CPSC 416 Distributed Systems

Winter 2023 Term 1 (September 19, 2023)

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Logistics

Teaching Assistants

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Office Hours

Remember: Use Piazza for **all** official course-related communications

- Not on Piazza? Not official.
- Canvas "comments/messages" **are not monitored**

Office Hours:

Who	When	Where
Tony	Monday 14:00-15:00 Wednesday 16:00-17:00	Discord
Andy	Thursday 19:00-20:30	Discord
Hamid	Friday 16:30-18:00	Kaiser 4075
Jonas	Thursday 11:00-12:30	X150, Table 1&2
Cathy	Friday 09:00-10:30 (Starting Sep. 22)	X237

Self-Assessment

This week

- Note: No self-assessment for guest lecture
- Self-Assessment for Chapter 5 & 7 due 2023/09/21 @ 17:00.
- Chapter 8: Next two lectures (split)

Note:

- You are strongly encouraged to collaborate with others on this
- You should use tools at your disposal to answer these questions
  - Share your prompts on Piazza (Discord #chatgpt channel)
  - Chat with ChatGPT on Discord (Discord #chat-with-chatgpt channel)
  - Your teddy bear (or another stuffed animal.) Great listeners.
- As previously noted, you get full credit if you submit. **Do not forget to submit it.**

Today's Failure

Types of Failures

[Robert Vitillo's Blog](#) (How distributed systems fail)

Single point of failure

- Non-replicated configuration database
- HTTPS
  - Manually renewed certificate = nobody can connect

Slow networks

- How long should we wait?
- What happens if we *don't* wait?

Slow Processes

- TCP connection exhaustion

Types of Failures

Demand spikes

- Failover = load spike
- Increased load = slow/no response
  - How long does a client wait?

Cascading failures

- Load spike
- Failed node resumes operation
- Working node collapses
- Repeat cycle

Learning Goals

Learning Goals (Modeling & Formal Verification)

Goals for this conversation:

- Understand what modeling is
- Understand how we validate models

Ask yourself:

How can I use modeling and formal verification to build robust distributed systems?
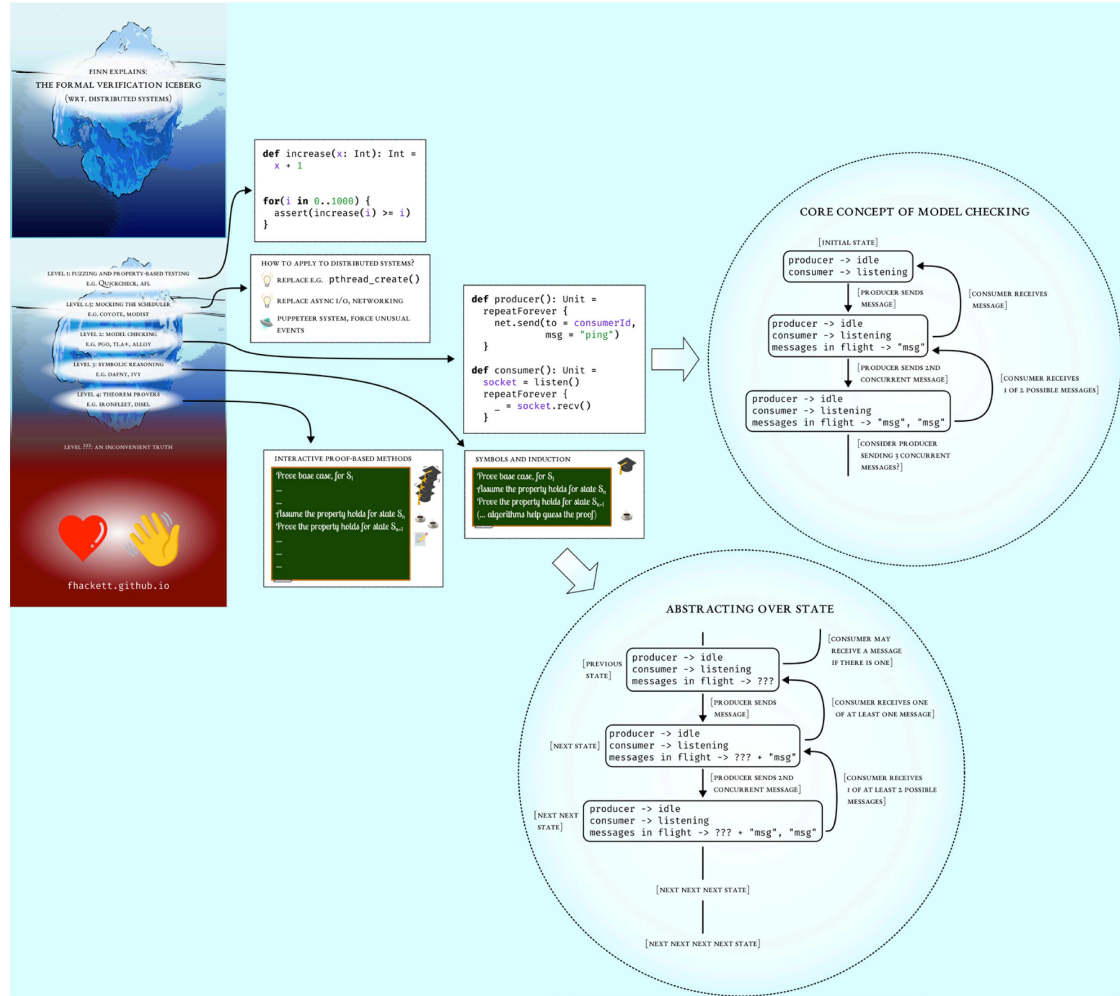
Finn Hackett – Guest Lecturer

Discussion

Questions?