0 Administrativa

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COMP526 (Spring 2022)
University of Liverpool

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Welcome to COMP 526 – Applied Algorithms

- Instructor: Dr. Sebastian Wild
  Ashton Building 223
  wild@liverpool.ac.uk

  Tutorials: Ben Smith
  b.m.smith@liverpool.ac.uk

- Module website: www.wild-inter.net/teaching/comp526
  → your first address for any infos on COMP 526

- *Campuswire:* collaborative Q&A (more on this later)
  also used for announcements
  → please register via link from the Canvas announcement
  https://campuswire.com/p/G89660827 PIN 0758

- *Slido:* student response system for formative feedback

- Final mark: 50% final exam + 50% assessments (more later)

My approach to lectures

My conclusions (from years of own experience and from observing others)

irrespective of the mode of delivery!

0. Good explanations (intuitions!) and well-structure material are the most important aspect.

1. **Synchronous (live) lectures** beat videos in keeping up with class. (but recordings are great!)

2. A small minority of students asks questions. ⇝ other backchannels

3. **Interaction** makes content memorable (and keeps brains awake!) ⇝ *Slido* tasks

Components of COMP 526

Slido questions

immediate feedback
simple questions

Lectures

new material
discussions
big picture

Tutorials

practice problems
solve deep questions

Campuswire

collaborative Q&A knowledge base

Video presentation

disseminate knowledge

Class tests

frequent test of
basic understanding

Programming tasks 1 & 2

find & realize creative solutions

Overview of the module

Goals:

- build / enhance your toolbox of algorithmic methods and techniques
  - ⇝ focus on practical methods
- enable you to reason about and communicate algorithmic solutions
  - ⇝ level of abstraction, proofs, mathematical analysis
- enable you to apply, combine and extend methods

Units:

0. Administrativa & Proof Techniques
1. Machines & Models
2. Fundamental Data Structures
3. Efficient Sorting
4. String Matching
5. Parallel String Matching
6. Text indexing
7. Compression
8. Error-Correcting Codes
9. Range-Minimum Queries

Assessments

= continuous assessment

(More details on CA tasks later in the term)

final mark = $0.5 \cdot$ exam mark
$+ \ 0.1 \cdot$ CA1 (video presentation) mark
$+ \ 0.1 \cdot$ CA2 (programming puzzle 1) mark
$+ \ 0.1 \cdot$ CA3 (programming puzzle 2) mark
$+ \ 0.15 \cdot$ class test mark
$+ \ 0.05 \cdot$ participation mark

Class Tests

- $\approx$ *offload 15% of mark from exam to CA*
- several throughout term
- very short
  (1 practice question + 1 marked question)
- quick intermediate feedback

Bonus Points

- for good questions and answers on *Campuswire* class feed
- $\rightsquigarrow$ earns **collective bonus points** for entire class
- bonus on class-test mark

Participation Marks

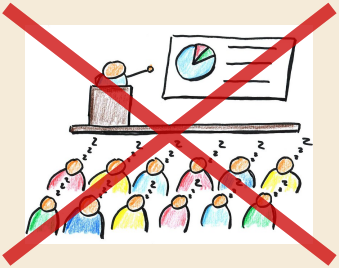
for good engagement, not correct answers!

- 5% for regular participation on *Slido*

What are clickers? Why use it?

- I use “clickers” as short term for any *student response system*
  We will use Slido, a web-based system.
- Goal: Collect immediate, formative feedback
  - Stay focused and engaged! (“active learning”)
  - Quick feedback (for you individually) if you are on track.
  - Quick feedback (for me) whether (most of) you are on track.

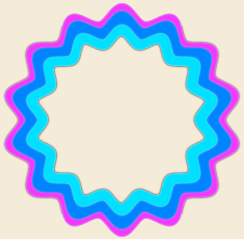
⇝ marks for *participation*, not for correct answers!



What is Campuswire?

Campuswire is an online space for lectures

1. ***Class Feed:*** questions on material
2. ***Chatrooms:*** structured social space
   similar to Slack or Discord



Join via link on website:
`campuswire.com/p/G89660827`

Use in brower
`campuswire.com/c/G89660827`

or via app
`campuswire.com/download`

We use Class Feed for **collaborative Q&A**

- Ask *public* questions
  - *"Why is* $\lg(n^3) = \Theta(\log n)$*?"*
  - *"Will there be classes during Carneval?"*
- ***Answer*** **your peers' questions!**
  - Know the answer? → put it in!
  - Know a partial answer? → Post it, others can build on it!
  - Found a helpful answer (or question)? → Vote it up!
- Ask *private* questions
  - if your question might contain "spoilers" for assessments
  - if you feel the answer is only relevant for you personally

How to Campuswire

- My goals for Campuswire Q&A:
  1. **be fair** Same answers for everyone
  2. **learning by teaching** YOU will answer most questions!
  3. **be inclusive** posts can be anonymous; you can take your time to ask and answer

- Therefore, we instructors will
  - redirect you to Class Feed for questions,
  - wait before answering, to give other students a chance to answer first,
  - explicitly mark good answers (and questions!) as such

- You will collectively earn **bonus points**:
  - 10 points for each good question
  - 20 points for each good answer
  - 10 extra points for each good answer that did not require clarification from us

$\rightsquigarrow$ every 100 points earns everyone *+1* on *class-test mark*

Video Presentation

- **Goals:**
  - engage with research literature
  - explore cutting-edge research in one topic
  - try out novel ways of disseminating knowledge

- **Schedule:**
  - till **week 3**: form teams of 3 – 4 students
  - till **week 5**: select an article
    - must be from

      COMMUNICATIONS OF THE ACM
      CACM.ACM.ORG

      a *contributed article*, *review*, *practice*, or *research highlight* from the last 3 years

  - till **28 March**: present article in video presentation and upload it!
    alternatively, create an interactive website / blog post

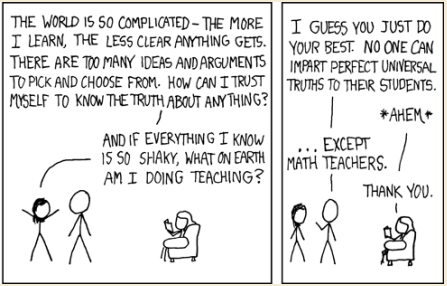
Philosophy of the module

COMP 526 is part of a *scientific* course.

Less . . .

https://imgur.com/gallery/vX118

. . . and more



https://xkcd.com/263/

- ⇝ Focus on *universal truths* of practical algorithms
  - model of reality (machines, programs, data)
  - quantitative predictions
  - validate model in experiments
- ⇝ Need some math techniques. (up next)