Varied profiles and the UG1 curriculum

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The problem

- Students join SoI UG1 with a diverse range of experience in:
  - **Programming**: ranging from years of study and experience, participation to programming clubs, hackathons, etc. to NO former programming experience
  - **Maths**: ranging from having done an Advanced Higher to interrupted learning experiences and little background in theoretical mathematical knowledge

- They may also come with **incorrect expectations** from an Informatics degree:
  - Not including much Maths?
  - Being mostly about programming?
  - Being mostly practical?
  - Building computer systems since first year?
  - AI = building robots?

ON TOP OF needing to accommodate to the HE system, a new place, lifestyle, etc.

Implications

- Anxiety when faced with reality
- Falling behind with course work to catch up with expected prerequisites
- Disappointment when first coursework marks come out
- Feeling discriminated in comparison with more experienced peers
- Not knowing where to seek help
- Needing to take resit exams

...

Getting to a high risk of dropping out of university, and wasting years of their lives!

Traditional course attempts at a solution

- Starting from the very basics, but…
  - Curriculum expectations and need to motivate advanced students lead to tendency to exponential increase difficulty very soon; This loses students ‘on the way’
- Providing some introductory material and activities; Same tendency as above
- Having lectures pitched at beginner-average level, and different activities for beginner vs. advanced students
  - When should beginners move to the advanced tutorial and how can we help them reach it?
- Diagnostic tests + adaptation to student needs:
  - Logistically difficult
- Lots of support opportunities: Induction Week, PT, SST, InfPALS, InfBASE, Programming Club

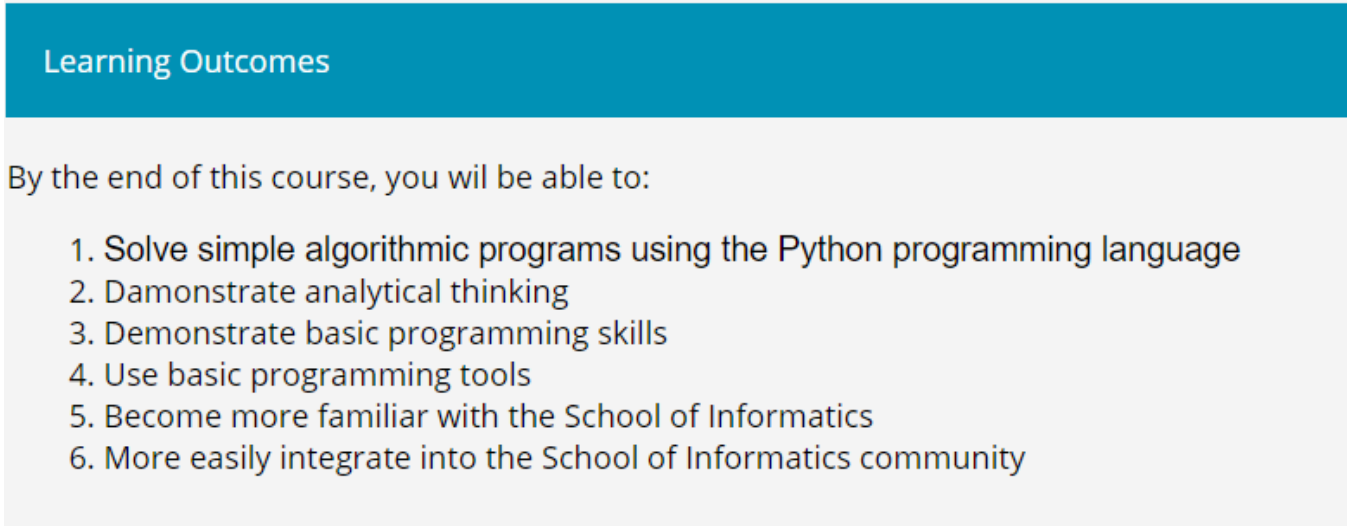
A shift of focus

What if we **prevented** rather than **addressed** differences in experience and expectations?

- Approaches, thanks to Björn Franke:
  - **Informatics Introductory Summer Courses (started 2020-2021)**:
    - In Programming (organisers: Cristina Alexandru, Michio Honda, NEW! Michael Glienecke, student support group leaders)
    - In Maths (organiser: Heather Yorston)
  - **Foundation Programme for CSE and CMVM (collaboration with Centre for Open Learning)**

The Informatics Introductory Summer Programming Course

- 6-week Python course taking place in July-August, with planning commencing early summer
- Online, optional, unassessed, plan for attendance certificate



Learning Outcomes

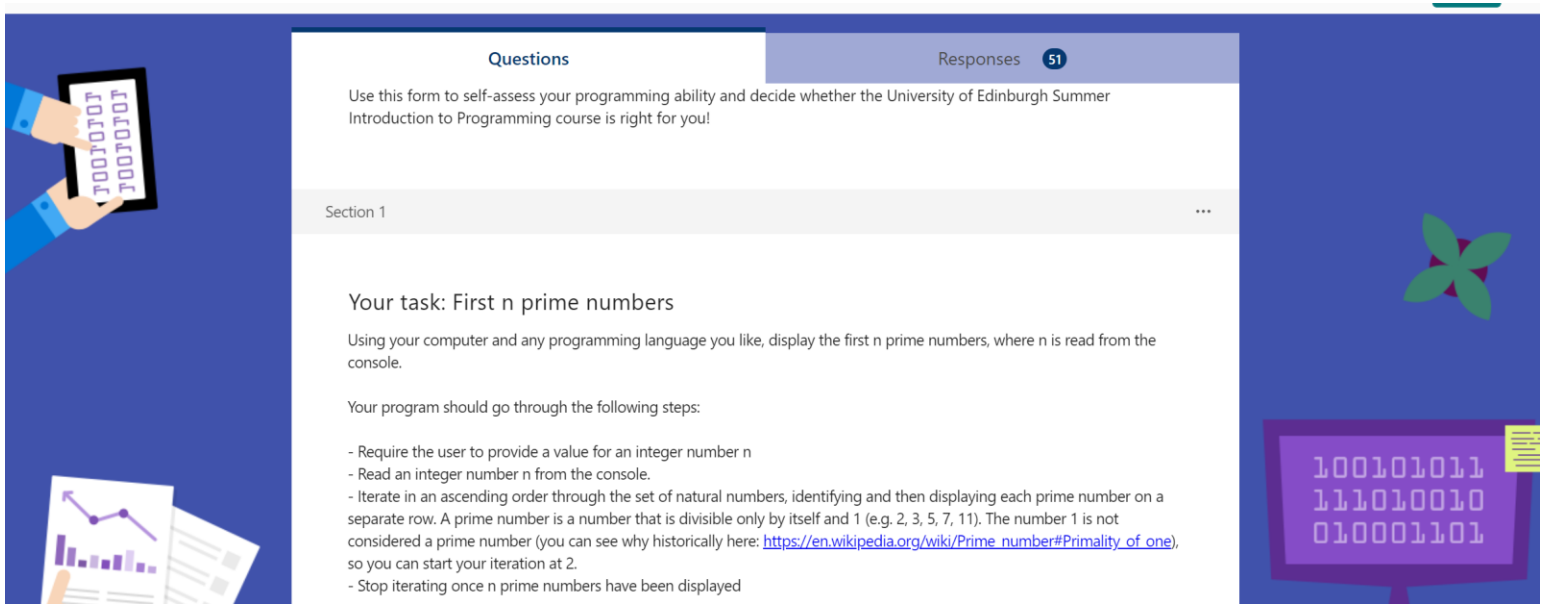
By the end of this course, you wil be able to:

1. Solve simple algorithmic programs using the Python programming language
2. Damonstrate analytical thinking
3. Demonstrate basic programming skills
4. Use basic programming tools
5. Become more familiar with the School of Informatics
6. More easily integrate into the School of Informatics community

The Informatics Introductory Summer Programming Course- Recruitment

– Attendance recommended through diagnostic test

– Registration through online form; 182 students registered in 2020-2021.



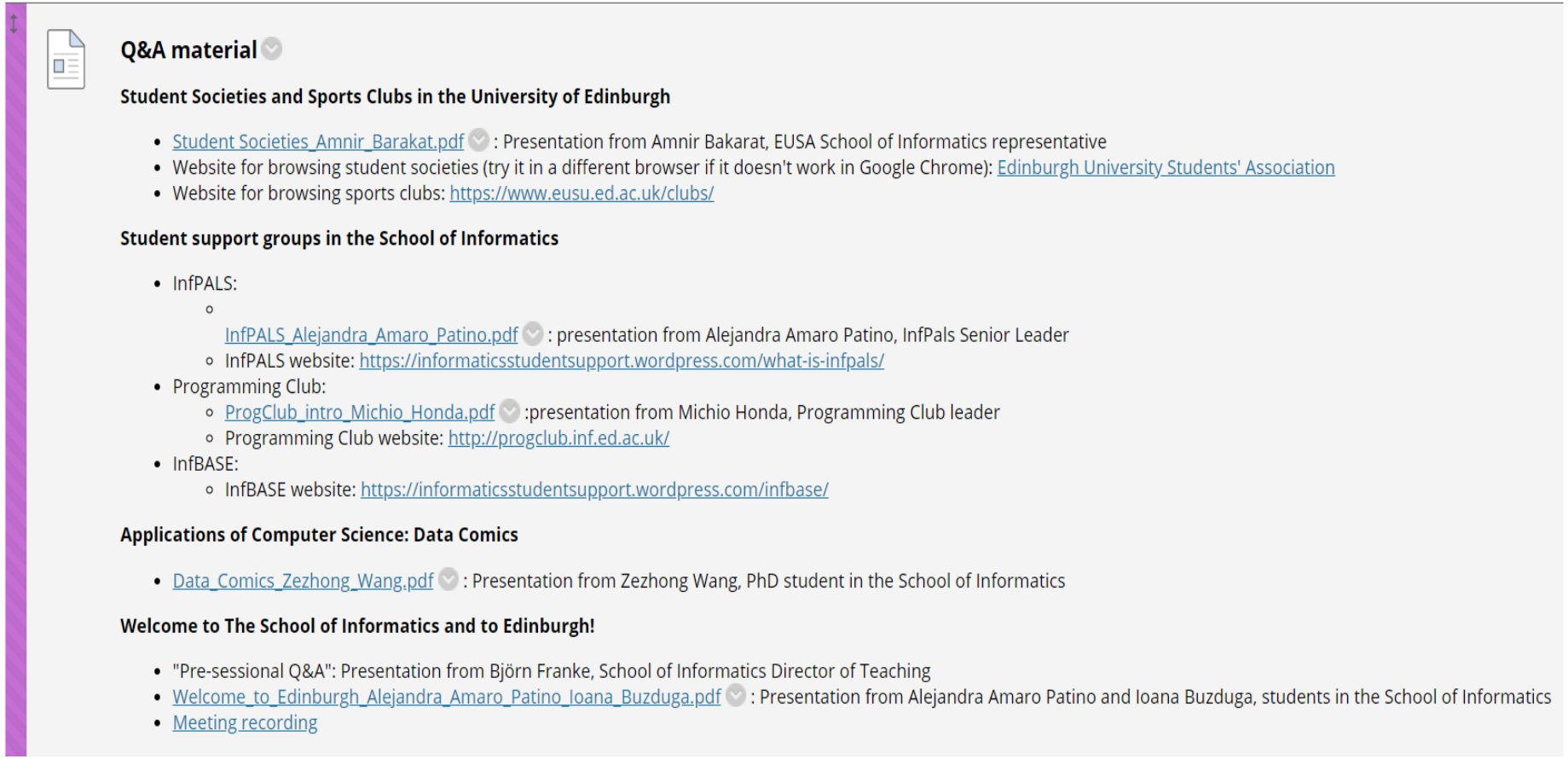
The Informatics Introductory Summer Programming Course- Format

Mix of:

- Self-taught videos and materials; 2 lessons/week
- Lab sheet launched with each lesson
- 2 labs/week with 2 demonstrators and an organiser
- 1 Q&A session/week, used for community building and introducing university life.

Lesson	Plan
Week 0 (before lessons start)	
Week 1 Lesson 1	Introduction, Installing Python 3/Google Collab/Noteable instructions
Week 1 Lesson 2	Your First Python Program, Variables, Receiving Input, Type Conversion
Week 2 Lesson 1	Strings, Formatted Strings, String Methods
Week 2 Lesson 2	Arithmetic Operations, Operator Preference, Math Functions
Week 3 Lesson 1	If Statements, Logical Operators, Comparison Operators
Week 3 Lesson 2	While Loops, For Loops, Nested Loops
Week 4 Lesson 1	Lists, 2D Lists, List Methods, Tuples, Dictionaries
Week 4 Lesson 2	Lists II
Week 5 Lesson 1	Matplotlib and data visualization
Week 5 Lesson 2	Functions, Parameters, Keyword Arguments, Return Statement
Week 6 Lesson 1	Functions II
Week 6 Lesson 2	Exercises/catch-up

The Informatics Introductory Summer Programming Course- Format



Q&A material

Student Societies and Sports Clubs in the University of Edinburgh

- Student Societies_Amnir_Barakat.pdf : Presentation from Amnir Bakarat, EUSA School of Informatics representative
- Website for browsing student societies (try it in a different browser if it doesn't work in Google Chrome): Edinburgh University Students' Association
- Website for browsing sports clubs: https://www.eusu.ed.ac.uk/clubs/

Student support groups in the School of Informatics

- InfPALS:
  - InfPALS_Alejandra_Amaro_Patino.pdf : presentation from Alejandra Amaro Patino, InfPals Senior Leader
  - InfPALS website: https://informaticsstudentsupport.wordpress.com/what-is-infpals/
- Programming Club:
  - ProgClub_intro_Michio_Honda.pdf :presentation from Michio Honda, Programming Club leader
  - Programming Club website: http://progclub.inf.ed.ac.uk/
- InfBASE:
  - InfBASE website: https://informaticsstudentsupport.wordpress.com/infbase/

Applications of Computer Science: Data Comics

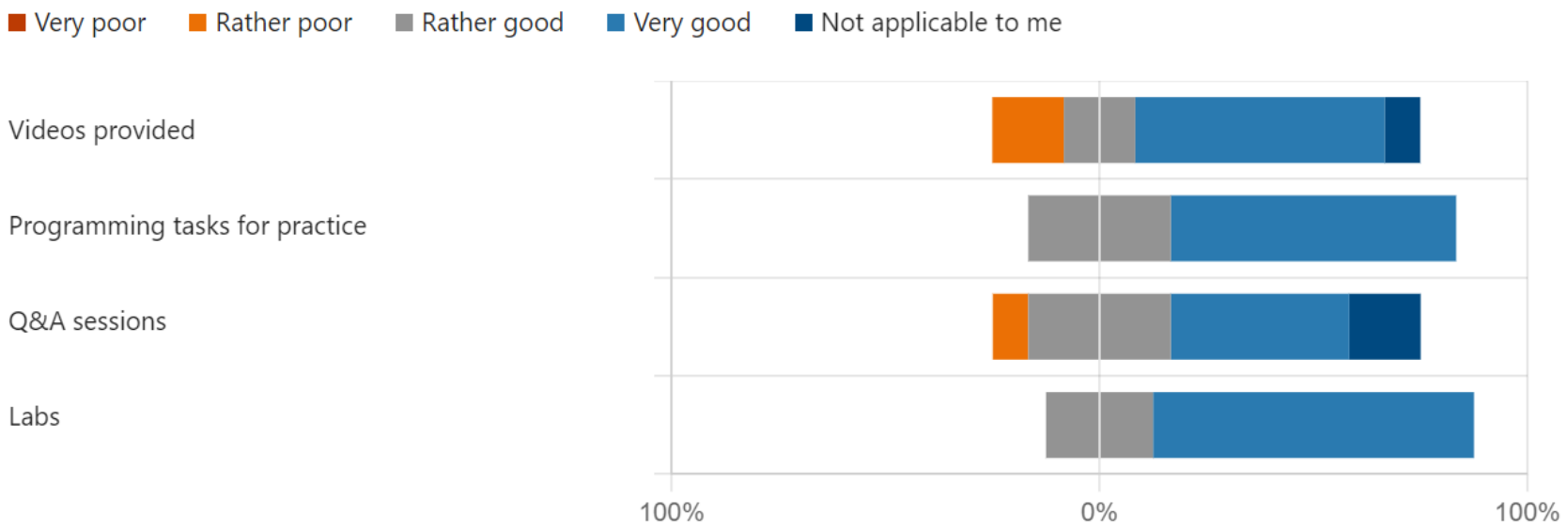
- Data_Comics_Zezhong_Wang.pdf : Presentation from Zezhong Wang, PhD student in the School of Informatics

Welcome to The School of Informatics and to Edinburgh!

- "Pre-sessional Q&A": Presentation from Björn Franke, School of Informatics Director of Teaching
- Welcome_to_Edinburgh_Alejandra_Amaro_Patino_Ioana_Buzduga.pdf : Presentation from Alejandra Amaro Patino and Ioana Buzduga, students in the School of Informatics
- Meeting recording

The Informatics Introductory Summer Programming Course- Feedback

Initial results look promising!



The Informatics Introductory Summer Programming Course- Feedback

– However, participant group affected results

How much programming have you done outside of school? (0 point)

More Details

I've done quite a lot - e.g., goin...	10
I've done a bit but not a lot	17
I've not done any	9

Foundation Programme for CSE and CMVM (target start: 2024-25)

- Main aim: increasing participation
- Will be delivered as a 2-uear (FT)/1- year (PT) college-level programme
- For fee-paying international students and local/global Wider Participation students, as preparation for a UG degree (in any university)
- Format: a suite of pre-UG courses delivered in a flexible format (online and on campus)
- TAs will be hired to deliver the courses
- Current stage: initial consultation period with school to identify "standard" subject content and skills that potential students **must** have to succeed on each UG programme
- Next: deciding on the content structure

Thank you! Questions?