with us, but we hope you do after this course
- So, our goal is to introduce you to the most common tools of professional software engineering …
- …and help you become more efficient programmers!

Course Schedule

DAY	TIME	TOPIC
Monday, 23.03.	09.15-12.00	**Basics:** An introduction to the UNIX shell, interactive Python and git repositories
	13.15-16.00	**Hands-on exercises**
Tuesday, 24.03.	09.15-12.00	**Best practices I:** Organizing, debugging and profiling of code
	13.15-16.00	**Hands-on exercises**
Wednesday, 25.03.	09.15-12.00	**High performance computing:** Speed optimization using Numpy, Cython, MPI and GPU acceleration
	13.15-16.00	**Hands-on exercises and coding project**

Course Schedule

DAY	TIME	TOPIC
Thursday, 26.03.	09.15-12.00	**Best practices II:** Testing, documenting and packaging of code
	13.15-16.00	**Coding project**
Friday, 27.03.	09.15-12.00	**Data containers:** Efficient memory storage using HDF5, Pytables and Pandas
	13.15-16.00	**Coding project**

Deadlines

Task	Deadline
Post on Slack link to the GitHub repository of your project, including a README.md with the Project	This Wednesday, 2020-03-25 23:59
Post a link to the repository of your exercise solutions, including the solution for the day 1	Next Monday, 2020-03-30 23:59
Mid-term assessment of the project	Next Monday, 2020-03-30 23:59
Solutions to day 2 exercises due	Next Tuesday, 2020-03-31 23:59
Solutions to day 3 exercises due	Next Wednesday, 2020-04-01 23:59
Final project deadline	Next Friday, 2020-04-03 23:59

Communication Tools

- This year the course will be fully online
- We'll use Zoom for the lectures
- The Zoom link will be the same for every lecture: https://uu-se.zoom.us/j/5276080324
- We'll also use a Slack workspace for feedback during the exercises and project.
- You should have received an invitation but here's the link again https://join.slack.com/t/advancedscien-kxs5703/shared_invite/zt-cughd6tx-k~J6hJoPT16DBTIgdZ5wUg

Coding Project

- Take some of your own code and improve it!
- This could mean:
  - Transform your code into a Python library
  - Improve documentation
  - Add proper test functions
  - Optimize your code for speed/memory usage
  - Your own idea on how you would like to improve it
- Do all development from beginning to end on GitHub
- Submit by emailing to us your repository
- No ideas what to work on: check some on http://bit.ly/2TfsY3x

Code Dissection: Send Us Your Code Problems/Questions

- For our last lecture on Friday, we would like to give a chance to send us your own code examples or problems
- We will try to answer and analyze as many as possible
- Anything related to Programming and/or Python works
- Just email us what you would like us to cover until Wednesday

You can post your problem / question on the Slack channel

Online Feedback

- We'll use Socrative in this course
- Go to https://socrative.com
- Click on Student Login
- Choose room "UU1"

Was is easy to find and answer this question?

socrative
UU1

Any Questions?

…Ok Then, We Are Almost Ready To Start!

Just A Few Questions For You...

Just A Few Questions For You…

- Did you all bring your own laptop?
- Are you all connected to power?
- Do you all have Python installed?
- Do you all have git installed?
- Are you all connected to WIFI?
- Have you all found the lecture notes?
- Hint: they are available here:
  - https://github.com/uu-python/day1-basics