SER 321 B Session

SI Session

Tuesday, April 22nd 2025

10:00 am - 11:00 am MST

Agenda

- Process Flow Examination
- Consensus!
  - Types and Algorithms
  - RAFT
- Peer to Peer Differences

SI Session Expectations

Thanks for coming to the **SER 321** SI session. We have a packed agenda and we are going to try to get through as many of our planned example problems as possible. This session will be recorded and shared with others.

- If after this you want to see additional examples, please visit the drop-in tutoring center.
- We will post the link in the chat now and at the end of the session.
  - tutoring.asu.edu
- Please keep in mind we are recording this session and it will be made available for you to review 24-48 hours after this session concludes.
- Finally, please be respectful to each other during the session.

Interact with us:

Zoom Features

Zoom Chat

- Use the chat feature to interact with the presenter and respond to presenter's questions.
- Annotations are encouraged

SER 321
Assignment 5 PSA

No starter code for this assignment

Don’t panic - you have options!

SER 321

Assignment 5 PSA

No starter code for this assignment

Use a previous assignment as a starting point

Use a repo example as a starting point

Build from scratch

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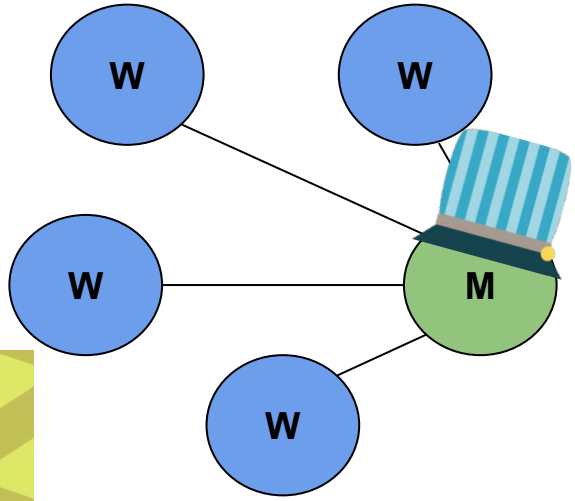
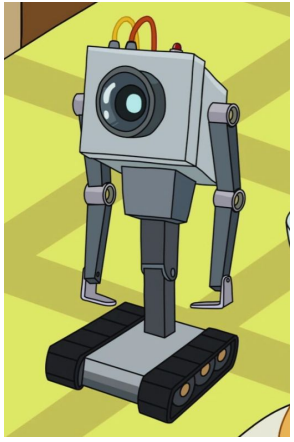
Communication



Workers only do their task then report back

Think worker bees or specialized machinery



Main is in charge of everything

Similar to _____ in our previous implementations

Check out the recording for the discussion!

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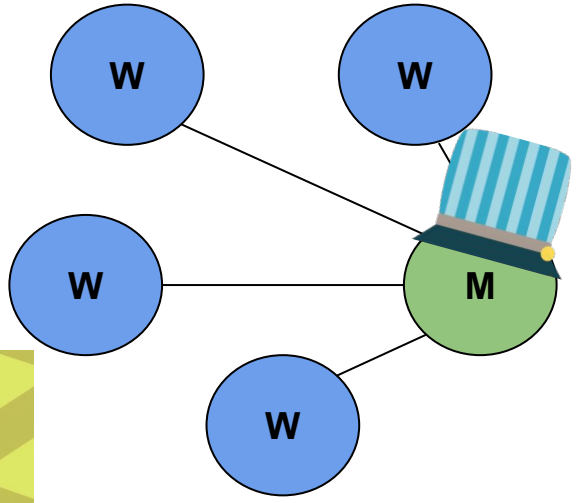
Communication



Workers only do their task then report back

Think worker bees or specialized machinery

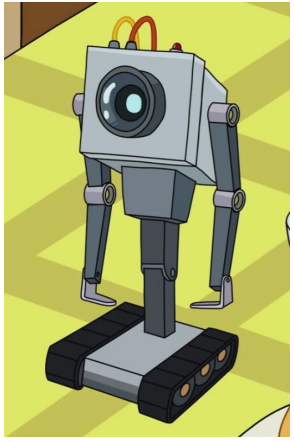
Request

C

What about Client Requests? Where do those get handled?

Main is in charge of everything

Similar to _____ in our previous implementations

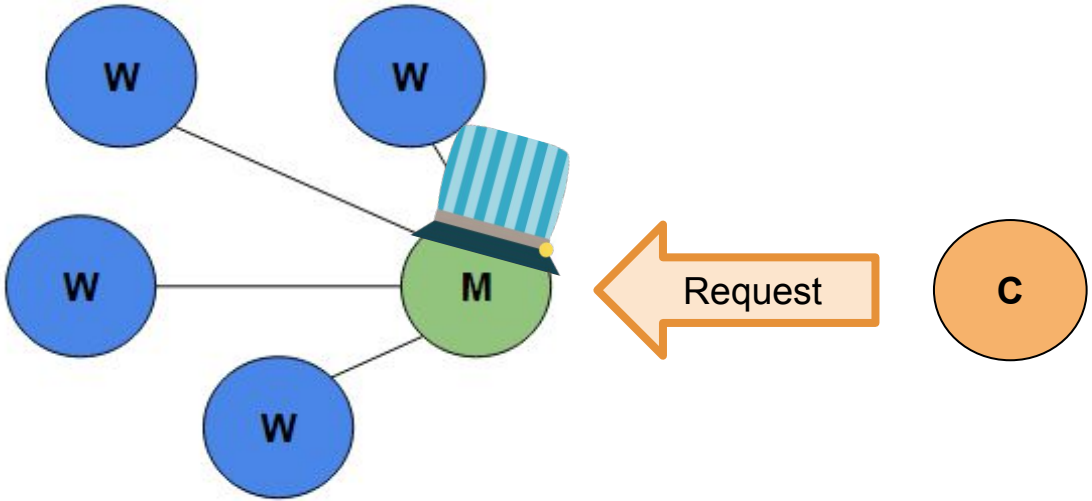


Check out the recording for the discussion!

SER 321
Distributed Systems

Process Flow!

DATA



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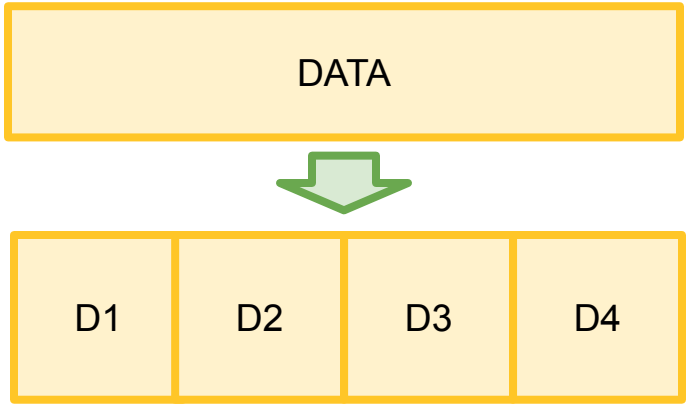
Distributed Systems

Process Flow!



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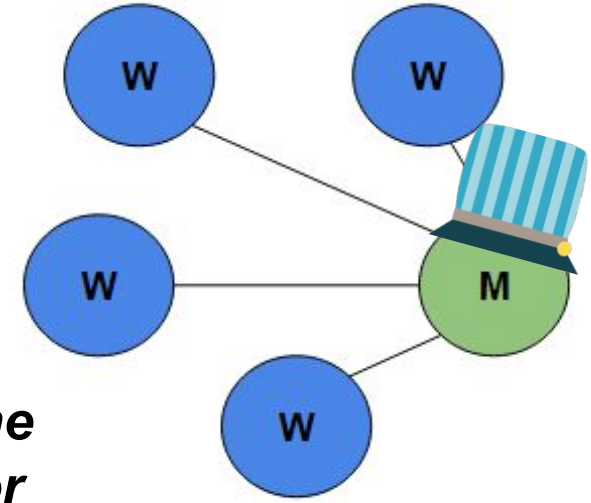

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Process Flow!

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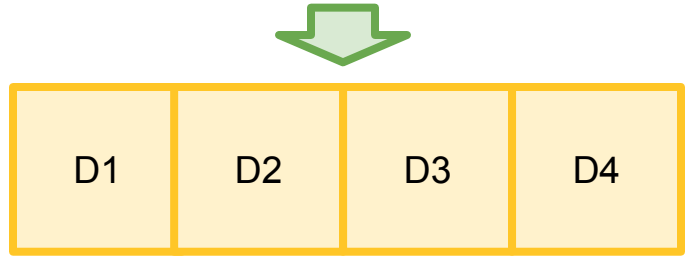
Distributed Systems

DATA



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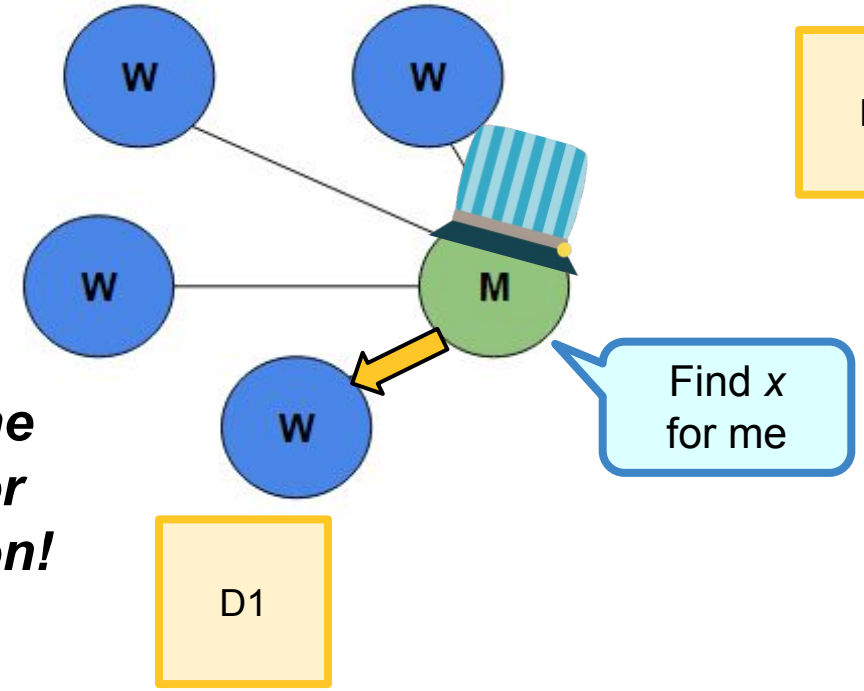

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Process Flow!

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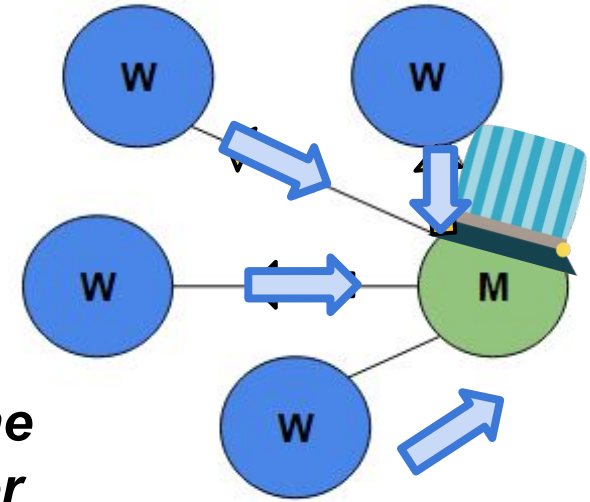

Check out the recording for the discussion!

D1

DATA

D1	D2	D3	D4

D1 Result	D2 Result	D3 Result	D4 Result

Process Flow!

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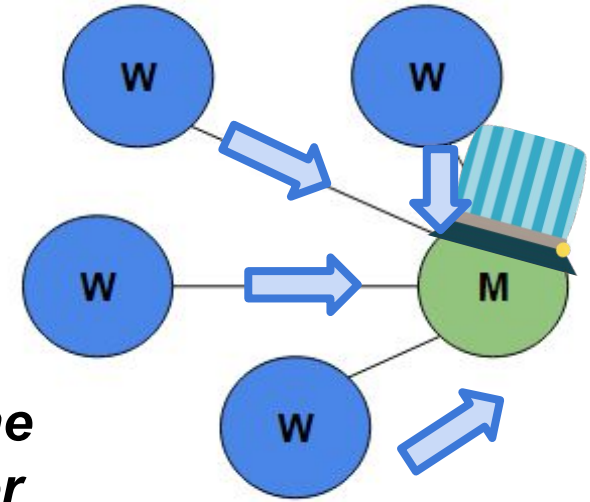
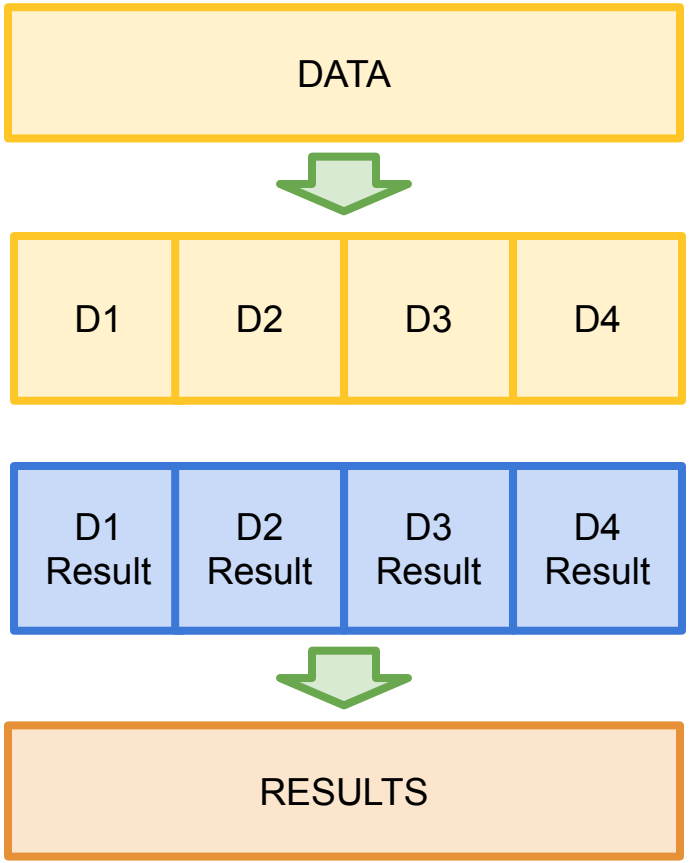
Distributed Systems

Workers only do their task then report back

Check out the recording for the discussion!





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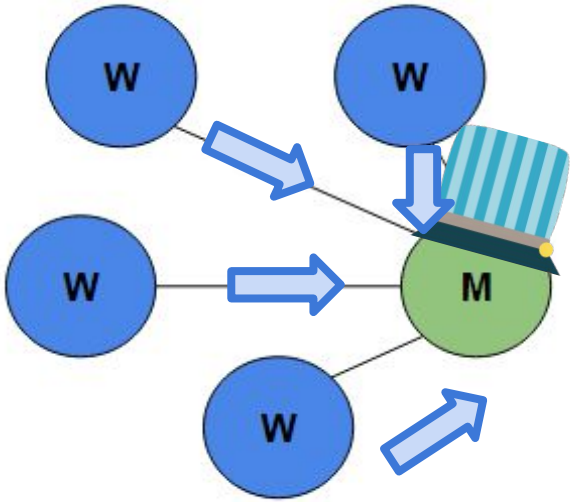
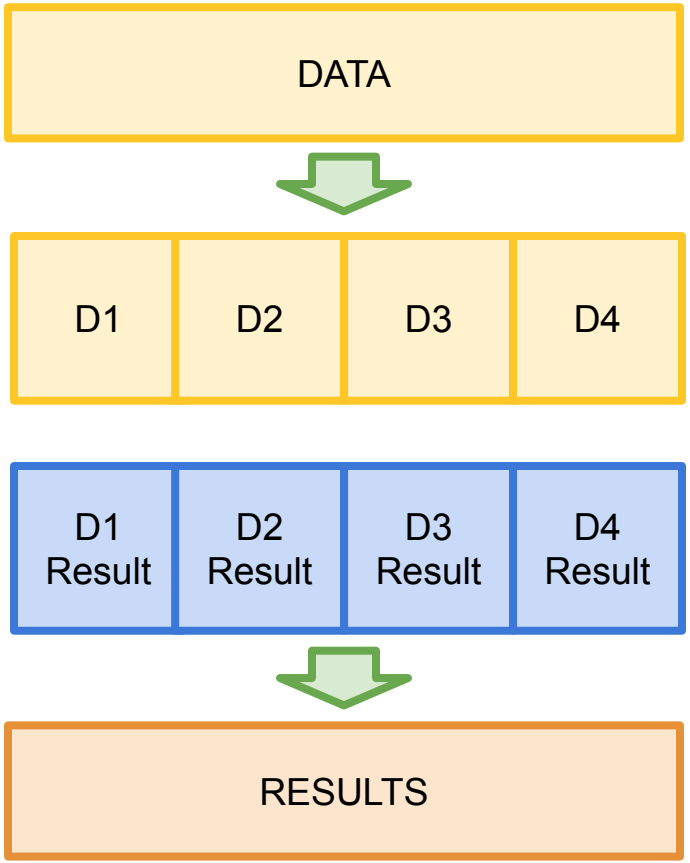
Distributed Systems

Does this look familiar?

How is this different from a parallel processing model?





Check out the recording for the discussion!

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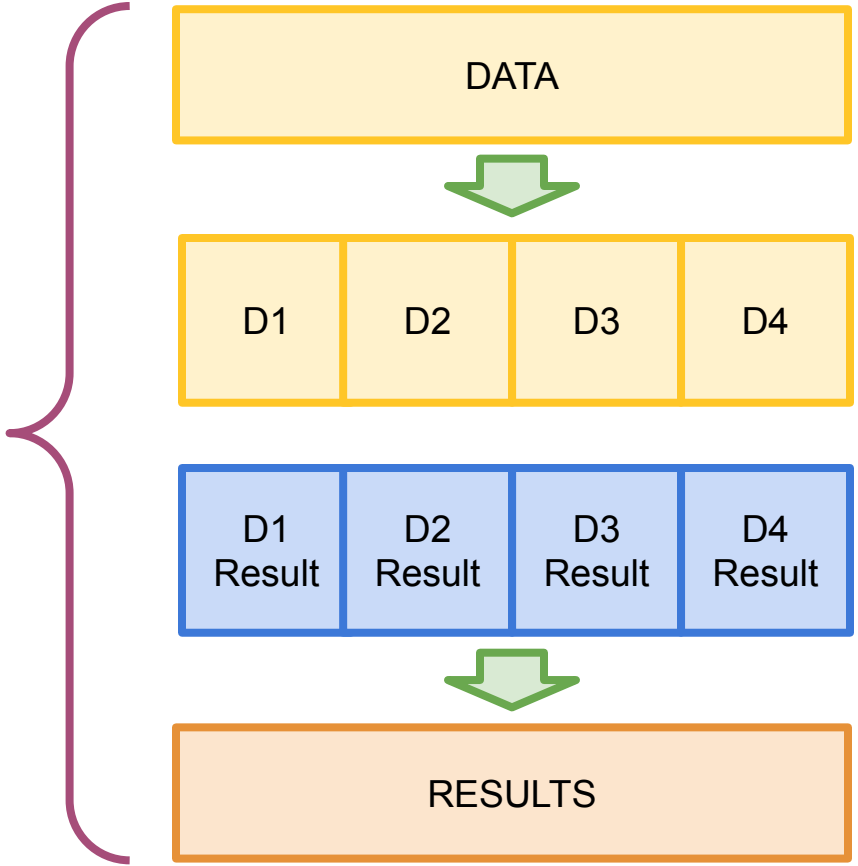
What about Peer to Peer?

Would this sequence *(the data handling)* change in the different structure?

Check out the recording for the discussion!



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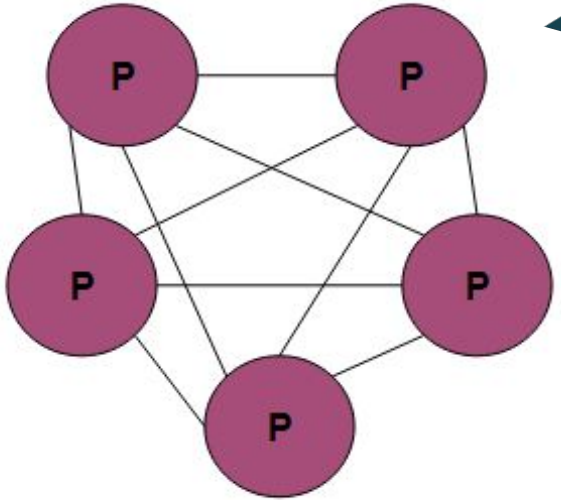
Distributed Systems

What about Peer to Peer?

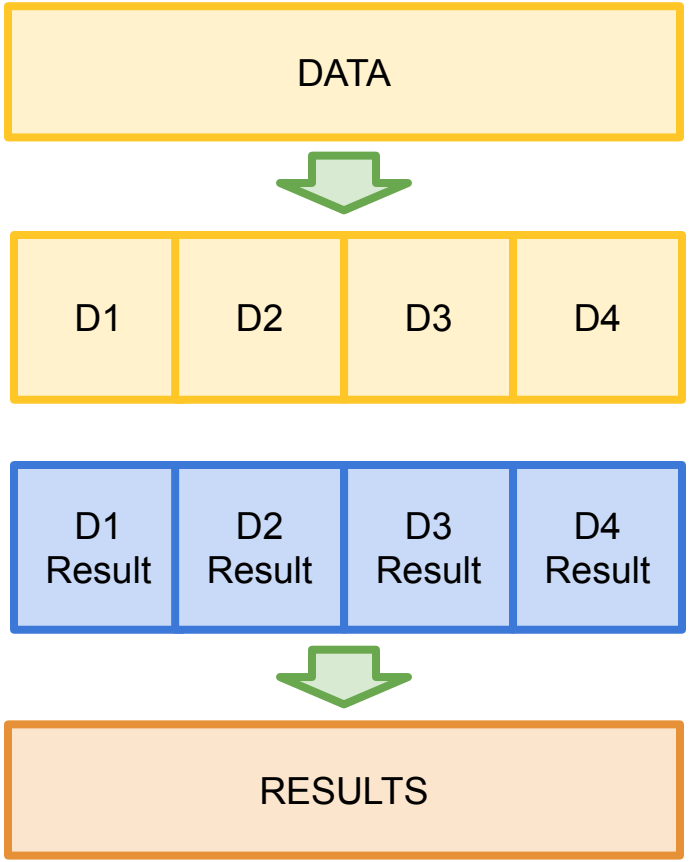
Check out the recording for the discussion!

We want someone to wear the conductor hat!

A ***LEADER***



How do we choose a leader?



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Distributed Systems

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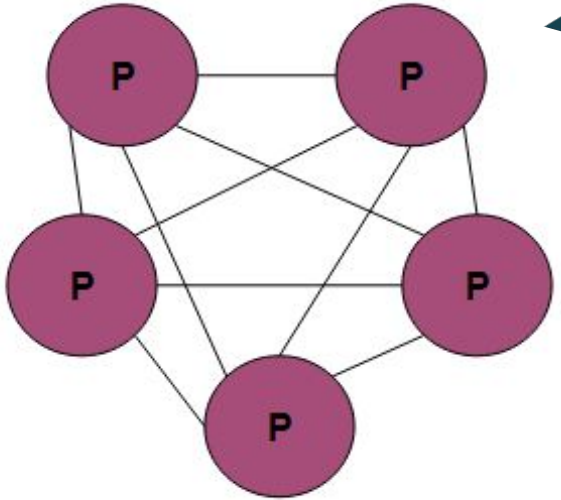
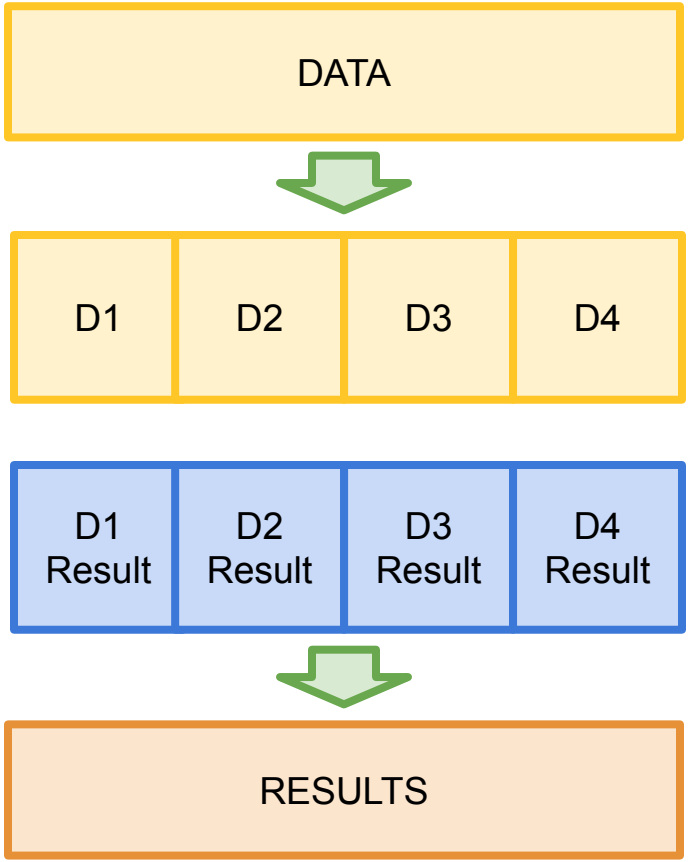


Leader Election!



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Distributed Systems

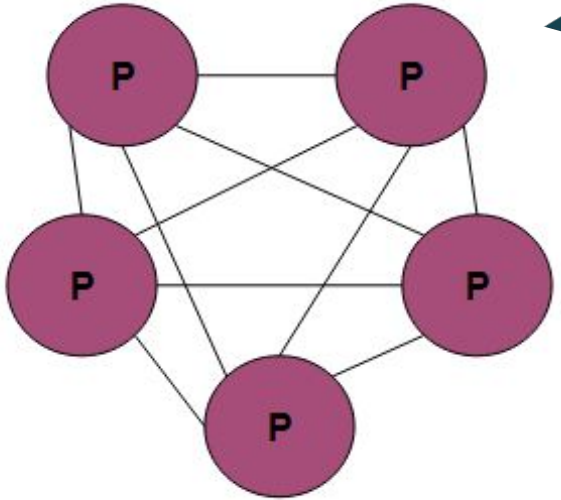
What about Peer to Peer?

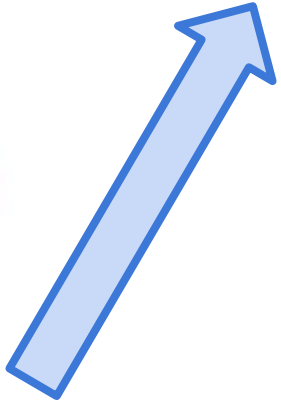
Check out the recording for the discussion!

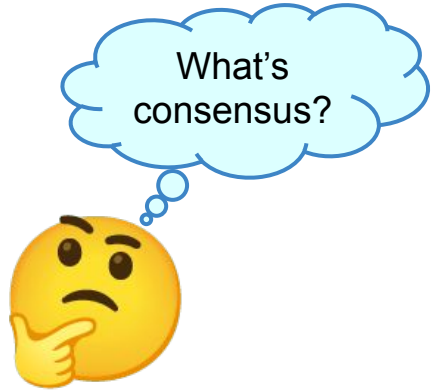
Type of ***CONSENSUS***

We want someone to wear the conductor hat!

A ***LEADER***







Leader Election!

"General agreement or trust amongst a group"

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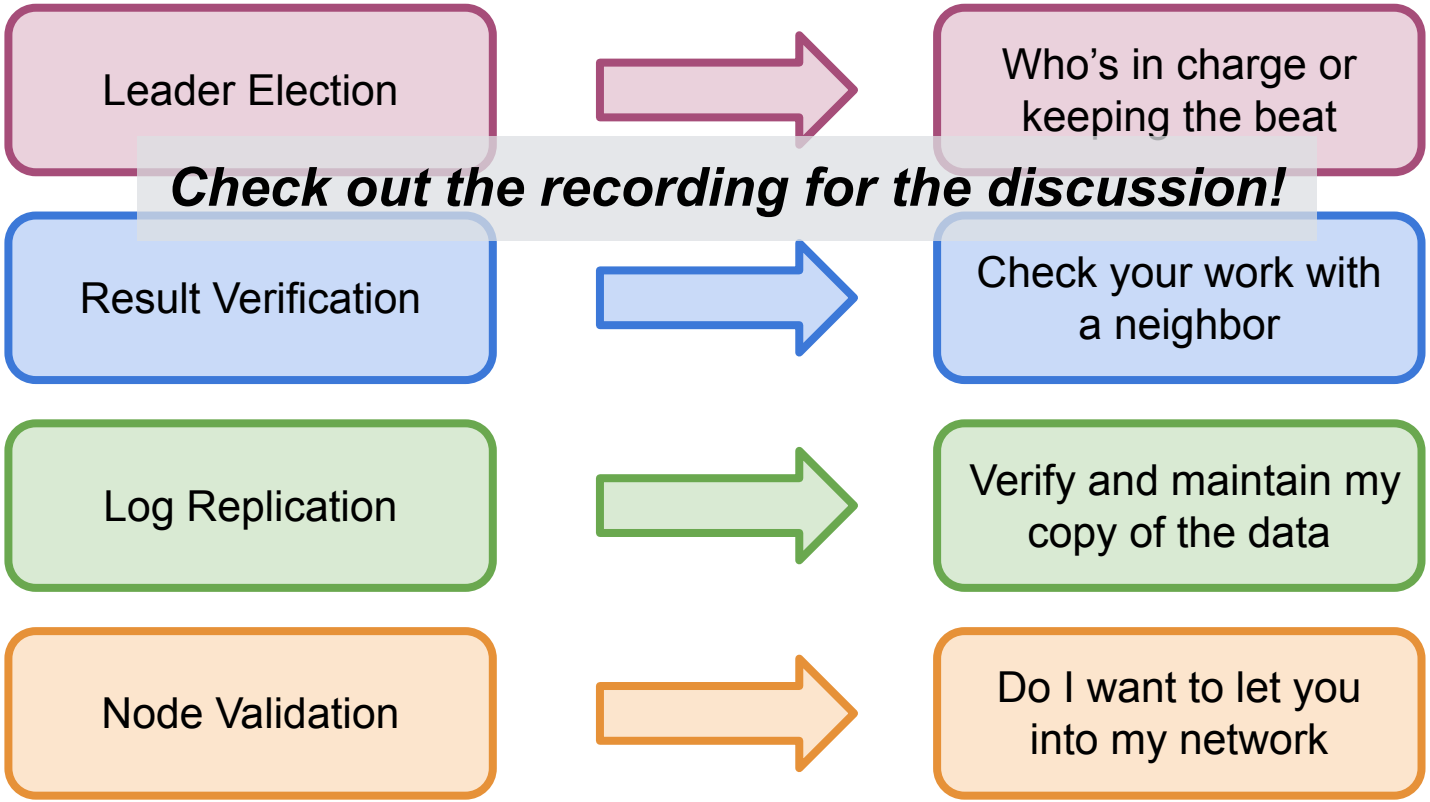
Consensus

"General agreement or trust amongst a group"

Types of Consensus?



Check out the recording for the discussion!

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Consensus

Match the Consensus Algorithm to its Description!

2-Phase Commit

Blockchain

Proof of Work

RAFT

Check out the recording for the solution and discussion!

If you solve this resource-intensive problem, you may make a request

Leader Election and Log Replication coordinate transactions

Transaction Coordinator approves and orchestrates transactions

Distributed Ledger used to determine if a transaction is valid

Check out the recording for the discussion!

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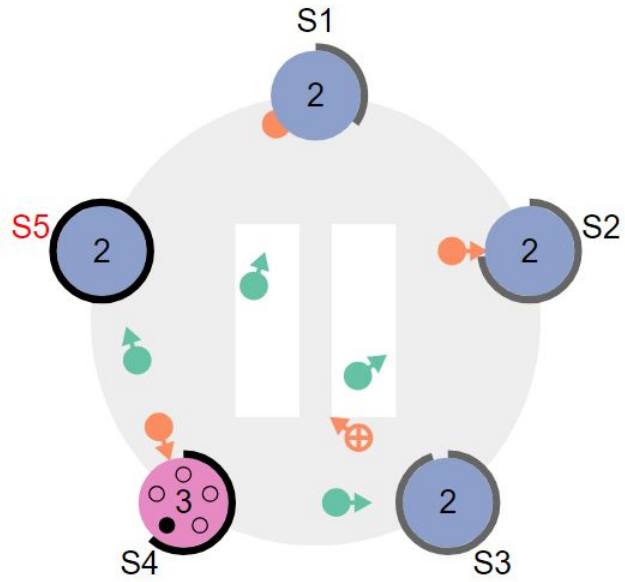
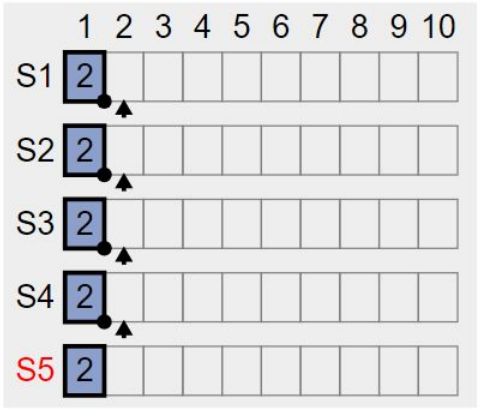
RAFT

RAFT is a great consensus example!

Leader Election

Log Replication





The Secret Lives of Data is a different visualization of Raft. It's more guided and less interactive, so it may be a gentler starting point.

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RAFT

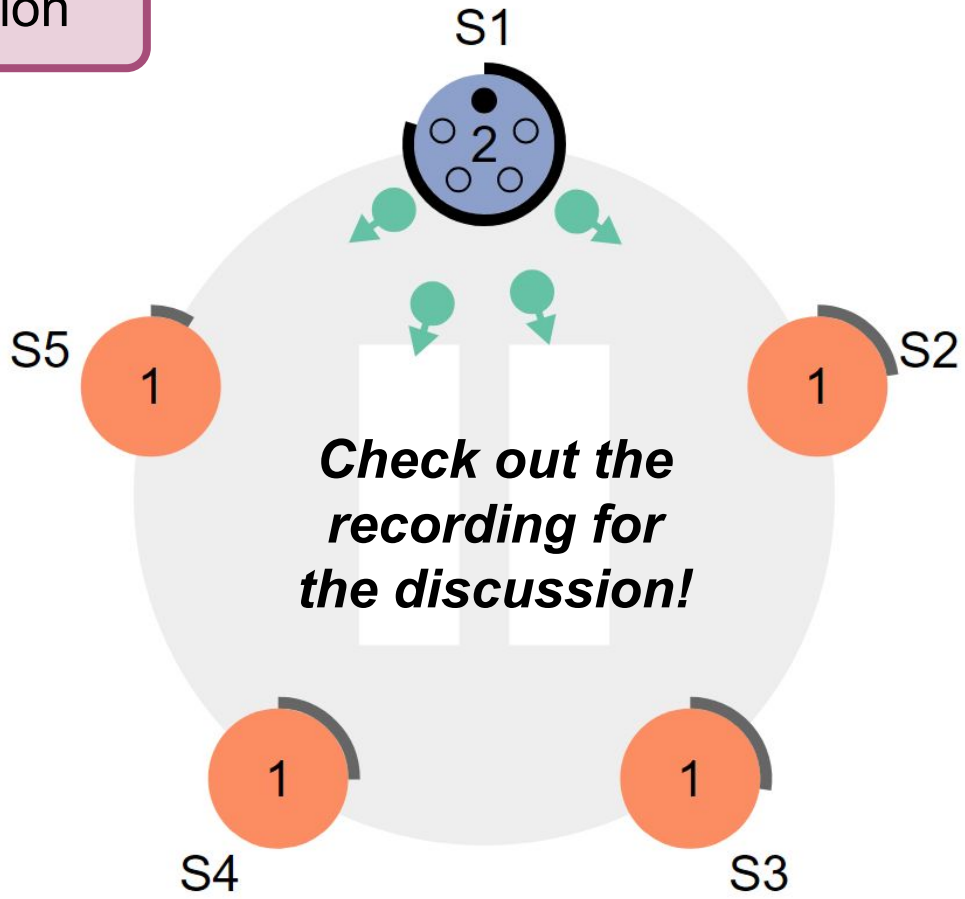
Leader Election

Nodes have 3 states:

Follower

Candidate

Leader



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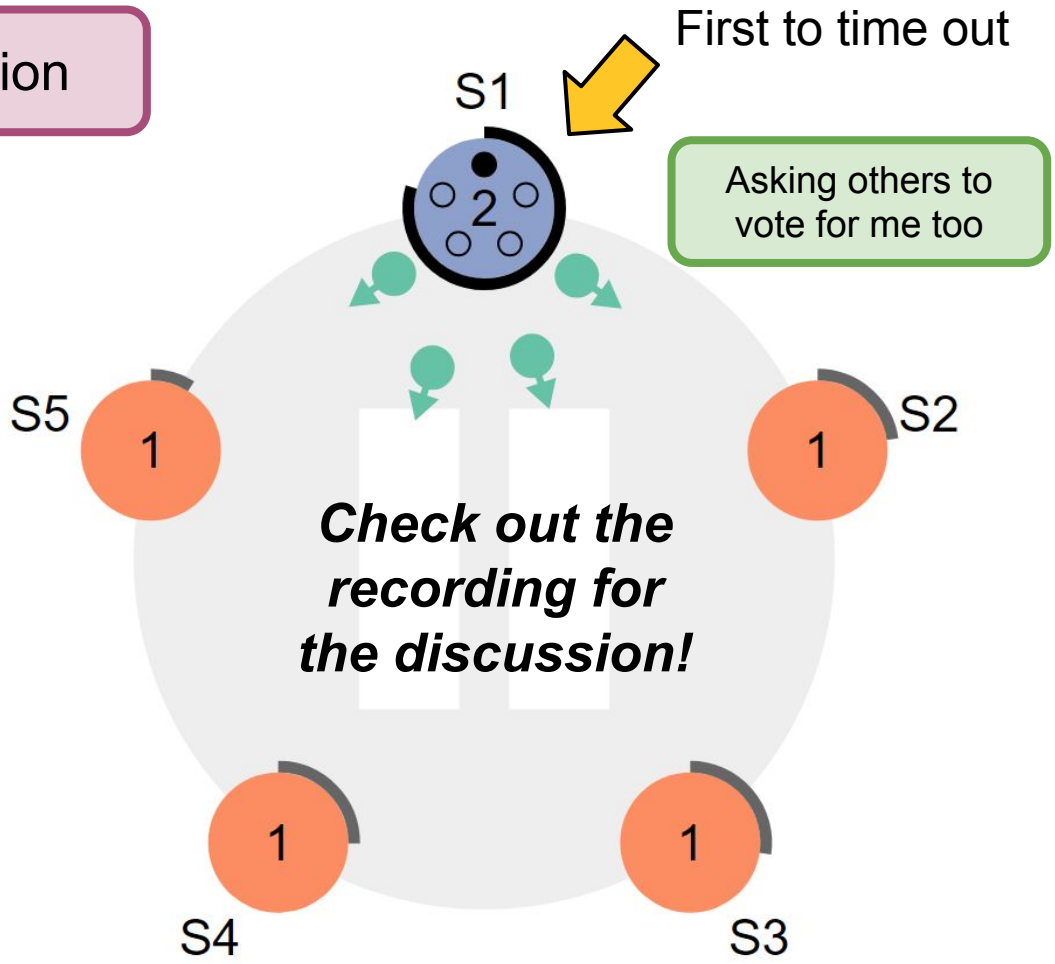
RAFT

Leader Election

This is the first election



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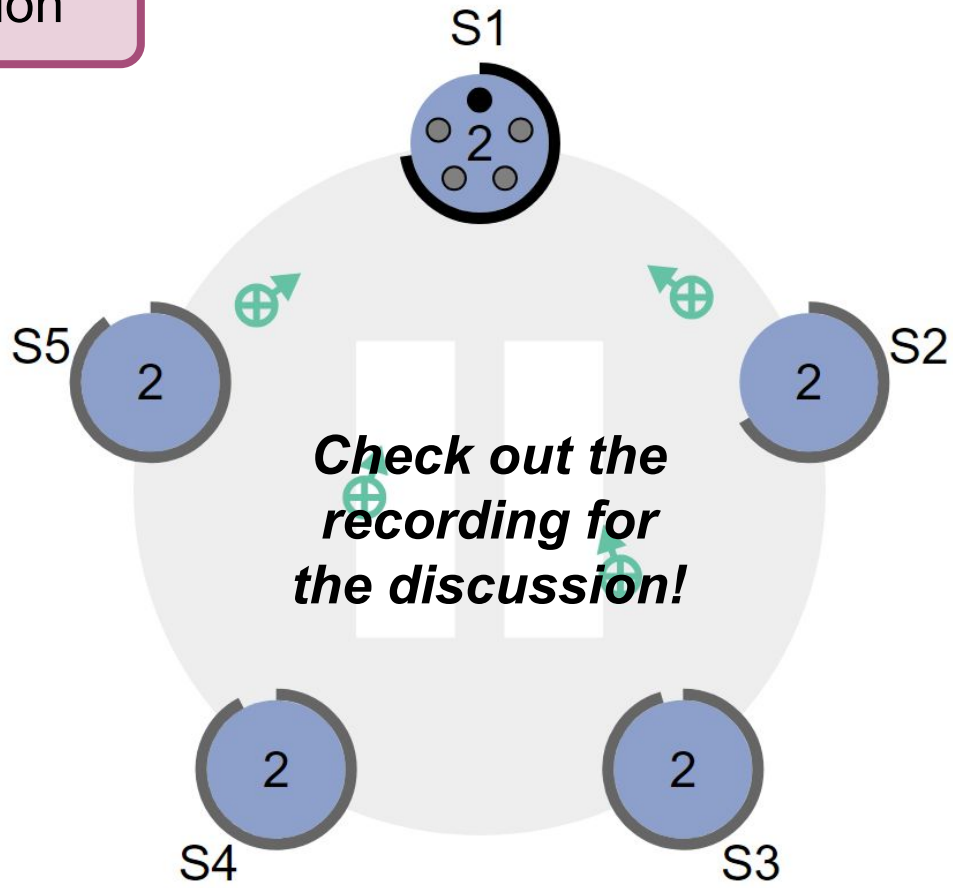
RAFT

Leader Election

Other nodes said sure whatever



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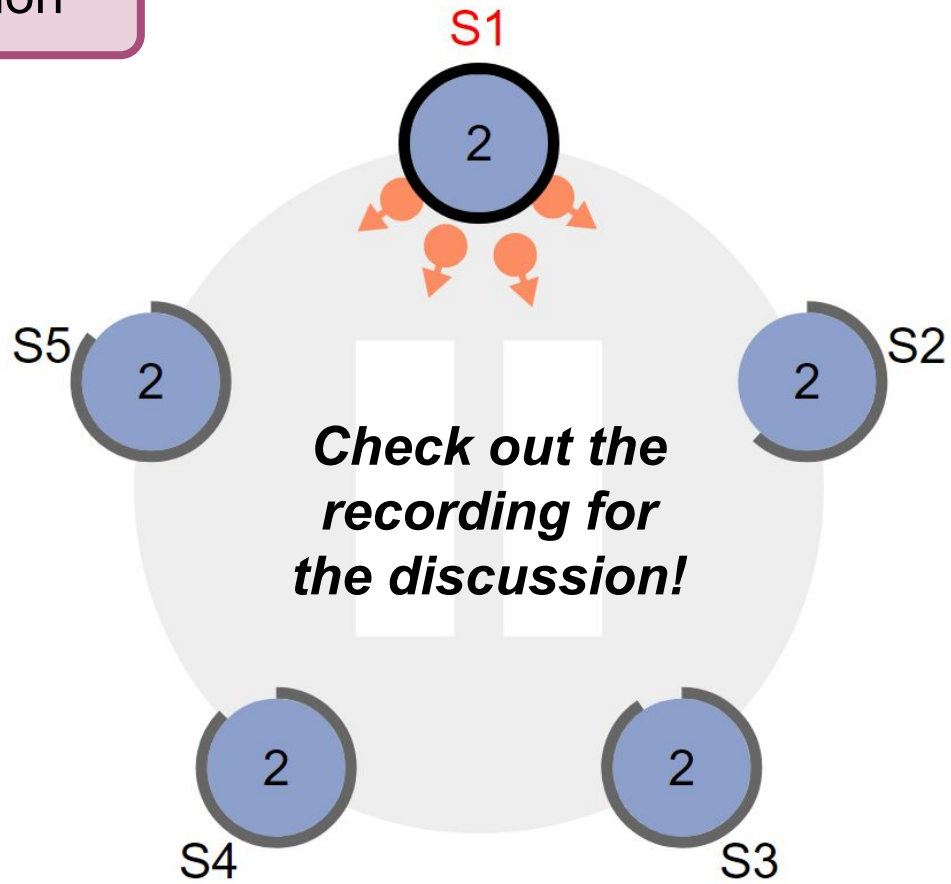
RAFT

Leader Election

Now confirmed as Leader



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RAFT

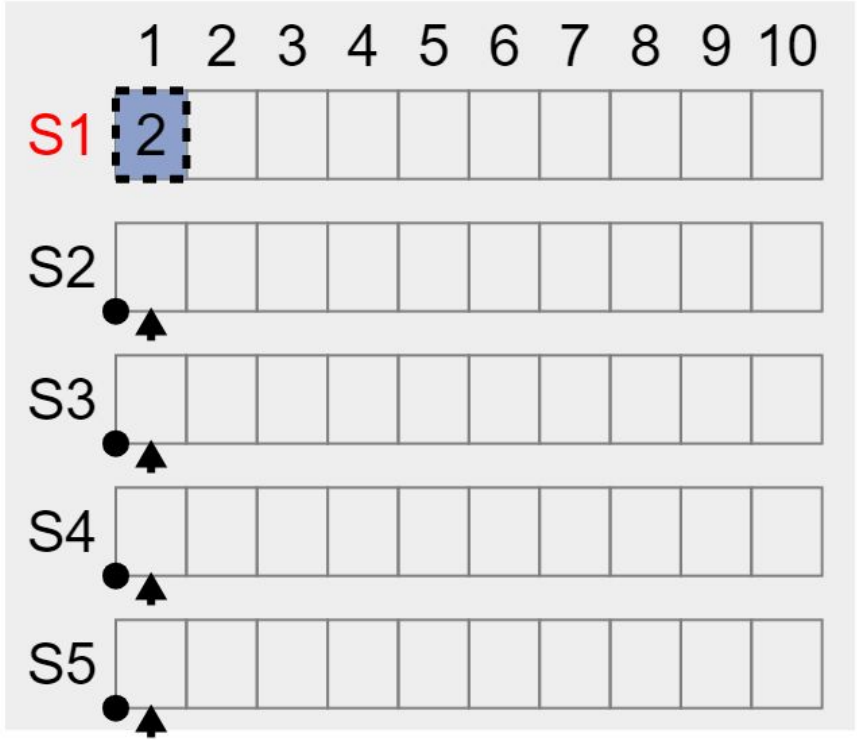
Log Replication

Check out the recording for the discussion!

Same Pattern!

Candidate

Added



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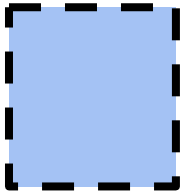
RAFT

Log Replication

Check out the recording for the discussion!

Same Pattern!

Candidate



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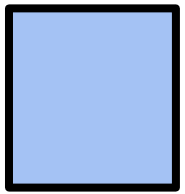

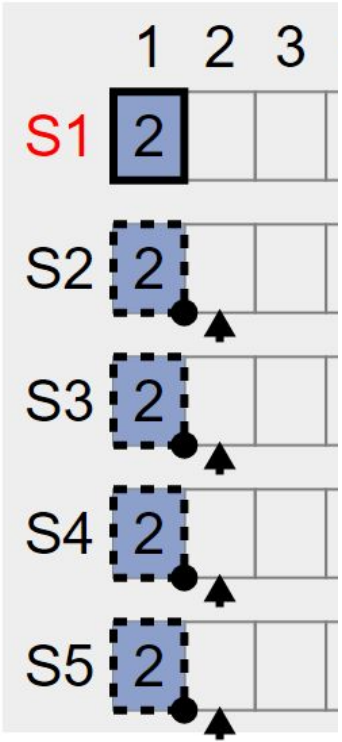

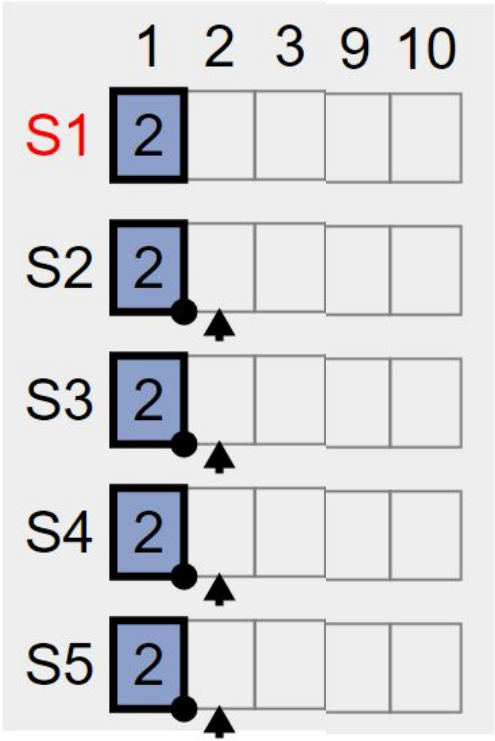

Check out the recording for a look at RAFT!

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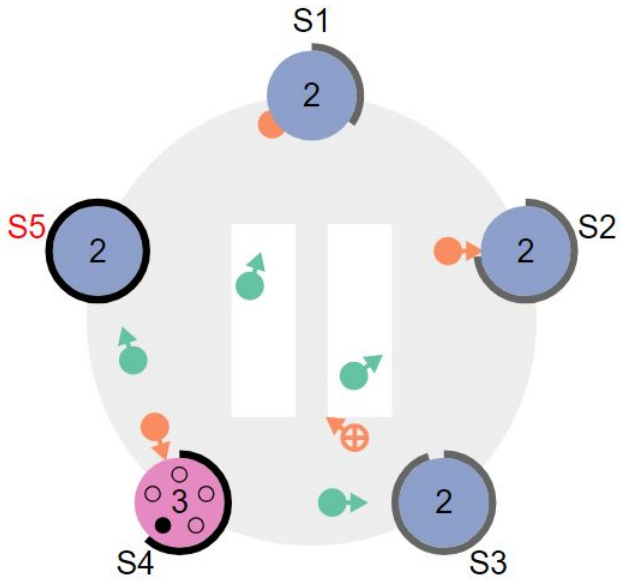
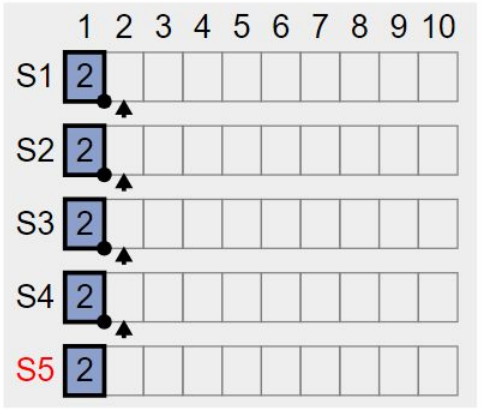
RAFT

RAFT





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Scratch Space

Upcoming Events

SI Sessions:

- Thursday, April 24th at 7:00 pm MST
- Sunday, April 27th at **6:00 pm** MST - **2 hour Exam Review Session**
- Tuesday, April 29th, at 10:00 am MST - **Q&A Session**

Review Sessions:

- Sunday, April 27th at **6:00 pm** MST - **2 hour Exam Review Session**
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Questions?

Survey:

https://asuasn.info/ASNSurvey

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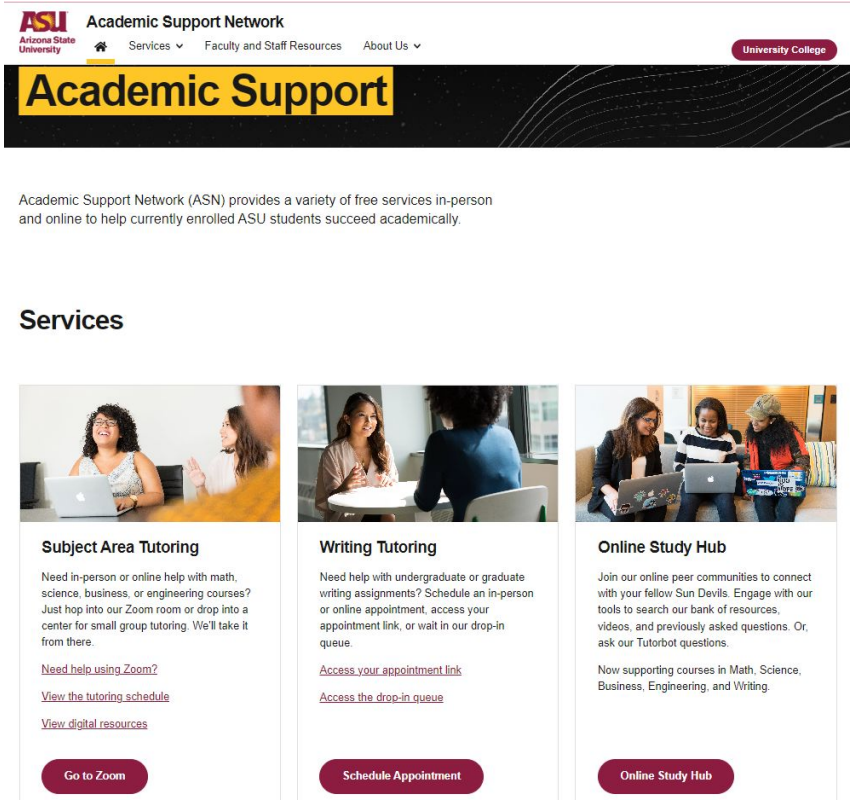
More Questions?

Check out our other resources!

tutoring.asu.edu

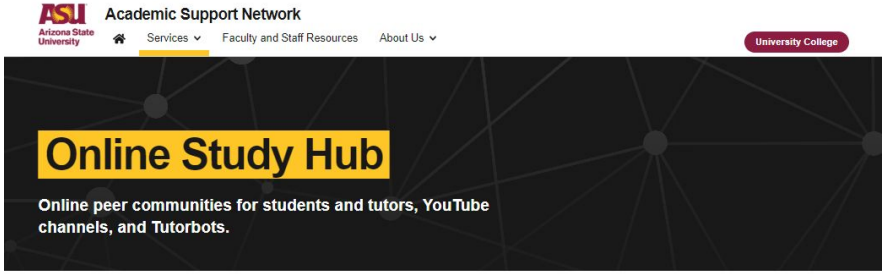


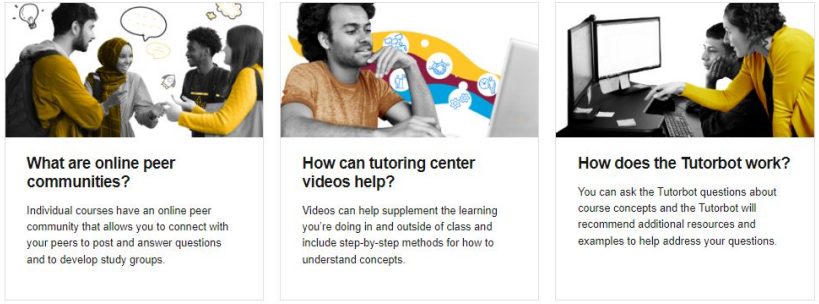
1. **Click on ‘Go to Zoom’ to log onto our Online Tutoring Center.**
2. **Click on ‘View the tutoring schedule’ to see when tutors are available for specific courses.**

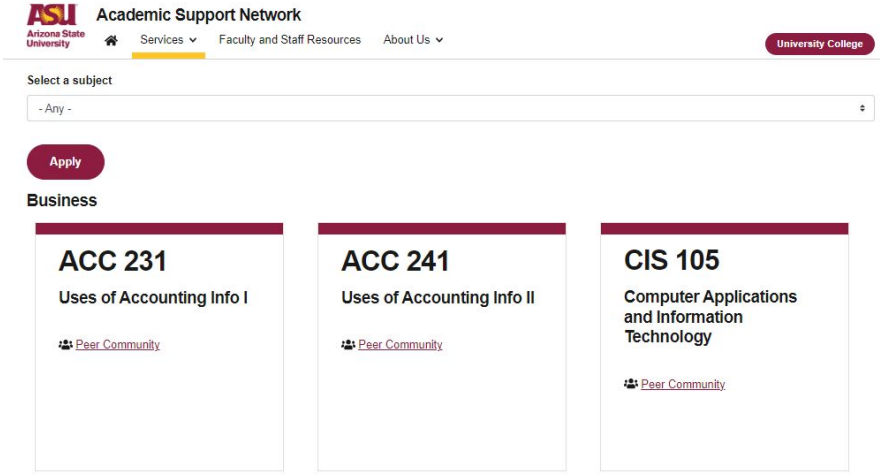
More Questions?

Check out our other resources!

tutoring.asu.edu/online-study-hub



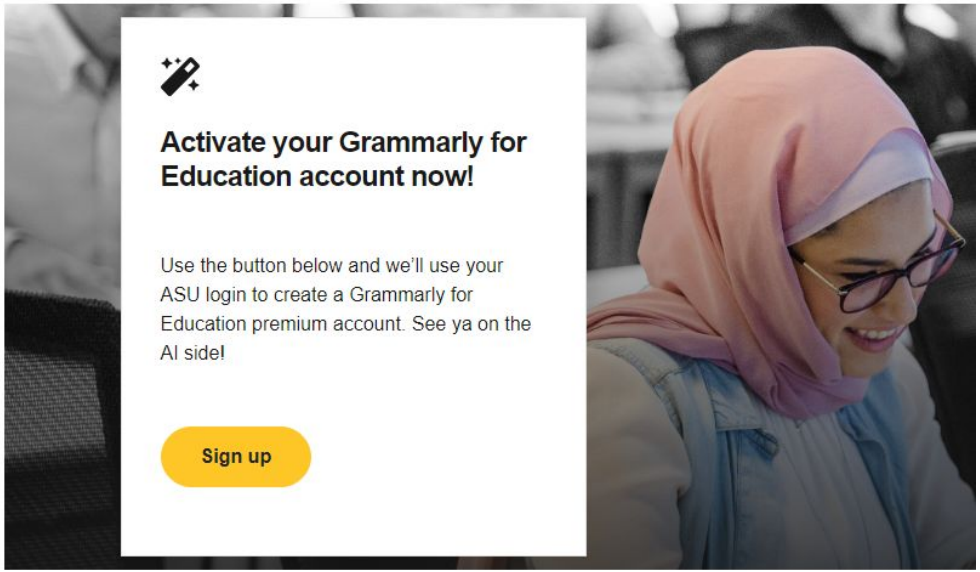




Don't forget to check out the Online Study Hub for additional resources!

Expanded Writing Support Available

Including Grammarly for Education, at no cost!



tutoring.asu.edu/expanded-writing-support

*Available slots for this pilot are limited

Additional Resources

- Course Repo
- Gradle Documentation
- GitHub SSH Help
- Linux Man Pages
- OSI Interactive
- MDN HTTP Docs
  - Requests
  - Responses
- JSON Guide
- org.json Docs
- javax.swing package API
- Swing Tutorials
- Dining Philosophers Interactive
- Austin G Walters Traffic Comparison
- RAFT