CSE 486/586: Distributed Systems

Course Conclusion

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Overview

In this course, we discussed the design and implementation of large-scale distributed systems.

You gathered some experience implementing distributed systems.

- …and sometimes finding out it's not as easy as it looks!

We covered some fundamentals, and some applications.

Before the Midterm

- Internet architecture
- Android architecture
- Failure detectors
- Time (logical and physical clocks)
- Global states
- Reliable multicast
- Gossiping
- Peer-to-peer architectures
- Distributed hash tables

After the Midterm

- Software development
- Consensus
- Mutual exclusion
- Elections
- Paxos
- Concurrency
- Consistency
- Amazon Dynamo
- The domain name system
- Content distribution networks
- Facebook Haystack and f4
- Distributed Filesystems
- Remote procedure calls
- Security

What should you take away from this course?

A few concepts came up over and over.

- Find a solution that fits the problem
- Many problems are not decisively solvable or are provably unsolvable in asynchronous systems
- Scalability requires attention to performance
- Correctness depends on your application
- Good distributed systems are planned

The Application is Everything

More than anything else:

Solutions in distributed systems must fit the problem. There are too many performance traps and proven limitations for one-size-fits-all solutions.

Where should you go from here?

Here at UB:

- Topics that support distributed systems:
  - CSE 421/521: Introduction to Operating Systems
  - CSE 470/570: Introduction to Parallel and Distributed Processing
  - CSE 489/589: Modern Network Concepts
- Topics that use distributed systems:
  - CSE 622: Advanced Computer Systems

Where should you go from here?

Research venues:

- OSDI
- ICDCS
- IPDPS
- NSDI
- Journal of Parallel and Distributed Computing
- IEEE Transactions on Parallel and Distributed Systems
- Concurrency and Computation: Practice and Experience

Final Exam

The final is *Wednesday, May 16* from 15:30-18:30.

It will be in *Millard Fillmore Academic Center* room 170.

Please arrive on time.

The exam is closed book, closed notes.

Do not bring:

- Cell phones
- Laptops
- Wearables

Review Session

There will be a review session tonight.

Talbert 107, 18:00-20:00

I will take any questions about any course material.

I will take any questions about the exam, but may decline to answer!

Thank You!

Thank you for a great semester.

I have enjoyed it, and I hope you have, too.

Stay in touch, you know where to find me!