Agenda for our first class

• Who am I, and who are you?
• Online format
• Survey results
• Course overview; reading research papers
• Break
• Distributed systems discussion
Who am I?

- Call me Ivan
- I'm in Vancouver (actually live on UBC campus)
- Have been at UBC for 7 years
- Before that worked on my PhD at U.Washington
- Broad research interests, usually intersecting with distributed systems in some way
- I teach UBC grad + ugrad distributed system courses
Who are you?

• We are distributed across 4 countries

Let’s go around!

1. What is your **name**? CS MSc/PhD/other **program**?

2. **Where** are you connecting from?

3. What is one **interesting fact about yourself**?
New this year: online format

- The atmosphere in the classroom is key
- Generally, there won’t be slides

**Discussion-focused course**

- Note: my first time teaching online
- Looking forward to figuring this out together with you, would like to hear your suggestions!
Format guidelines

• Respect for each other

• Active participation
  • My camera will always be on
  • Your camera use is optional, but recommended. Try to at least turn camera on at start and end of class. Consider putting up a photo if you switch off camera.
  • Ask questions in chat, or interrupt by voice/raise hand
  • Let’s make an effort to be clear: speak slowly and clearly

Other suggestions/ideas?
Other survey results

- Reached consensus quickly
  - No final
  - Open-ended project
  - Recorded zoom calls (only available to class)
Course resources overview

- **Canvas**: place to find zoom links
- **Zoom**: this magic place we are all in
- **Piazza**
  - Use this for all course-related communication
- **Slack** *(optional)*
  - Place to hang out, good for project work
Structure of the course

- Schedule with papers
- Advocate/skeptic roles
- Project details
- Marking details
- How to do well
- Honesty
- Taking care of yourself
Reading research papers
(Today’s readings)

• The three pass approach by Keshav
  1. Bird eye’s view (note order of sections)
  2. Careful read
  3. Virtually re-implement the paper
Reviewing papers

(Today’s readings)

• Roscoe’s suggestions

• “A review is a chance to get your own thoughts on the paper straight by writing them down. It’s surprising how your opinion of a paper can change by being forced to explain it.”

Responses advice on homepage
https://www.cs.ubc.ca/~bestchai/teaching/cs538b_2020w1/responses.html
Volunteer advocate/skeptics for next week

- **Tuesday**: Fundamentals of Distributed Computing: A Practical Tour of Vector Clock Systems
  - Advocate: Shiqi
  - Skeptic: Mayank

- **Thursday**: Distributed Snapshots: Determining the Global States of a Distributed System.
  - Advocate: Lucca
  - Skeptic: Fangyu
Distributed Systems

• What are they?
  • A system where components may **fail**
  • A *network* with inter-dependent computers
  • Is RAID a distributed system? (no network)
  • Anything that requires **more than one machine**?
    • Concurrency (versus parallelism)
      • Concurrency = executing **at same time** (independent processes)
      • Parallelism = *group work* of multiple tasks
    • Multiple cores in a CPU? (2 say yes!)
Distributed Systems

- Why build them / what are their advantages?
  - **Security**: distribute information across parties
  - **Fault tolerance**: one failure doesn’t bring down the system (redundant copies of data)
  - **Scalability**: support more users/workload

- Why **not** build them / what are the disadvantages?
  - SE challenge: splitting logic into components
  - Complexity: SE and design challenge
  - Security: data in more places; risk goes up because there are more places where you can be vulnerable
D. Systems Abstractions

- What do you think would be some distributed systems abstractions that might be useful?

1. Name a (potential) abstraction
2. How is it useful?

- **Reliable communication**: ensure message delivery

- **Sharding**: split data into chunks and assemble chunks from different machines (data is a collection of chunks)

- **Map reduce**: distribute compute abstraction
Next class

- Distributed time reading
- Slightly theoretical
- Fundamental abstraction!
Post-class short survey

• I’ll post on piazza a short survey about what worked well and what you wish could be done better.

• Please answer it to give me some feedback :-)