Cloud Systems

Chapter 0: Course Setup

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Course Specification

- School of Computing Science
- 10 credits
- Level 4 or 5 (SCQF level 10 or 11)

- Summative Assessments
  - Coursework 50%
  - Written examination 50%
- Students must submit at least 75% by weight of the components of the course's summative assessment.

Intended Learning Outcomes

- H/M course:
  1. Compare virtualization/containerization techniques in terms of overhead, resource isolation, and flexibility
  2. Evaluate options for deploying cloud applications
  3. Employ resource management methods and scalable system designs
  4. Design systems that combine edge and cloud
  5. Analyze the carbon footprint of edge/cloud systems

- M course:
  6. Apply recent research results in the area

Teaching Team

- Lecturers
  - Dr Lauritz Thamsen
  - Dr Yehia Elkhatib
- GTAs
  - James Nurdin
  - Kathleen West

Overall Course Setup

- Part 1 – Cloud Resource Management
  - Lauritz + James
  - Weeks 1-5
  - Assessed Exercise 1

- Part 2 – Scalable and Sustainable Architectures
  - Yehia + Kathleen
  - Weeks 6-10
  - Assessed Exercise 2

Teaching Schedule

- Contact hours: Tuesdays, 3-6 pm
  - Weekly lectures: 3-5 pm, SAWB 422/423
  - Weekly labs: 5-6 pm, BOYD ORR Lab 720

- Lectures
  - Slides will be made available beforehand
  - Lectures will include one or more breaks
  - Recordings will be made available afterwards

Assessments and Feedback

- Lab Exercises 0%
  - Solidify concepts from the lectures
  - Build skills towards the coursework and exam
- Coursework 50%
  - AE 1 – Benchmarking Virtual Resources – 25%
  - AE 2 – Cloud System Design – 25%
- Written examination 50%
  - To take place in May

- Feedback opportunities:
  - Ask questions: in the lectures, in the labs, and on Teams
  - Formative feedback in the labs from tutors and peers
  - Quizzes to test your understanding

Recommended Reading

- No one “textbook”, but we will give you references (e.g. to research papers) as we proceed

- Still, some recommended books on key topics:
  - Tanenbaum: Modern Operating Systems
  - Humble, Farley: Continuous Delivery
  - Kleppmann: Designing Data-Intensive Applications

Getting Help

- Help us help you – by asking questions!
  - We will find the answers by trying things together
  - Also: Please help yourself and each others!

- Support “route”
  - Read – Learning material (Moodle) and supplementary material (referenced)
  - Labs – Ask the GTAs and us
  - Teams Q&A channel – Post questions, and answers too
  - Office hours – Details on Moodle
  - Email – Only issues relating to you and you alone (e.g. access issues; we only respond to UofG email addresses)

Some Caveats

- This is a **new course** at Glasgow: It is possible that there are some glitches still in the first delivery
- This is a **practical course**: expect to use real cloud technologies, face system setup issues, experiment yourself, write code, and use mostly Linux
- The labs and exercises are relatively **open-ended projects** that benefit for **teamwork** (up to 4 students)