INFO1111: Computing 1A Professionalism

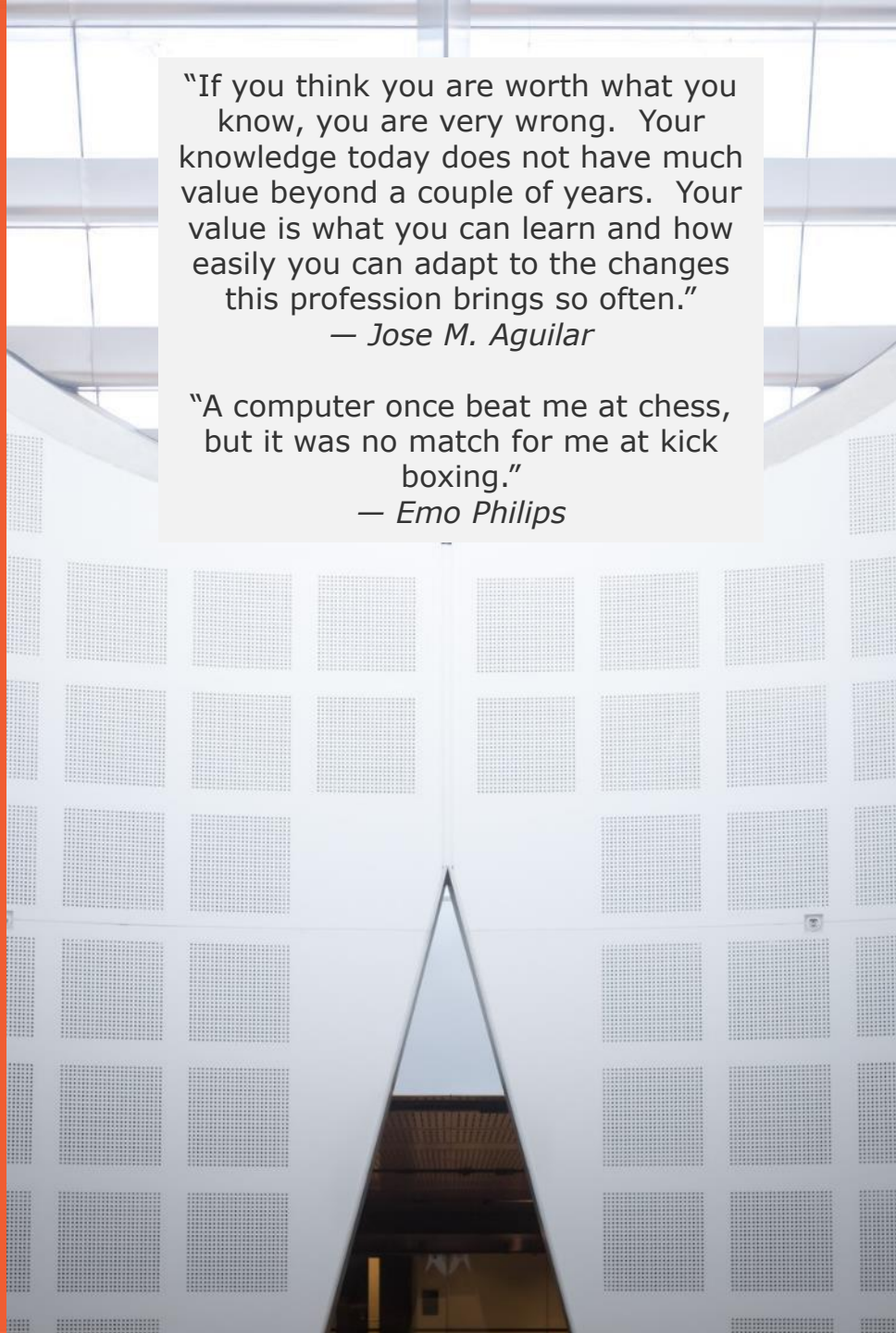
Week 1: Professionalism

1. Welcome

Professor David Lowe

School of Computer Science

THE UNIVERSITY OF SYDNEY



"If you think you are worth what you know, you are very wrong. Your knowledge today does not have much value beyond a couple of years. Your value is what you can learn and how easily you can adapt to the changes this profession brings so often."
— Jose M. Aguilar

"A computer once beat me at chess, but it was no match for me at kick boxing."
— Emo Philips

Acknowledgement of Country

I would like to acknowledge the Traditional Owners of Australia and recognise their continuing connection to land, water and culture. I am currently on the land of the Darramurragal people of the Eora Nation and pay my respects to their Elders, past, present and emerging.

I further acknowledge the Traditional Owners of the country on which you are on and pay respects to their Elders, past, present and future.

Week 1 Agenda

- Welcome
- A quick challenge….

- What do computing graduates actually do?
- What skills will you need?

- Changing technology
- The importance of self-learning

- Admin! (Structure / Assessment / etc…)

INFO1111: Computing 1A Professionalism

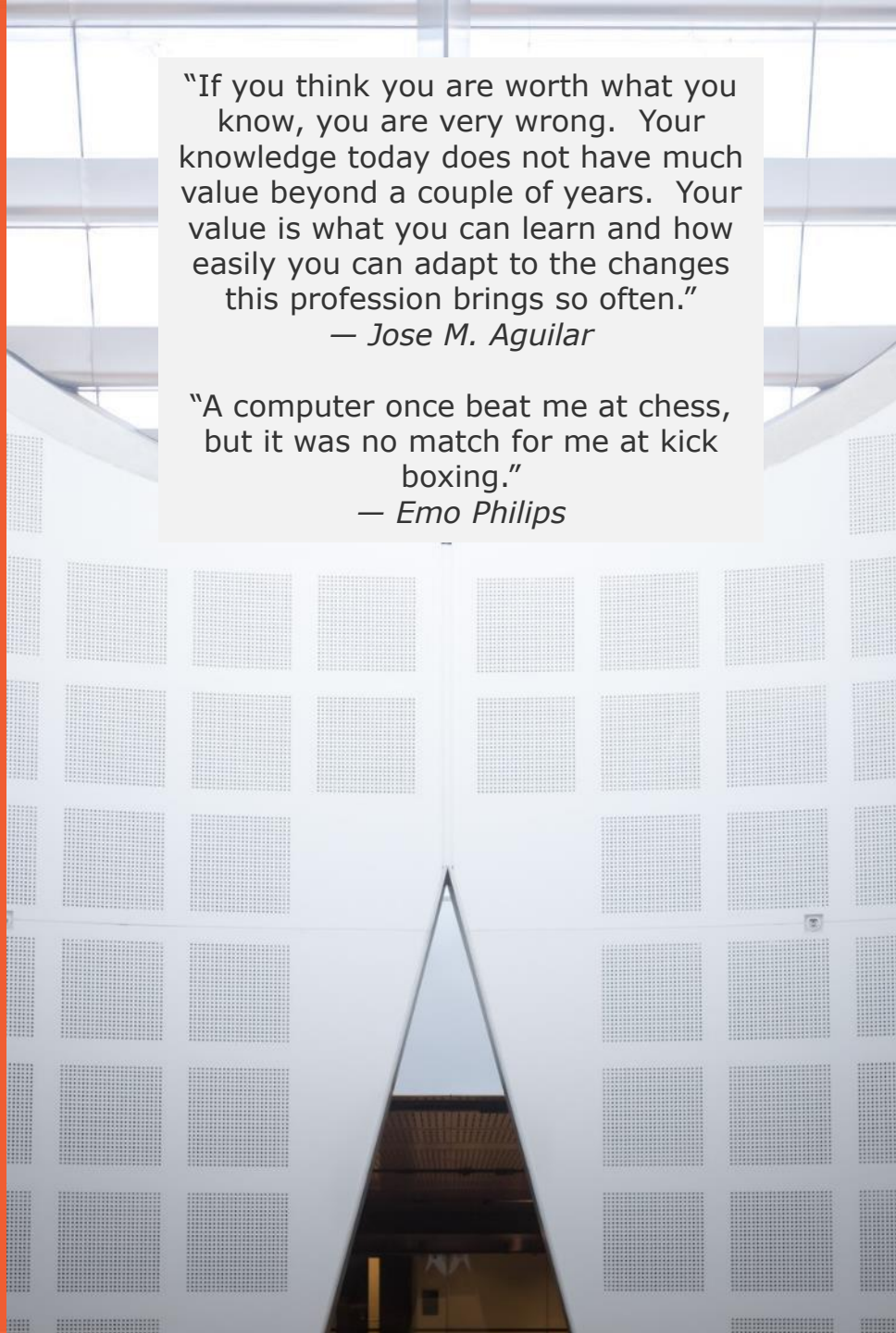
Week 1: Professionalism

2. An initial puzzle

Professor David Lowe

School of Computer Science

THE UNIVERSITY OF SYDNEY

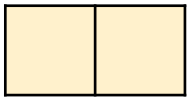


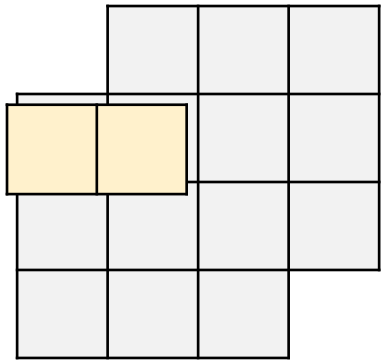
"If you think you are worth what you know, you are very wrong. Your knowledge today does not have much value beyond a couple of years. Your value is what you can learn and how easily you can adapt to the changes this profession brings so often."
— Jose M. Aguilar

"A computer once beat me at chess, but it was no match for me at kick boxing."
— Emo Philips

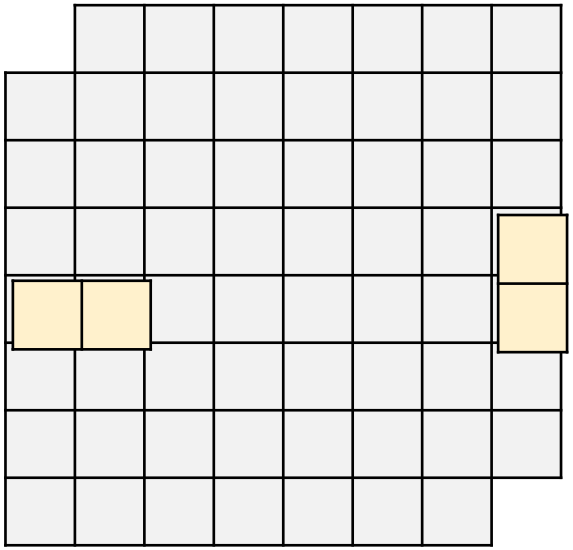
Can you solve this?

Can you place one domino at a time on this almost-4x4 grid, so that eventually the whole grid is covered?

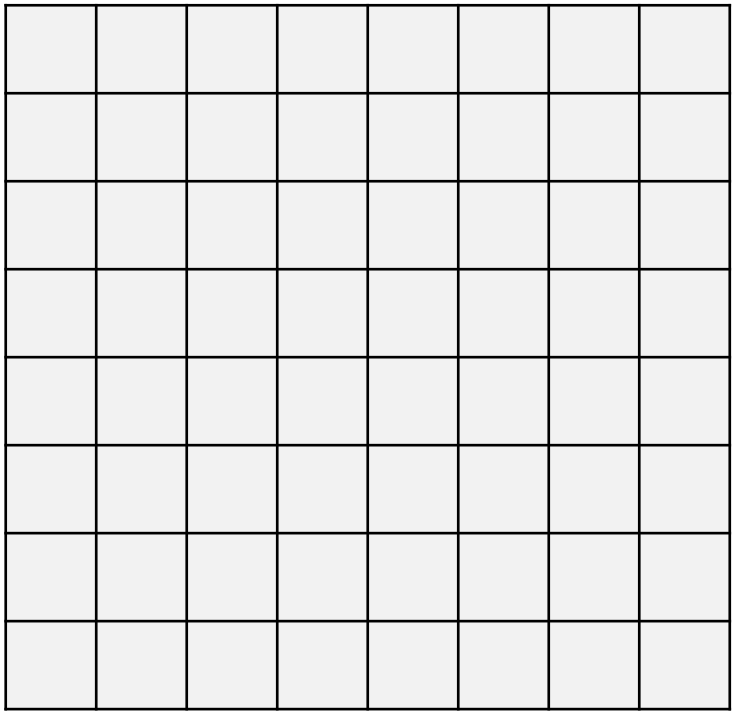




What about an almost-8x8 grid?
Could you write a program to find a solution?

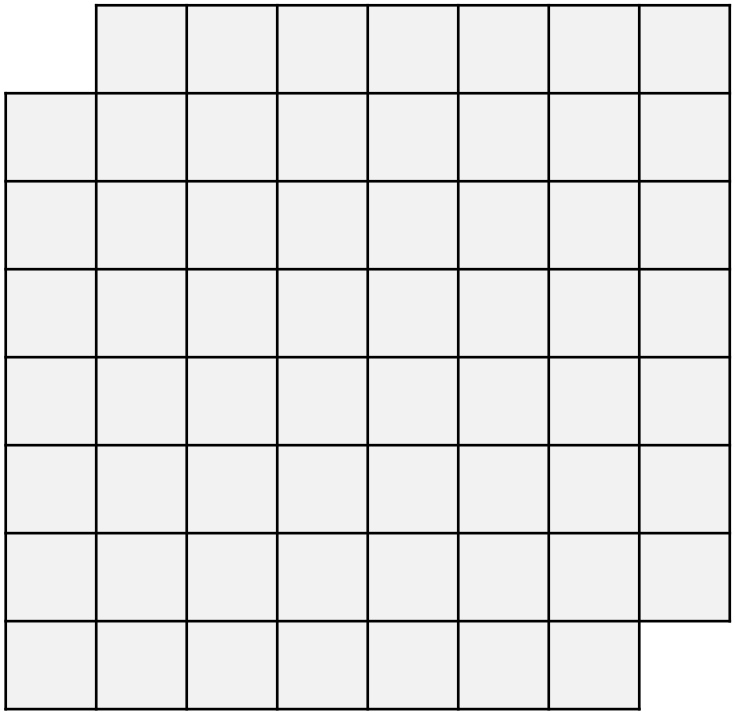


Did you solve the puzzle?



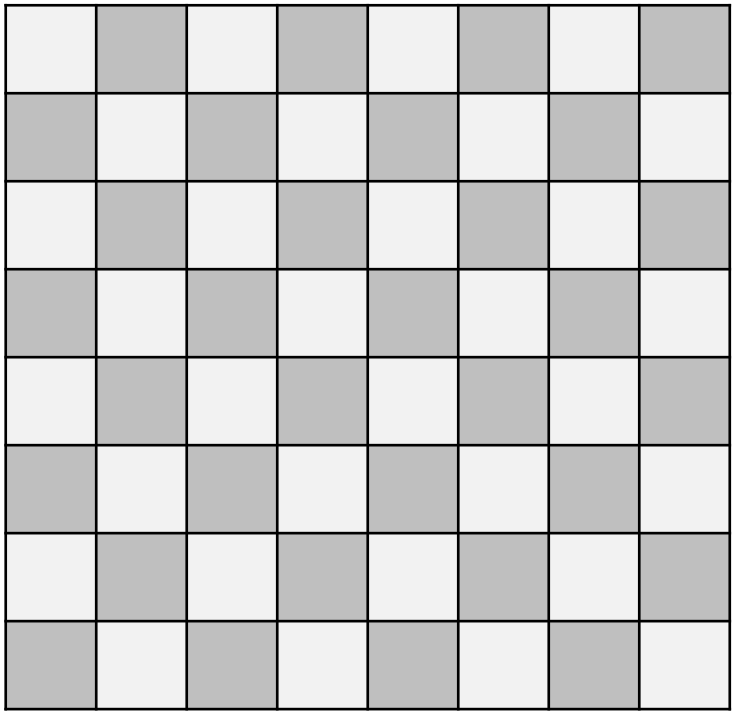
64 squares in total (32 dominoes)

Did you solve the puzzle?



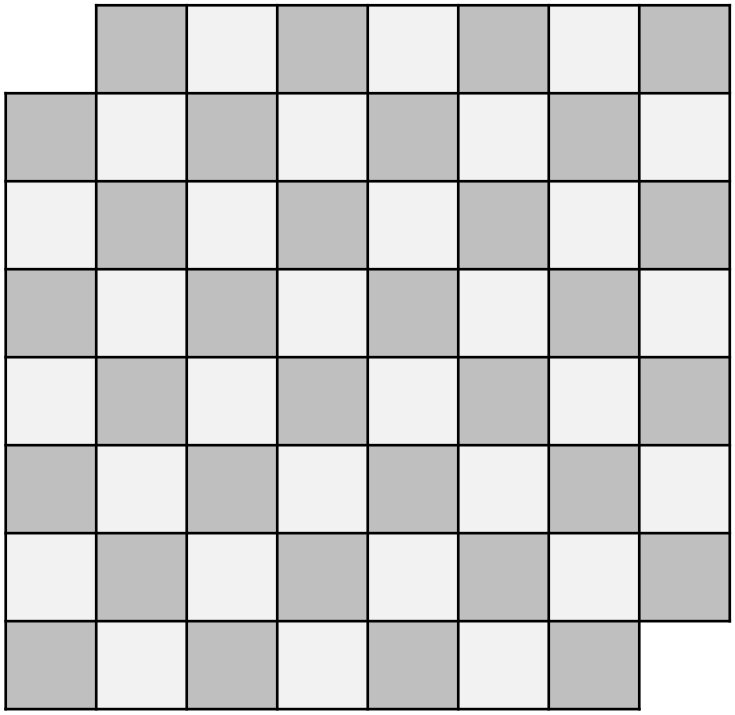
62 squares in total (31 dominoes)

Did you solve the puzzle?



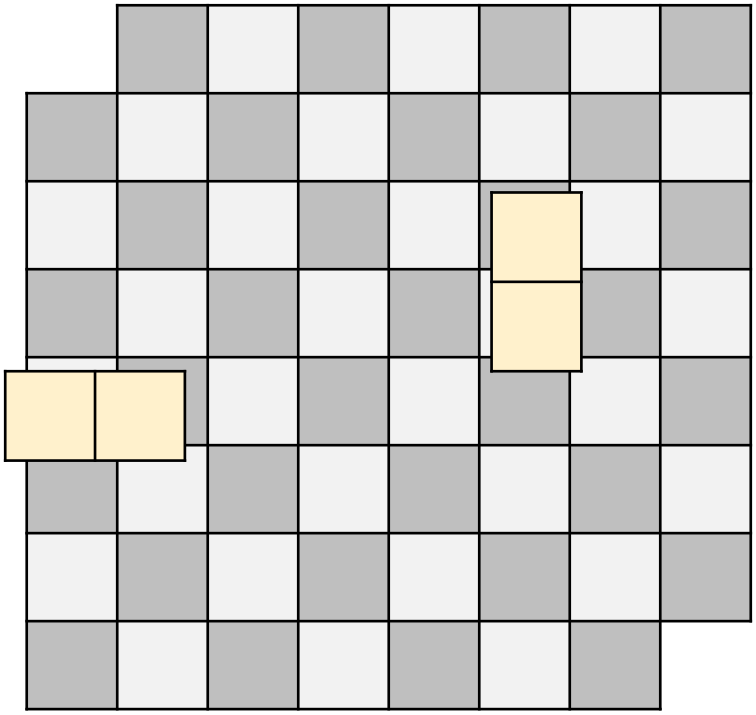
64 squares in total – 32 dark squares, 32 light squares
(32 dominoes)

Did you solve the puzzle?



62 squares in total – 32 dark squares, 30 light squares
(31 dominoes)

Did you solve the puzzle?



62 squares in total – 32 dark squares, 30 light squares
BUT each domino must cover 1 dark and 1 light square!!!

INFO1111: Computing 1A Professionalism

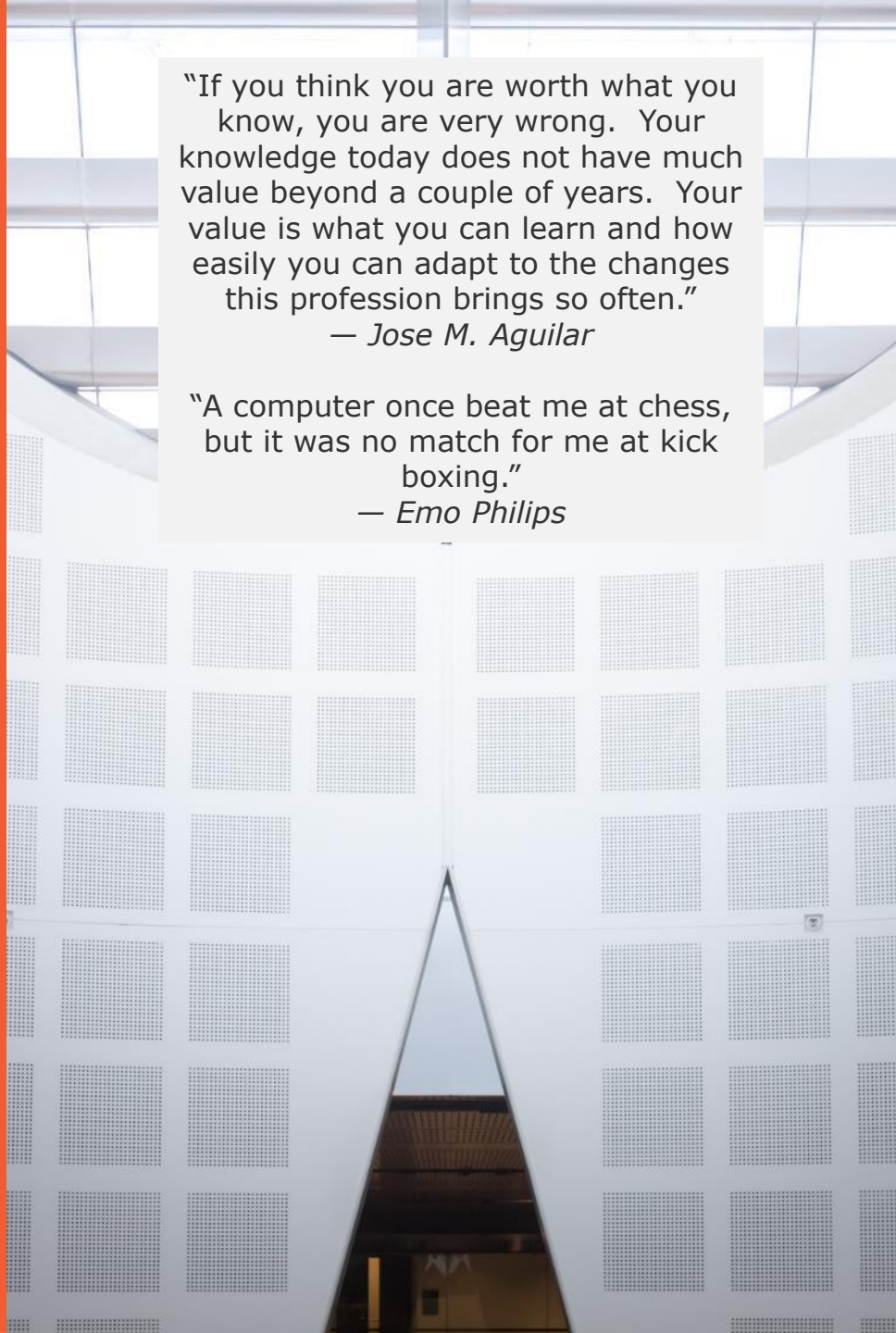
Week 1: Professionalism

3. What do graduates do?

Professor David Lowe

School of Computer Science

THE UNIVERSITY OF SYDNEY



"If you think you are worth what you know, you are very wrong. Your knowledge today does not have much value beyond a couple of years. Your value is what you can learn and how easily you can adapt to the changes this profession brings so often."
— Jose M. Aguilar

"A computer once beat me at chess, but it was no match for me at kick boxing."
— Emo Philips

IT Careers – So what do computing grads actually do?

- Why did you choose to study computing?
  - Because you like gaming?
  - Because you like coding?
  - Because you think it will be a great career?
  - Because you want to become the next tech billionaire?
  - Because you want to solve problems and improve peoples lives?

Word cloud for “Information Technology Software Programming Computing” search on Seek.

IT Careers – So what do computing grads actually do?

Activity

Pause the video and open up another browser tab. Select a job website (for example http://www.seek.com.au/, https://jobsearch.gov.au/, https://www.careerone.com.au/ etc.) and search for key words associated with computing jobs, and then review the descriptions of some of those jobs..

Key word(s)	Roles
IT Programming Java	Java Developer Full Stack Java Developer IT support officer IT Graduate Position
Specialist Database	Microsoft SQL/DBA Consultant Business Systems and Database Administrator B2B Client Services Database Technical specialist

Once you finish this video, do the Week 1, Poll 1

Q: For our graduates, what proportion of their time is spent writing code?

Q: Apart from coding, list the 4 other things that you think a computing graduate will spend most of their time doing?

INFO1111: Computing 1A Professionalism

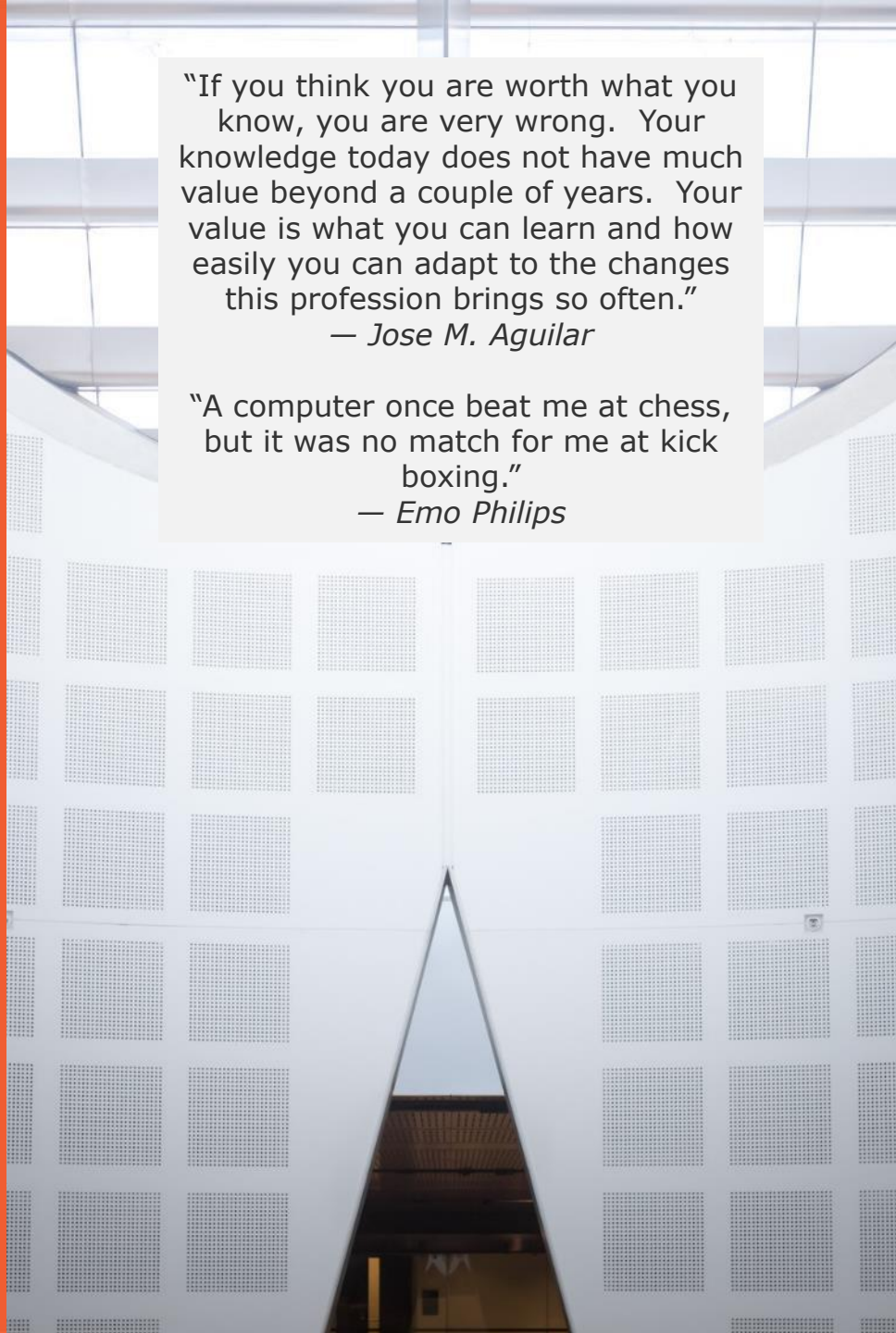
Week 1: Professionalism

4: Computing skills

Professor David Lowe

School of Computer Science

THE UNIVERSITY OF SYDNEY

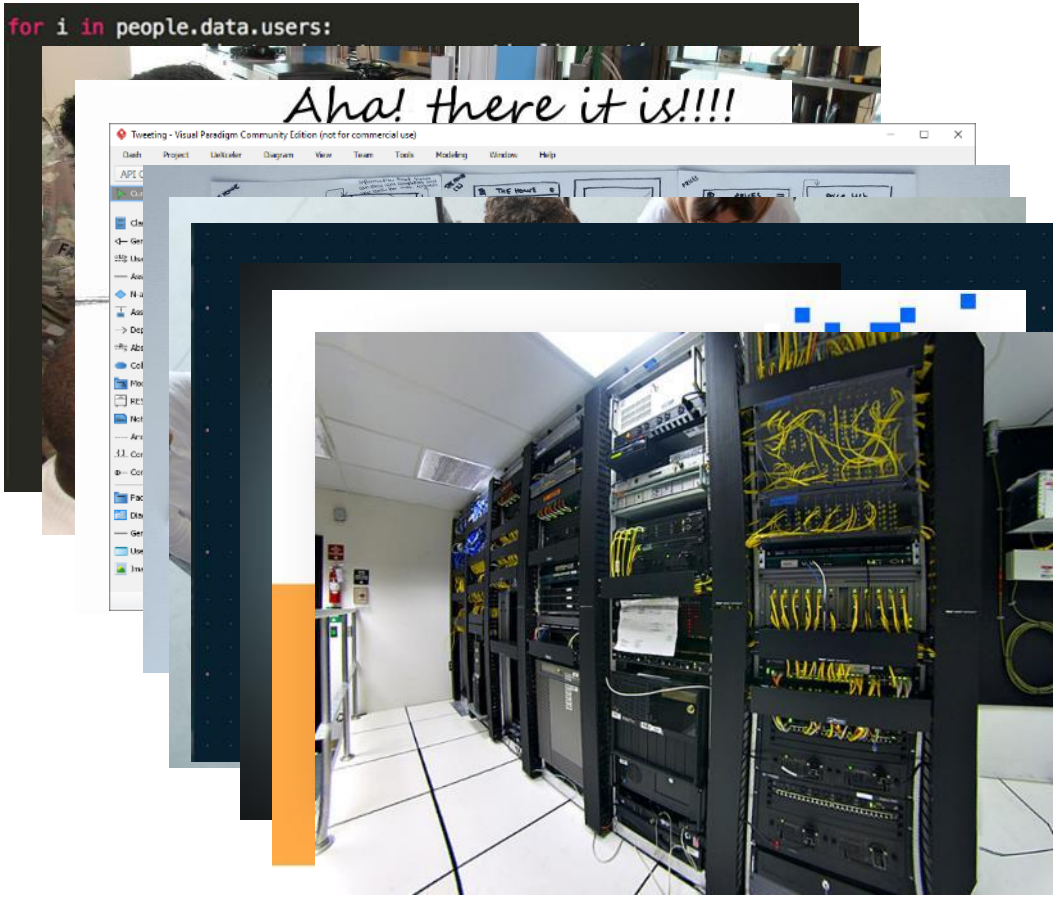


"If you think you are worth what you know, you are very wrong. Your knowledge today does not have much value beyond a couple of years. Your value is what you can learn and how easily you can adapt to the changes this profession brings so often."
— Jose M. Aguilar

"A computer once beat me at chess, but it was no match for me at kick boxing."
— Emo Philips

Typical activities

- Coding
- Testing
- Debugging
- Design
- Prototyping
- Requirements
- Data analysis
- Business analysis
- Support
- Hardware



- See https://gradaustralia.com.au/career-planning/13-types-of-graduate-jobs-in-the-tech-industry

Tech Stacks

- Lists of inter-related technologies that can be integrated together to create a solution.
  - Sometimes specific to one solution
  - Sometimes a collection used by an organisation across all their activities
- Example (generic) → LAMP
  - Linux, Apache, MySQL, PHP (or Perl, Python)
- See:
  - https://heap.io/topics/what-is-a-tech-stack
  - https://fullscale.io/blog/top-5-tech-stacks/
  - https://stackshare.io/
  - https://mixpanel.com/blog/tech-stack-examples/

So what skills will we need?

Finish the video and do the Week 1, Poll 2

- What skills will you need to develop in order to maximise your chances of getting your dream job after you graduate?

Role	Skills needed
Java Developer	Javascript/ CSS/ HTML5
	Java E2E
	Hibernate
	RESTful services
	SCRUM/ Agile
	Eclipse, JIRA, GitHub
	English
	Bachelor of Computer Science
	2 years experience

INFO1111: Computing 1A Professionalism

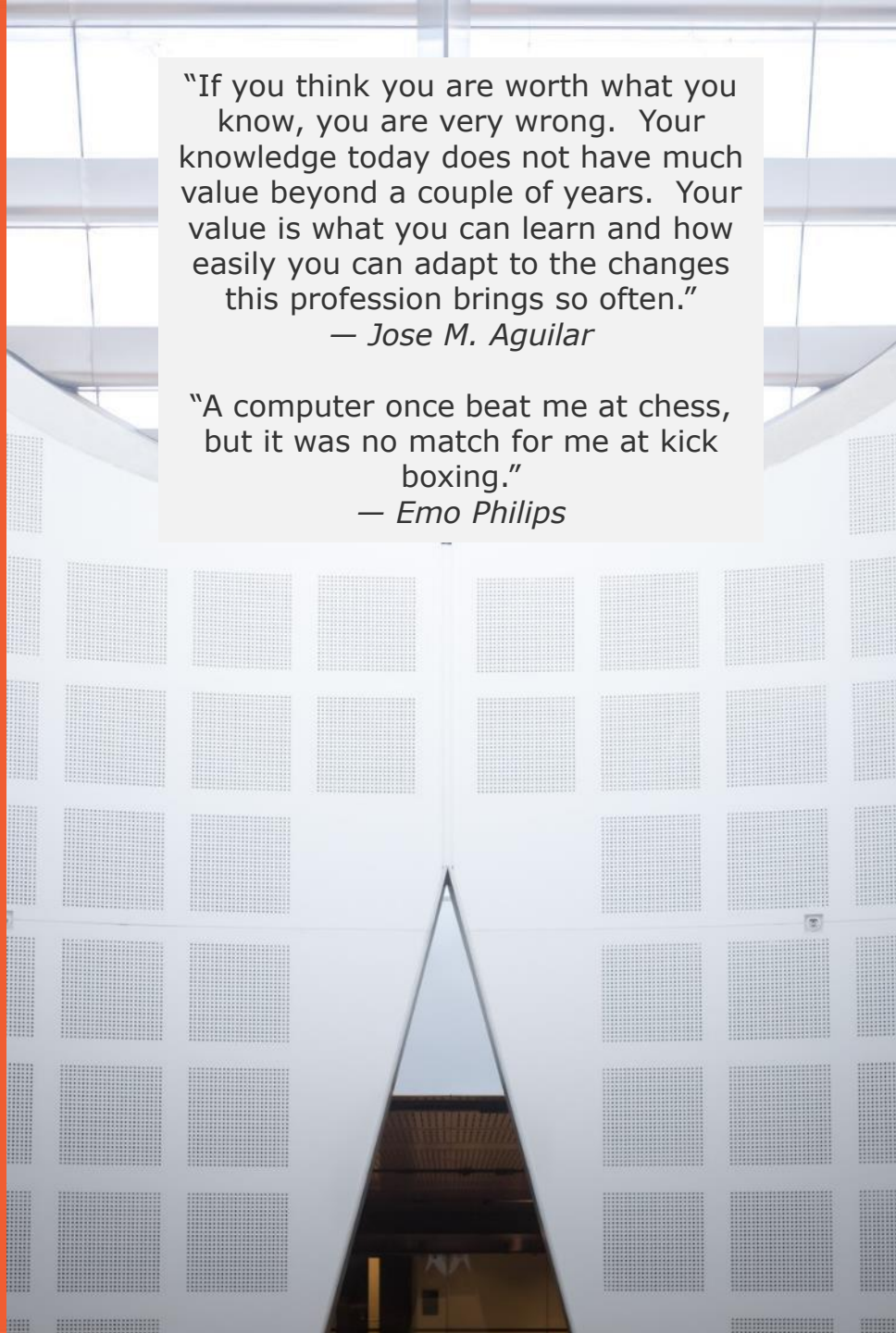
Week 1: Professionalism

5. Technological change

Professor David Lowe

School of Computer Science

THE UNIVERSITY OF SYDNEY



"If you think you are worth what you know, you are very wrong. Your knowledge today does not have much value beyond a couple of years. Your value is what you can learn and how easily you can adapt to the changes this profession brings so often."
— Jose M. Aguilar

"A computer once beat me at chess, but it was no match for me at kick boxing."
— Emo Philips

How have careers changed?
Then and now…

- In 2000… (that are disappearing in 2022)
  - User Interface Designer
  - Flash Developer
  - Fortran programmer
  - Software Support
  - SEO Specialist
  - Quality Assurance Manager
  - Windows XP Admin
  - Voice Telephony
  - C/C++, VB, Perl, …

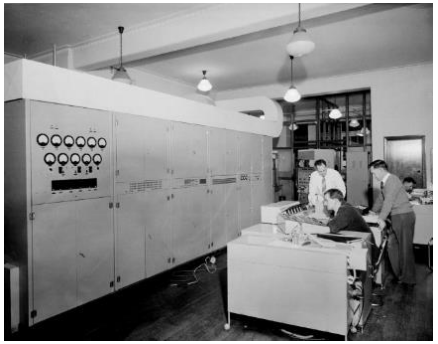
(* see http://readwrite.com/2013/05/01/10-technology-skills-no-longer-in-demand)

- In 2024 (that didn't exist in 2000*)
  - User Experience Designer
  - App Developer
  - Cloud Developer
  - Social Media Manager
  - Data Miner
  - Chief Listening Officer
  - Millennial Expert
  - Internet of Things
  - Java, Python, PHP, Ruby

(* Or at least were nowhere near as common)

However technology changes *quickly*.

- Facebook - 2004
- YouTube - 2005
- Google Maps - 2005
- Twitter - 2006
- Netflix streaming - 2007
- iPhone - 2007
- 4G networks - 2008
- First Android phone - 2008
- BitCoin - 2009
- iPad - 2010
- Apple pay - 2014
- Apple watch - 2015
- TikTok - 2016
- ChatGPT - 2022



Technology changes quickly

- But we rarely can predict how…

- *"This 'telephone' has too many shortcomings to be seriously considered as a means of communication. The device is inherently of no value to us."*
  - Western Union internal memo, 1876.
- *"I think there is a world market for maybe five computers."*
  - Thomas Watson, 1943 (chairman of IBM)
- *"Computers in the future may weigh only 1.5 tons."*
  - Popular Mechanics, 1949
- *"There is no reason anyone would want a computer in their home."*
  - Ken Olsen, 1977
- *"We will never make a 32-bit operating system."*
  - Bill Gates, 1989
- *"I believe OS/2 is destined to be the most important operating system, and possibly program, of all time."*
  - Bill Gates, 1987
- *"Spam will be a thing of the past in two years' time."*
  - Bill Gates, 2004
- *"Next Christmas the iPod will be dead, finished, gone, kaput."*
  - Sir Alan Sugar, 2005 (founder of Amstrad)

- See http://www.rinkworks.com/said/predictions.shtml for many more...

Technology in 15 years time

Finish the video and do the Week 1, Poll 3

Q: What technology will be common in 15 years that does not exist now?

INFO1111: Computing 1A Professionalism

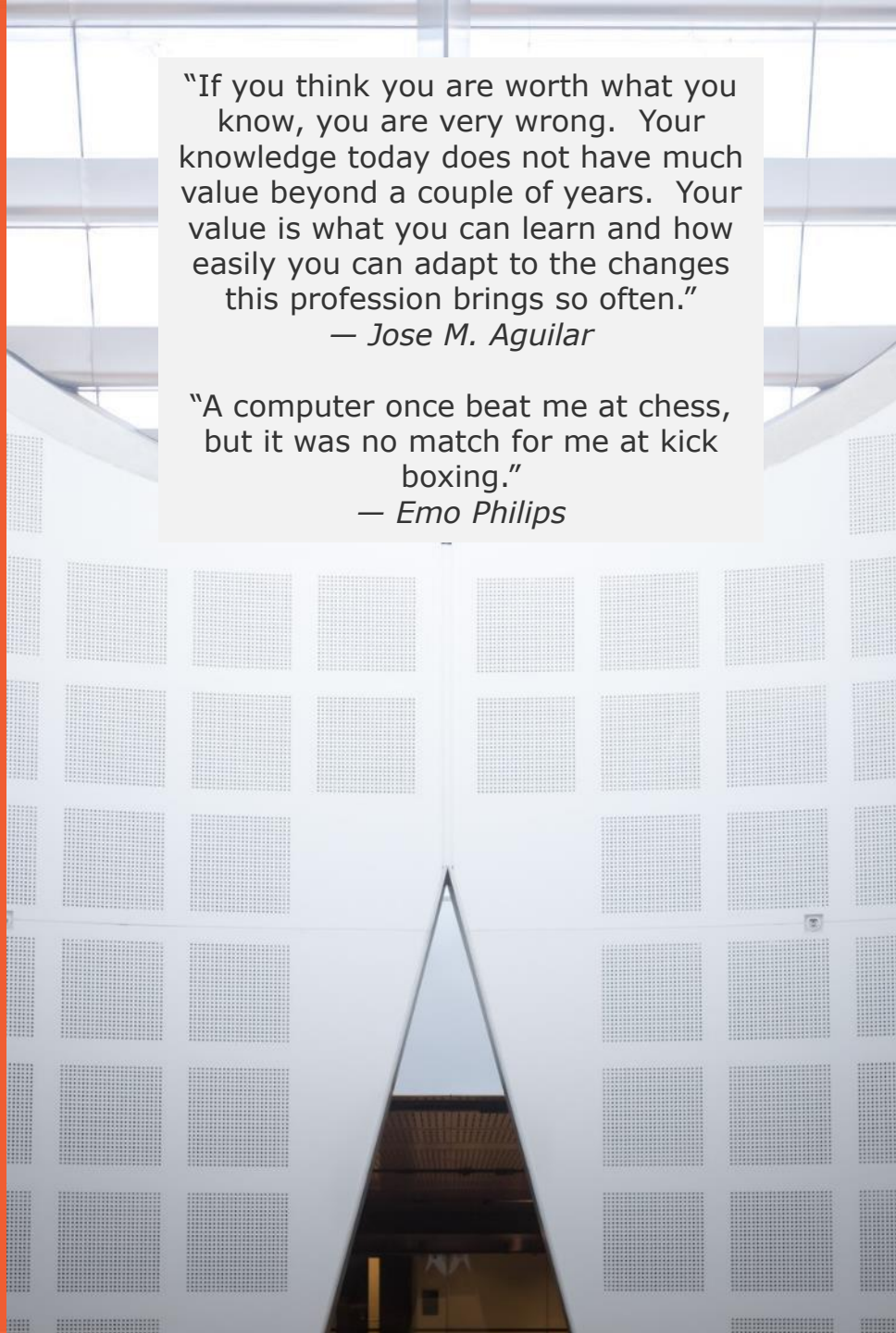
Week 1: Professionalism

6. What is this unit about?

Professor David Lowe

School of Computer Science

THE UNIVERSITY OF SYDNEY



"If you think you are worth what you know, you are very wrong. Your knowledge today does not have much value beyond a couple of years. Your value is what you can learn and how easily you can adapt to the changes this profession brings so often."
— Jose M. Aguilar

"A computer once beat me at chess, but it was no match for me at kick boxing."
— Emo Philips

If you stop learning…

- If you graduate, then don't learn anything more, what will happen to you?

- "*[anyone] not busy being born is busy dying*", Bob Dylan

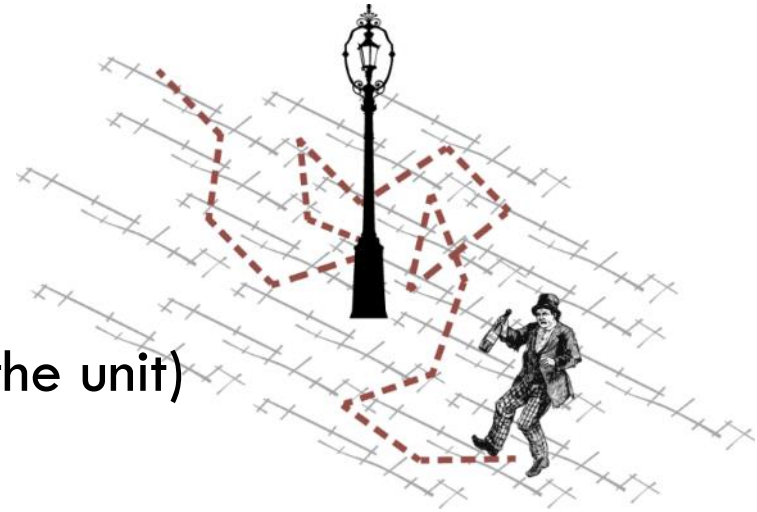
- Conclusion:
  - We will teach you core skills, but…
  - Important for your future careers, that you can grow and develop…
  - This is more important in IT than almost any other area!

A small self-learning exercise…

- Each week I will give you a "computing concept"
- You should see if you can "self-learn" that concept
- And then I'll explore it at the beginning of the following lecture

- This week…

  Drunkard's walk



- (This one is a bit of a metaphor for the unit)

So – this unit

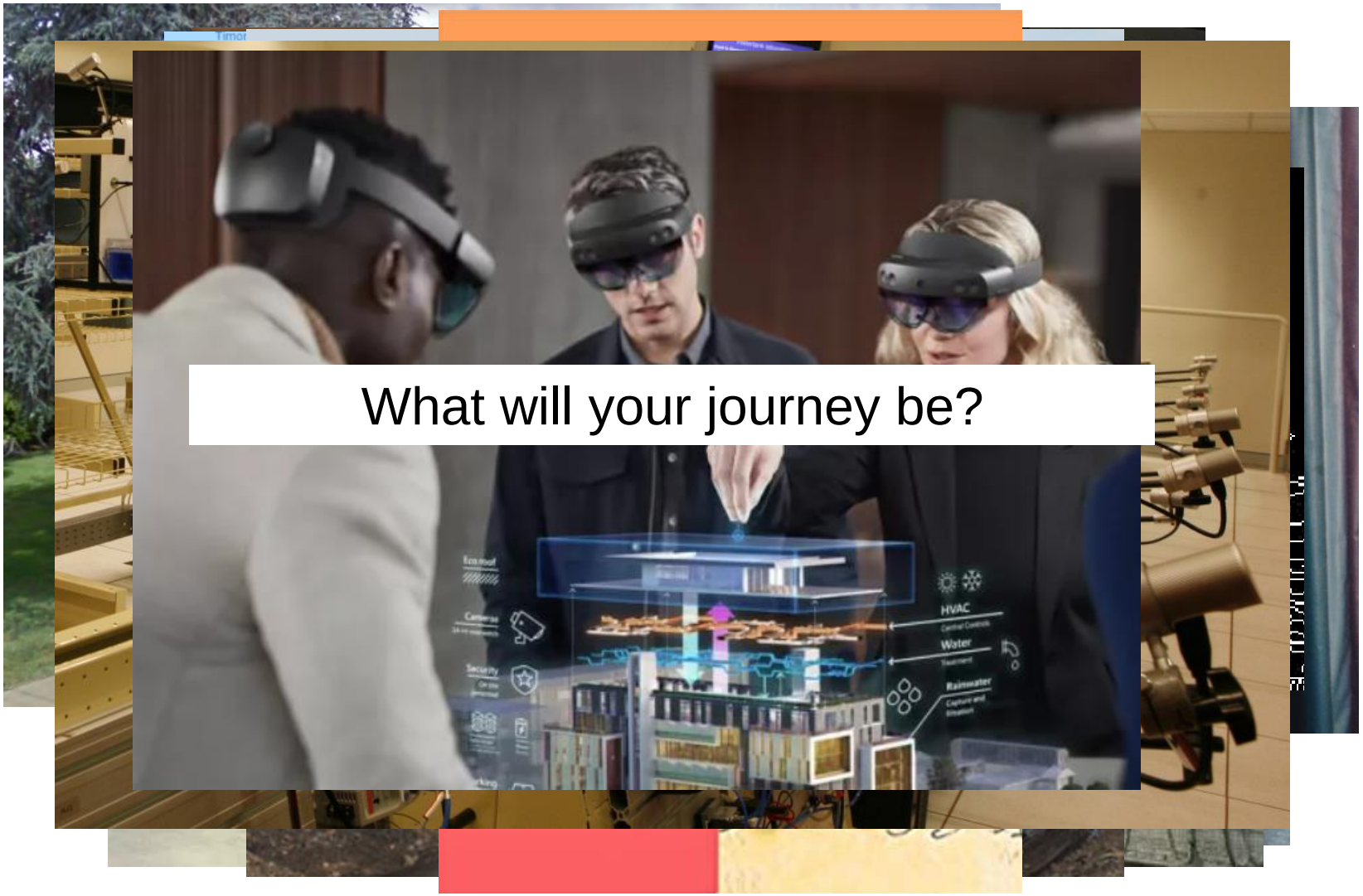
- What does it mean to work in computing?
- What are the different pathways?
- What skills will you need to succeed?
- How do you keep up-to-date?

- And what can go wrong?
  - https://www.youtube.com/watch?v=gp_D8r-2hwk

Introductions

- Coordinator/Lecturer
  - David Lowe
- Teaching Assistants (x2)
  - Chouthereyi Kathirgamanaarthan
  - Lagsiny Kathirgamanaarthan
- Tutors
  - Cohen Rinas
  - Elyna Lin
  - Joshua Pople
  - Luca Napoli
  - Skye Kim
  - Tuan Khai Nguyen
  - (and maybe others…)
  - Daniel Friedrich
  - Gabriel Timothy
  - Lam Li
  - Omar Briceno
  - Stefanus Adrian
  - Yangqing Zheng
- Students (~600)
  - Average age = ~18.9
  - BAdvComp (68%); BAdvComp + BX (32%) + …
  - Commencing students (70%); First year (95%); …
  - Female (26%); Male (73%); …
  - Domestic (52%); International (48%)

My educational journey?



Your Educational Journey

- From the welcome survey
  - 6x Egyptian National Age Record Holder - Swimming
  - I've been getting into jigsaw puzzles
  - Experienced failed perm and now get super curly hair!
  - Have knowledge of bartender
  - I am a great skier
  - I am a surf life saver
  - I am decent at chess and playing guitar
  - I am growing an onion
  - I am learning guitar
  - I am really passionate about soccer
  - i can fold my ears into themselves
  - I can play the piano, but not very well.
  - I enjoy creative writing
  - I have a degree in Musical theatre and I've been in quite a few productions in Norway
  - I have a very big and fun extended family!
  - I have read 'Emma' completely and regret it deeply
  - I have studied at schools in 5 different countries
  - I am from Brissy
  - I like cherry blossoms
  - I like to bake
  - I like to sleep a lot
  - I like traveling a lot
  - I like wrestling
  - I love dancing and I specialise in hiphop
  - I love Taylor Swift's music
  - I own a camera business
  - I was the dux at my high school.
  - I've travelled to over 40 countries.
  - I'm originally from New Zealand
  - I have a cat named Sesame
  - My birthday is 29 February
  - Nil

The next stage of *your journey* - Your Degree

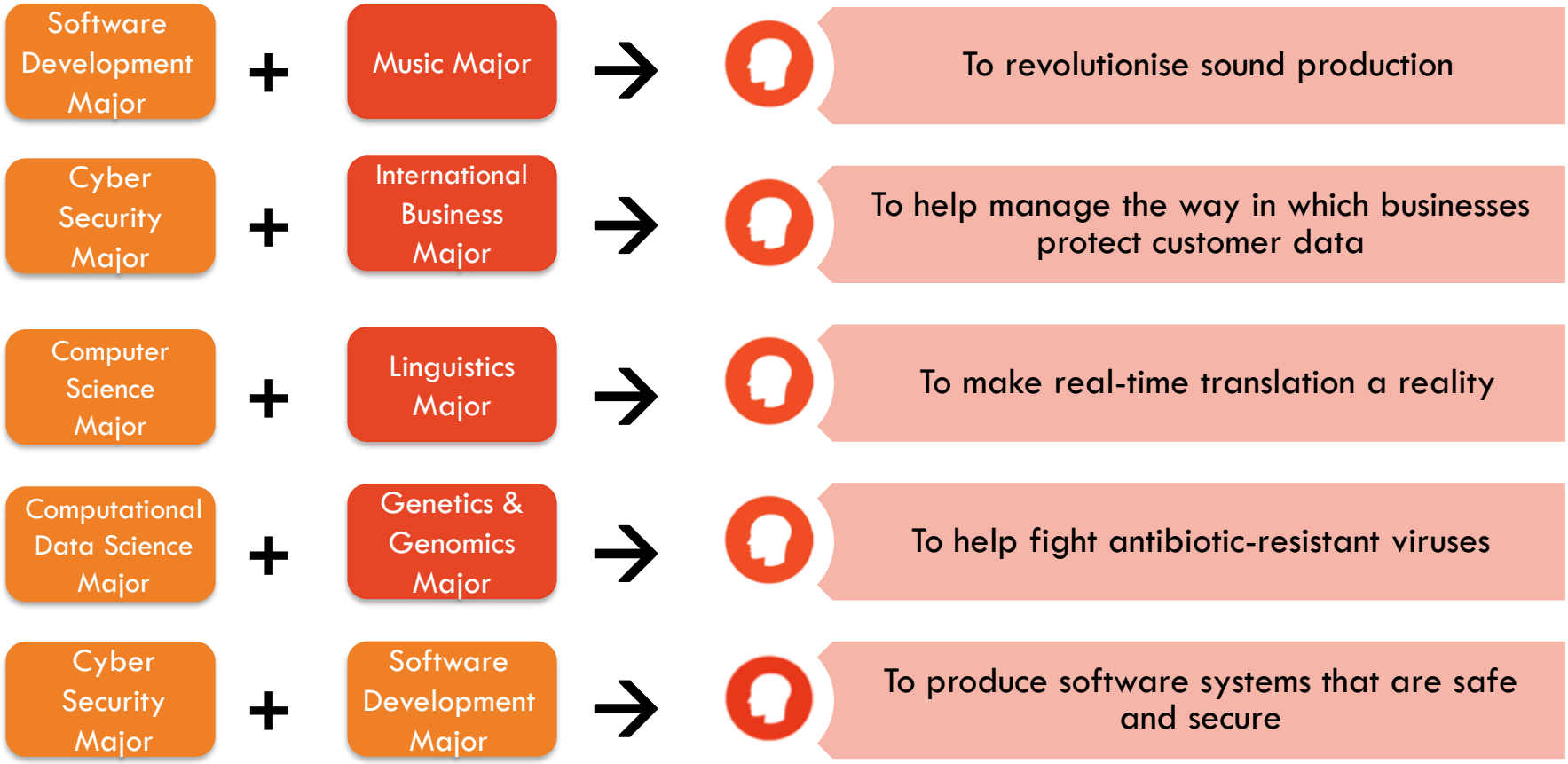
Year	Sem				
1	1	*Intro Programming*	*Found. Data Sci*	***Computing 1A***	*Maths*
1	2	*OO Programming*	*Intro Comp Sys*	*Computing 1B*	*Maths*
2	1				
2	2				
3	1				
3	2				
4	1		*Thesis A*		
4	2		*Thesis B*		

Core
IT Major
2nd Major
Elective

- Bachelor of Advanced Computing: key requirements = 192cp…
  - 96cp Core…
  - 48cp IT Major (Table A)
  - 12cp 4000-level electives
  - optional 12cp of OLE units)
  - optional 36cp or 48cp second major (Table A or S)
  - Additional IT electives to bring the total to 192cp
  - *But how does this fit ???*
- Key sources
  - Degree Resolutions:
  - https://www.sydney.edu.au/handbooks/engineering/advanced_computing/advanced_computing_rules.shtml

Combinations of majors

- each student does one major on computing; can then do a second major (more computing), a second major (something different, from shared pool) or a self-chosen selection of electives.



7 *This will be covered in this week's lecture: Wednesday 26/2*

INFO1111: Computing 1A Professionalism

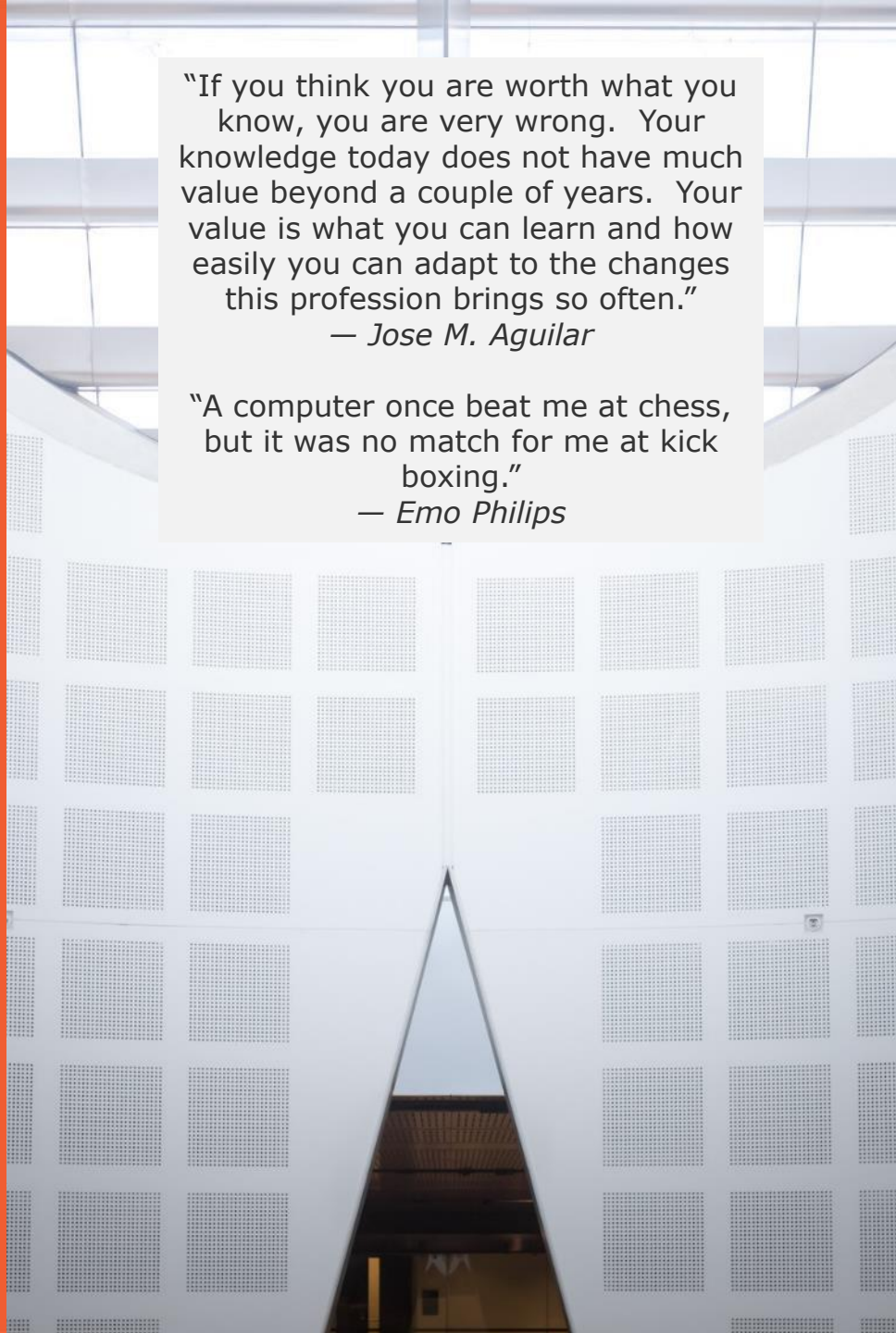
Week 1: Professionalism

7. Unit admin

Professor David Lowe

School of Computer Science

THE UNIVERSITY OF SYDNEY



The Admin Bits…. UoS Overview

- Topics covered
  - Professionalism
  - Teamwork
  - Technologies and Tools
  - Pathways (Majors and career options)

  - (See https://www.pluralsight.com/blog/career/cs-and-is-students-need-to-know-by-graduation)

- Learning outcomes
  - https://www.sydney.edu.au/units/INFO1111

- Resources
  - Canvas - login using Unikey and password
    - Lecture content and copies of lecture slides
      - We intend to record the lectures (but the technology is not reliable – and we still want you to listen live)
    - Tutorial instructions
    - Assessment instructions
    - *Submit activities and official assignment work here*
    - see your grades; etc
  - Canvas/Unit Outline for official schedule, list of learning outcomes, etc
  - Discussion forum - Ed: on Canvas site

More admin

- Lecture: online
  - Each week, you should complete this by Tuesday!
  - This is so that you can indicate if there are things you want to explore in the…
- Lecture Review: Wednesday 2pm-4pm
  - Not covering new material. Not mandatory
  - Just if there are aspects that you struggled with, or would like to explore further…

- Tutorial session: depends on your timetable:
  - Thursday or Friday – various times.
  - It is important you attend these*, as there is groupwork…
    - **and attend the one that is allocated in your timetable*

- Expectations: You are responsible learners!
  - Attend scheduled classes, and devote an *extra* 6-9 hrs per week
  - Participate constructively in classes
    - Respect for one another (criticize ideas, not people)
    - Humility: none of us knows it all; each of us knows valuable things
  - Check Canvas & Ed regularly - at least once a week!
  - Notify staff whenever there are difficulties
  - Notify group partners honestly and promptly about difficulties

Assessments

- Overview:
  - This unit has no marks!
  - What! Wait! – Then how do you get a final grade???

- So, how does it work…
  - There are three core learning areas, and each area has two tasks
    - Knowledge Foundation task — Knowledge Advanced task
    - Skills Foundation task — Skills Advances task
    - Self-Learning Foundation task — Self-Learning Advanced task

  - You get multiple attempts in each area
    - With each attempt rates as Poor / OK / Strong.

  - You start with each Foundation task
    - If you achieve a Poor / OK result, then for the next submission you try again
    - If you achieve a Strong result, then for the next submission you move to the Advanced task.

- And then your final mark/grade depends on the level you reach in these tasks by the end of the semester.

Assessments

Week	Date (Mon)	Content	Tutorial	Assessment
1	19 Feb	Administration Concepts: Nature of computing	Introduction, assessment overview, team formation, markdown	
2	26 Feb	Concepts: Core skills Skills: CLIs and scripts	Teamwork, self-learning, CLI and scripts	
3	4 Mar	Concepts: Languages/Comms Skills: LaTeX	Self-learning, LaTeX	*Trial knowledge test*
4	11 Mar	Concepts: Tech Stacks Skills: make	Skills topics, make files	
5	18 Mar	Concepts: Version Control Skills: GitHub	Github	
6	25 Mar	Concepts: Problem Solving Skills: Debugging	*Note: Friday is a public holiday, so tutorials will take a different form. See Ed for details.*	Skills / Self-Learn Submission 1 Knowledge Test 1 (during tutorial)
Break	1 Apr			
7	8 Apr	Concepts: IP and Ethics Skills: (review)	Self-learning and problem solving	Knowledge Test 2 (during tutorial)
8	15 Apr	Domains: Computer Science Guest: TBA	Project updates, ethics	
9	22 Apr	Domains: Software Development Guest: TBA	Project updates, software failures	Skills / Self-Learn Submission 2 Knowledge Test 3 (during tutorial)
10	29 May	Domains: Cyber Security Guest: TBA	Project updates, information seeking	
11	6 May	Domains: Data Science Guest: TBA	Project updates, threshold concepts	Knowledge Test 4 (during tutorial)
12	13 May	Domains: Others....	Project updates, self-learning demos	
13	20 May	Review	Final review	Skills / Self-Learn Submission 3 Knowledge Test 5 (during tutorial)
Exams	-			Formal Exam Oral Exam

Assessments

- To get a 50-Pass, you must
  - Achieve an OK result in both the knowledge and skills areas.
- To get higher results
  - You progressively improve in each area.

Result	Knowledge tasks	Skills tasks	Self-Learning tasks
50 Pass	Foundation OK	Foundation OK	-
55 Pass	Foundation OK	Foundation OK	Foundation OK
60 Pass	Foundation OK	Foundation Strong	Foundation OK
65 Credit	Foundation Strong	Foundation Strong	Foundation OK
70 Credit	Foundation Strong	Foundation Strong	Foundation Strong
75 Distinction	Advanced OK	Foundation Strong	Foundation Strong
80 Distinction	Advanced OK	Advanced OK	Foundation Strong
85 High Distinction	Advanced Strong	Advanced OK	Foundation Strong
90 High Distinction	Advanced Strong	Advanced OK	Advanced OK
95 High Distinction	Advanced Strong	Advanced Strong	Advanced OK
100 High Distinction	Advanced Strong	Advanced Strong	Advanced Strong

Assessment: Examples

	Submission 1	Submission 2	Submission 3	Final Exams
Student 1	Knowledge - Foundation OK Skills - Foundation Strong Self-Learning - Foundation Strong	Knowledge - Foundation Strong Skills - Advanced Strong Self-Learning - *Not attempted*	Knowledge - *not attempted* Skills - *not attempted* Self-Learning - Advanced OK	Knowledge - Advanced Strong - -
Pending result	60 Pass	70 Credit	70 Credit	95 High Distinction
Student 2	Knowledge - Foundation OK Skills - Foundation Poor Self-Learning - *Not attempted*	Knowledge - Foundation OK Skills - Foundation Strong Self-Learning - *Not attempted*	Knowledge - Foundation Good Skills - *not attempted* Self-Learning - *not attempted*	Knowledge - *not eligible* - -
Pending result	40 Fail	60 Pass	60 Pass	55 Pass
Student 1	Knowledge - Foundation Poor Skills - Foundation Poor Self-Learning - *Not attempted*	Knowledge - Foundation Strong Skills - Foundation OK Self-Learning - *Not attempted*	Knowledge - Foundation Strong Skills - Foundation Strong Self-Learning - Foundation Strong	Knowledge - *not attempted* - -
Pending result	20 Fail	55 Pass	70 Credit	70 Credit

Assessments: Key implications

- You will need to decide what level of achievement you are willing to work towards, as higher levels will require more time and effort
  - You can control what level of outcome you want to target!
  - If you want just a pass – you know exactly what is needed (an OK in Skills and Knowledge foundations) – and might even be able to achieve that by mid-semester.
  - If you want a high distinction, you know what is required!

- In order to achieve a good result, you need to balance your work across the three areas.
  - Start with meeting the OK requirements in all 3 areas *first*
  - Essentially, everything above an OK for Knowledge and Skills is optional.

- You earn each level, rather than "lose marks"
  - Can struggle at the beginning, but still achieve a HD!

Late assessments

- This is tricky! (Normally late penalties are applied as a proportion of the marks awarded).
- **But no marks are awarded – so what happens?**
- **So – each day late, you accumulate 0.5 mark penalty**
  - And these accumulate and are then applied to your final mark
  - So be careful!
    - Knowledge + Skills + Self-Learning all OK = 55P
    - But 8 marks penalty could reduce this to 47F

- If you are late (and have a valid reason) then you will need to apply for special consideration and alternative arrangements will be made.

INFO1111: Computing 1A Professionalism

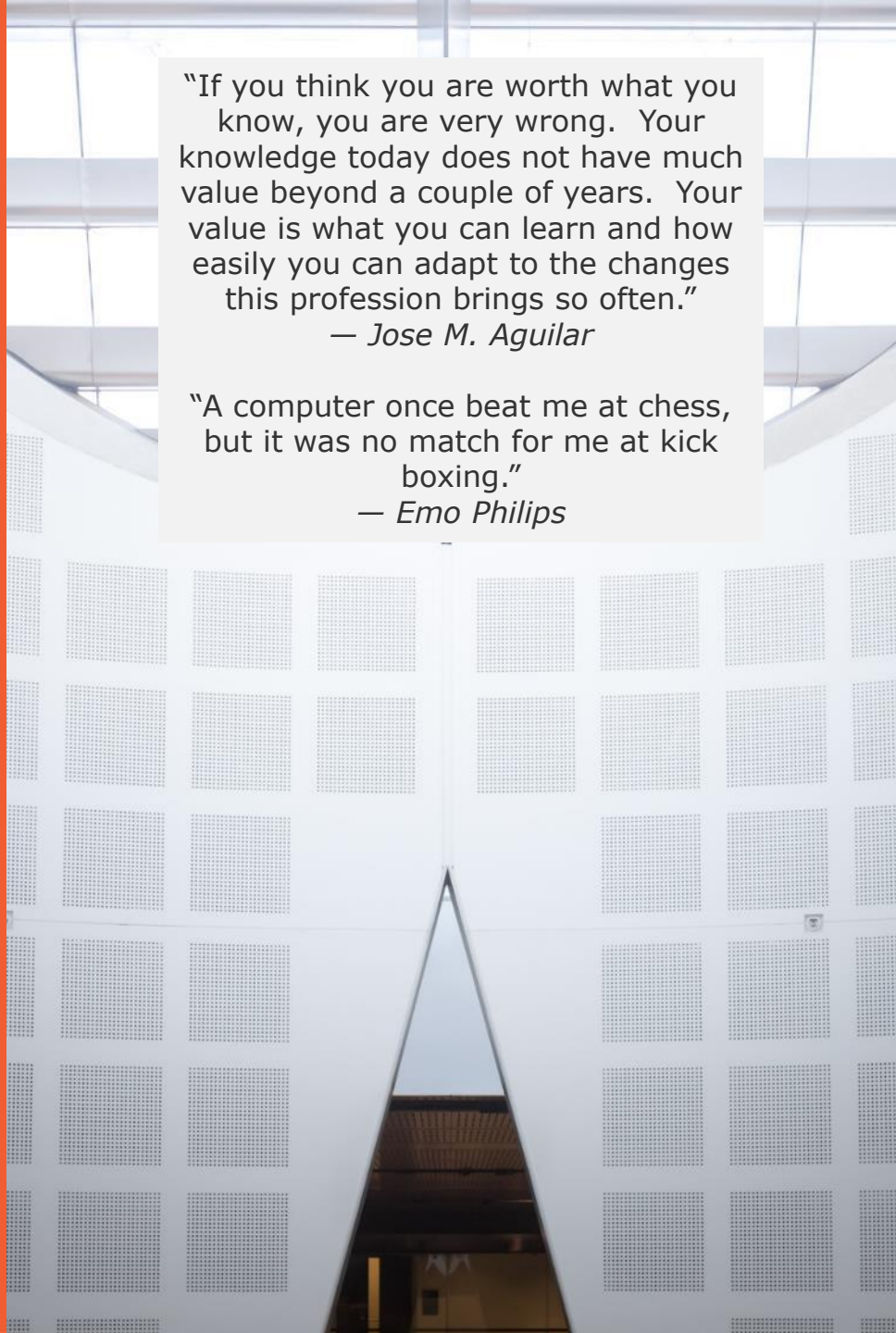
Week 1: Professionalism

8. Wrap-up

Professor David Lowe

School of Computer Science

THE UNIVERSITY OF SYDNEY



"If you think you are worth what you know, you are very wrong. Your knowledge today does not have much value beyond a couple of years. Your value is what you can learn and how easily you can adapt to the changes this profession brings so often."
— Jose M. Aguilar

"A computer once beat me at chess, but it was no match for me at kick boxing."
— Emo Philips

This Week's Tutorial

- Meet your tutors
  - And answer any questions about things discussed today…
- Skills Category
  - Group project
  - Form groups (groups of 4)
- Self-learning Category
  - Begin your self-assessment
  - Planning for self-learning
  - Initial self-learning activity

Self-Learning

- How good are you at learning independently?
  - Can you identify something you learnt yourself, without it being directed by someone else?
  - How did you manage this?

- Initial Activity
  - We want you to learn "MarkDown"
    - a document formatting 'language' widely used for online documents
  - But you should only spend 2-3 hours maximum…
  - See how far you can get prior to next weeks class…
  - *Not assessed – so no point in copying off others!*

Advice

- Metacognition
  - Pay attention to the learning outcomes in Canvas
  - Self-check that you are achieving each one
  - Think how each assessment task relates to these
- Time management
  - Watch the due dates
  - Start work early, submit early
- Networking and community-formation
  - Make friends and discuss ideas with them
  - Know your tutor, lecturer, coordinator
  - Keep them informed, especially if you fall behind
    - Don’t wait to get help
- Enjoy the learning!