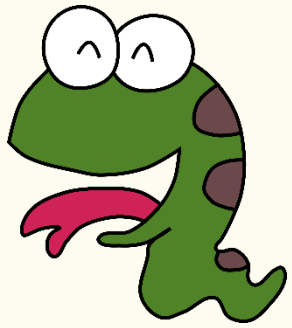
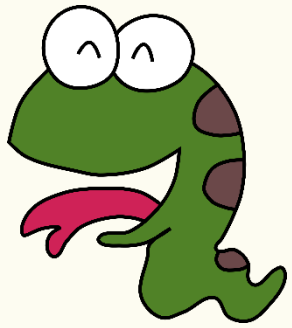


Python Programming

We will be starting shortly

Sit back and relax while you wait!



Python Programming

Warning!

We will start recording this session now!

Also, any messages in the text chat will remain on MS Teams even after the session

Remote learning housekeeping

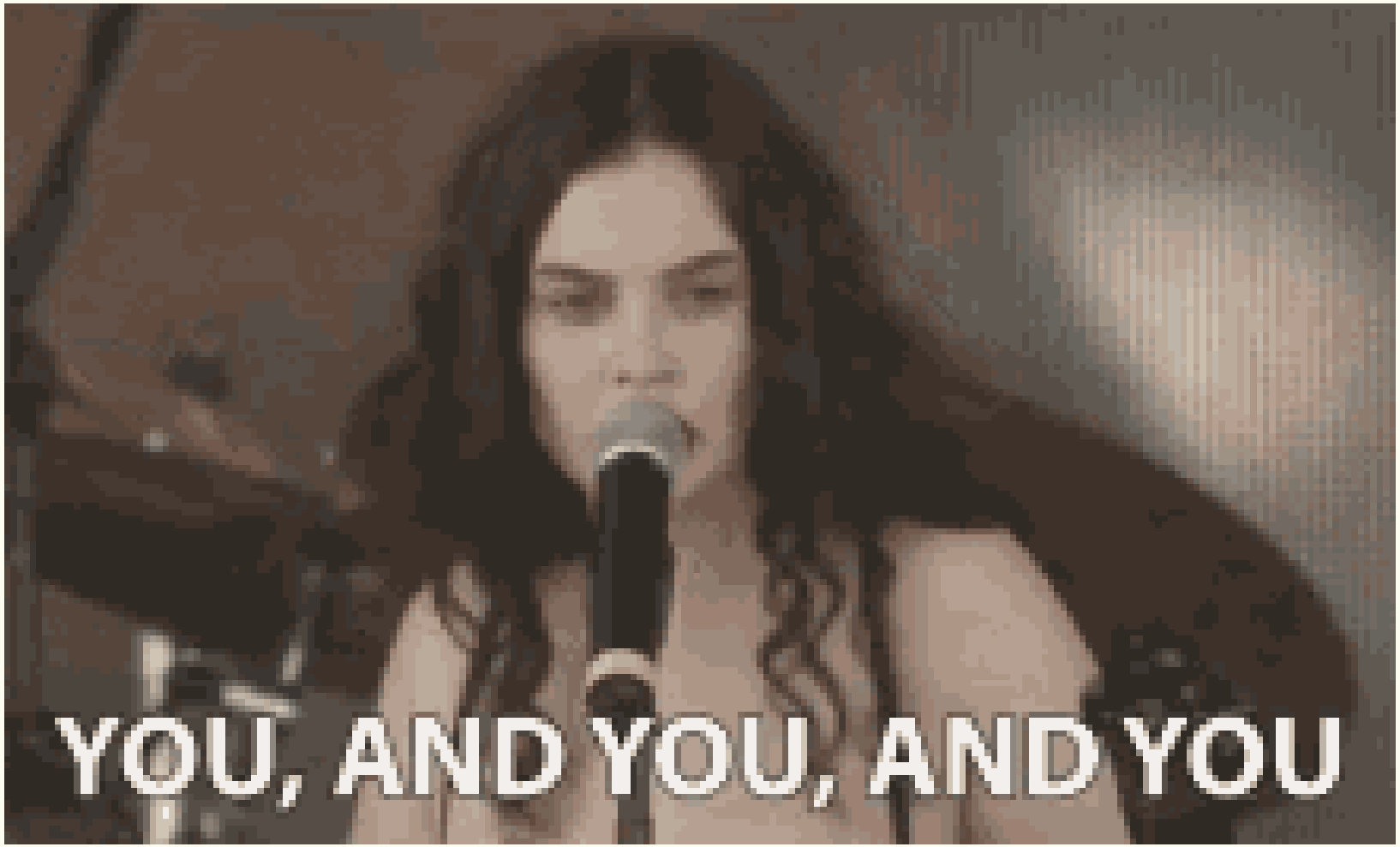
- Keep yourself muted
- Post any questions or comments in the text chat
  - I will go through them at intervals
- Raise hand if you want to ask questions verbally
- Interrupt me if I am talking while muted!

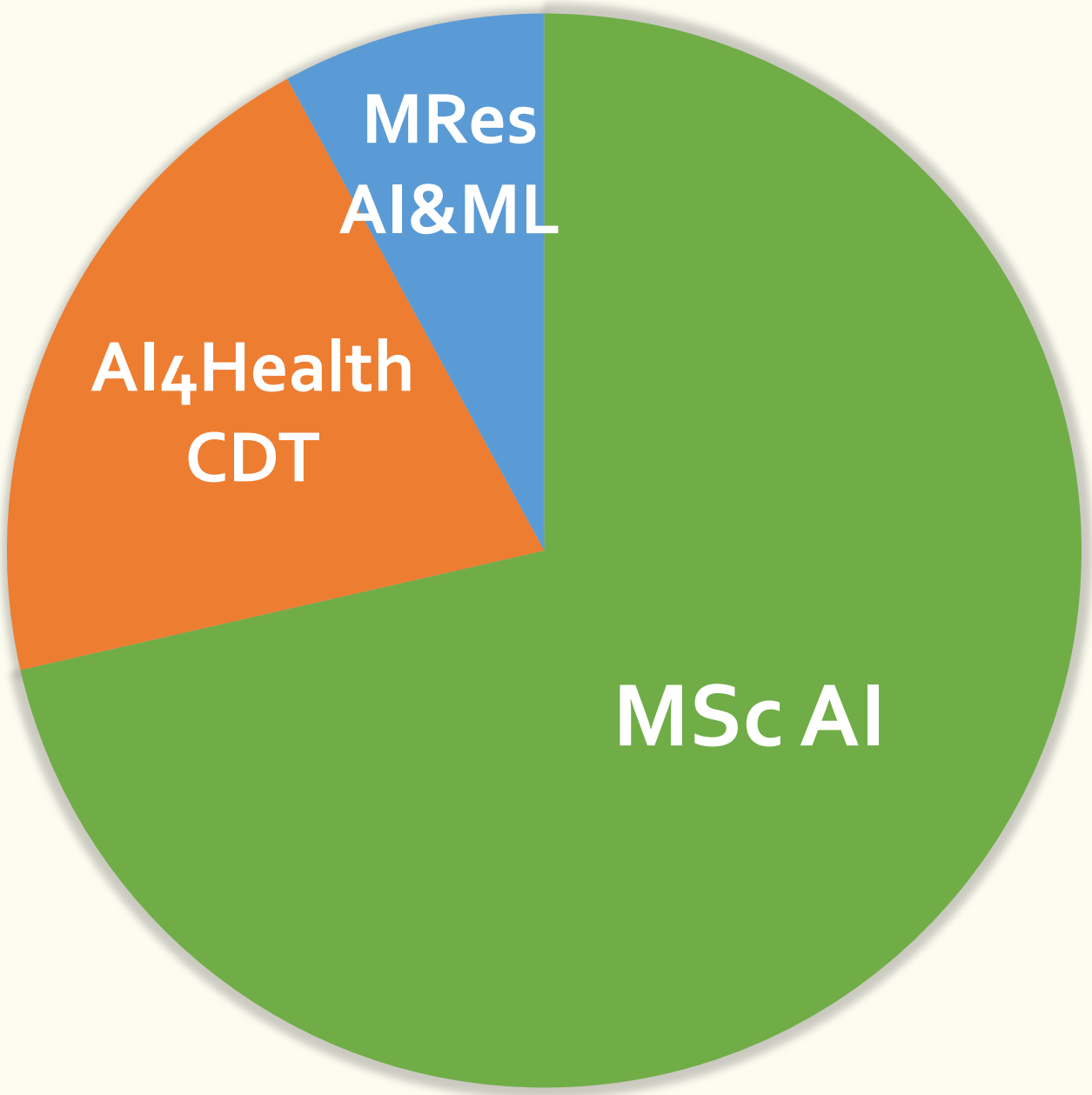
Quiz

What do you call a snake that's 3.14 meters long?

A π-thon

Let’s talk about YOU!




MRes
AI&ML
AI4Health
CDT
MSc AI

MSc AI

- Mathematicians, Engineers, Physicists, Economists etc.
- Non-computing first degree
- Need to pick up Python fast!
  - *Intro to Machine Learning, Intro to Symbolic AI, Reinforcement Learning, Computer Vision*

AI4Health CDT

- Starting PhD in Healthcare-related AI
- Some are clinicians
- Some have computing background
- Need to pick up Python to do your PhD!
  - *Intro to Machine Learning* for some of you!

MRes
AI & ML

- Starting a Masters by Research in AI & ML
- Varied background!
- Need to learn Python to do your research!

Assumption

- Assume no previous programming experience!
- Reality: You are all at different levels!
- Course designed to cater for different levels

About the course

And logistics

My aim

- Learn to **solve programming problems** in Python
- Learn it **fast**!
- Do it in an **enjoyable** way!

This course is for you!

Traditional classroom

Lecture | Lab | Lecture | Lab | Lecture | Lab

Practise and apply

Not best way to learn programming **FAST**!

Some of you might be bored!

Flipped classroom

Go through learning materials

Practise and apply

Lecture (general topics/ group work)

Lab support

Lab support

Lab support

Lab support

Adapts to your needs!

No wasting time!

Learning materials

- https://python.pages.doc.ic.ac.uk/2021/materials.html
- All-in-one!
  - Lecture + Tutorial + Lab + Applied Exercises + Quizzes + Tips
- Still under development! ☹
- Will be released slowly over the course

Learning materials

Core

- Main focus!
- 10 lessons

- Fundamental topics all ‘blended’ together
- Incremental learning
  - Start applying knowledge early
- ‘Compressed’ learning!
- Repetition!
- Up to Lesson 8 released so far
- Most important for courseworks and final programming test

Learning materials

Scientific & ML libraries

- NumPy
- pandas
- scikit-learn
- Deep learning (PyTorch)

- Useful for other courses
  - *Introduction to Machine Learning* needs NumPy (and later PyTorch for second coursework)
- Useful for your future needs (research, projects)
- Not required for courseworks and final programming test
  - But you can use them if you want

Learning materials

Advanced Python

- Regular Expressions
- Advanced OOP
- HTTP Requests
- Decorators

- Useful for your knowledge or future needs (research, projects)
- Not required for courseworks and final programming test
  - But you can use them if you want

Live lectures

- Mon 3-4pm
- Delivered remotely
- Sometimes pure lectures, sometimes group activities

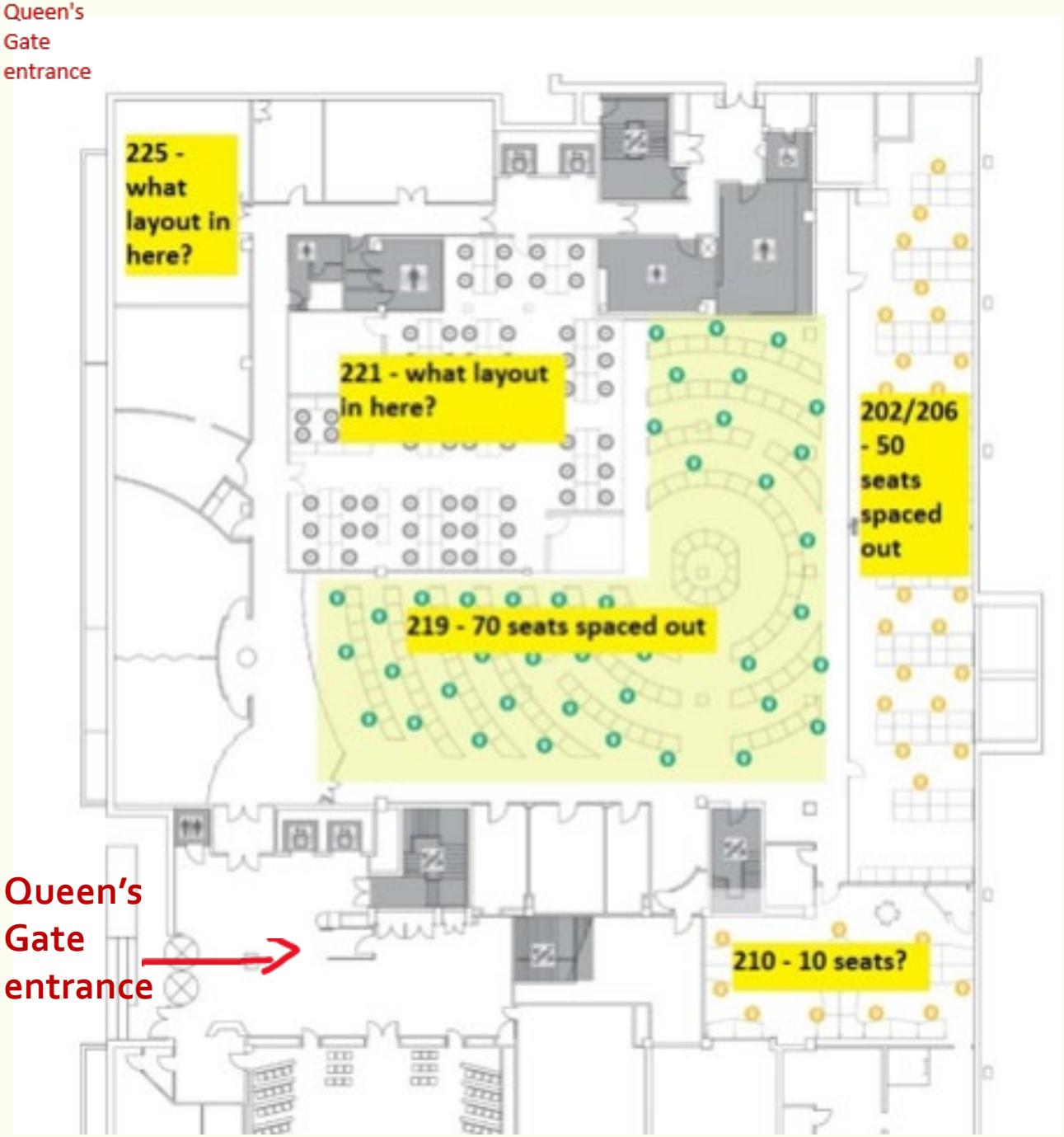
	TOPIC (subject to change!)
WEEK 1	Coding efficiently
WEEK 2	Data structures: Trees
WEEK 3	Algorithms: Searching
WEEK 4	Object-oriented analysis and design
WEEK 5	Software refactoring
WEEK 6	Deep learning (Guest lecture by Luca)
WEEK 7	Python quirks (Guest lecture by Ivan)
WEEK 8	*NO LECTURE!*
WEEK 9	Lab test info session/Revision/Q&A

Lab sessions

- Lab sessions are for **YOU!**
- Time for you to work on the learning materials/courseworks
- Ask questions & technical help from TAs
- For you to work together as a cohort (if physically in lab)

Lab sessions

- 'Hybrid mode' this year
  - Can work **in lab** or **remotely**
  - Support provided in-person and remotely (s.t. TA availability)



219: Main big lab

202/206: The back lab

210: The quiet lab

221: The big room connected next to the lab (not all have desktops)

225: That lonely isolated corner room at the end of the corridor

TA's will be around

Lab sessions

- Remote support on MS Teams
- Procedure
  1. Post a **NEW CONVERSATION** in "Lab Queue"
     - E.g. "I need help to get Python installed"
     - **Don't reply to your message** – you will end up in the bottom of the queue!
  2. Wait for a TA to reply
  3. Go to TA's channel and join the meeting there
  4. Once done, leave the meeting and feel refreshed!

- Can try to get help remotely if TAs too busy on site (bring laptop/headphones!)

Week 1

Tue 3-4pm	Wed 9-11am	Thu 9-11am	Thu 3-5pm	Fri 9-11am
219	221/225	202/206/210	221/225	221/225

Weeks 2-8

Mon 4-5pm	Tue 9-10am	Wed 9-10am	Thu 11am-1pm
ONLINE ONLY	219	219	221/225

* Weeks 7-8 are with `reduced service'

One-on-one with Josiah

- More personal contact time with me!
- I want to understand your needs
- Remote 1-on-1 meeting, 10 mins per person
- During lab hours
- MSc AI first, followed by AI4Health CDT and MRes AI&ML
- Will be turned into on-demand “Consultation/Personal coaching” if it works out!

One on one with Josiah

Wed 6/10 (9AM)		
9:10-9:20	ae3718	Alba Espinosa Rastoll
9:20-9:30	an2915	Alexandra Ntemourtsidou
9:30-9:40	asridi	Abir Sridi
9:40-9:50	cm2021	Christos Margadji
9:50-10:00	cpc21	Cormac Conway
10:00-10:10	ejb121	Elizabeth Bates
10:10-10:20	gmh21	Georgia Hughes
10:20-10:30	hl3920	Hongye Liu
10:30-10:40	jhc21	Jamie Couchman
10:40-10:50	jla21	Jonah Anton
10:50-11:00	js921	Jaime Sabal Bermudez

Thu 7/10 (9AM)		
9:10-9:20	lc1021	Lisa Coiffard
9:20-9:30	lem3617	Louis Manestar
9:30-9:40	lrc121	Liam Castelli
9:40-9:50	lz420	Luming Zhang
9:50-10:00	mb1221	Mart Bakler
10:00-10:10	mc821	Mun Chan
10:10-10:20	mgg21	Max Greenwood
10:20-10:30	mjc121	Matthew Collins
10:30-10:40	mjr3717	Maxim James Ramsay King
10:40-10:50	mk21	Maria Kosyuchenko
10:50-11:00	mo220	Mathilde Outters

One on one with Josiah

Thu 7/10 (3PM)		
15:00-15:10	ms421	Mustafa Saleem
15:10-15:20	mt2617	Marios Theodorou
15:20-15:30	mt3215	Maksym Tymchenko
15:30-15:40	owf20	Oskar Fernlund
15:40-15:50	pfl21	Patrick Leggett
15:50-16:00	qh116	Qi Huang
16:00-16:10	ql5318	Quanlong Li
16:10-16:20	ql721	Qi Li
16:20-16:30	sd721	Shay Divald
16:30-16:40	sk2521	Sun Kim
16:40-16:50	sm3821	Suniyah Minhas
16:50-17:00	sp21	Spyros Ploussiou

Fri 8/10 (9AM)		
9:10-9:20	st321	Sofiya Toteva
9:20-9:30	tap21	Thomas Phillips
9:30-9:40	tth21	Tilman Hisarli
9:40-9:50	vwc21	Venus Cheung
9:50-10:00	wc1021	Wei Chua
10:00-10:10	wt421	Wan Tang
10:10-10:20	xz12918	Xuanjia Zhang
10:20-10:30	yl7720	Yikang Li
10:30-10:40	yo521	Yi Ong
10:40-10:50	yw21218	Yixuan Wang
10:50-11:00	yy3219	Charlize Yang

Coursework

CW1 (4%) small

Start: W2 Mon
End: W2 Fri

CW2 (6%) medium

Start: W3 Mon
End: W4 (Early)

CW3 (10%) large

Start: W4 Fri
End: W6 Fri

AI4Health CDTs: submit this one!

Suggested learning schedule

- By start of Week 2 (Coursework 1)
  - Complete at least up to Lesson 6
  - Preferably also "Recursion" section of Lesson 7
- By start of Week 3 (Coursework 2)
  - Complete at least Lesson 9
- By end of Week 4 (Coursework 3)
  - Complete at least Lesson 10
- By start of Week 3 (Intro to Machine Learning)
  - Complete NumPy

Final Programming Test

- For MSc AI and MRes AI&ML (80% of final grade)
- First week of Spring Term (most likely first day on Monday)
- Conducted remotely
- Applied problem solving
  - 5-7 questions, increasing difficulty
  - 2 hours 10 minutes
- Mock test (currently Thu Week 9, 2nd Dec 11am)

Next lecture

Fri 3-4pm
Making your code more efficient