

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!

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Assignment 5 PSA

No starter code for this assignment

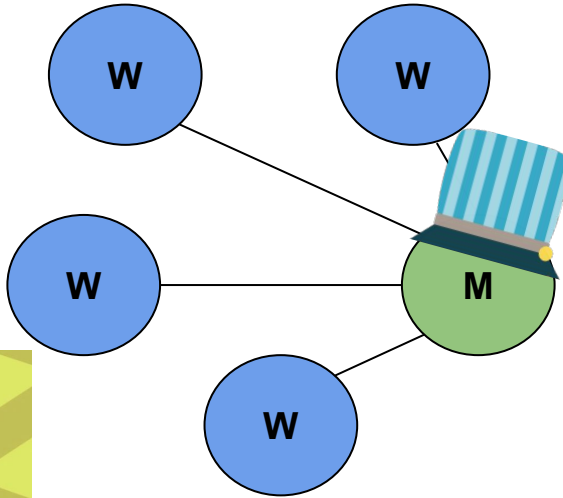
Use a previous
assignment as a
starting point

Use a repo
example as a
starting point

Build from scratch

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Communication



Workers
only do
their task
then report
back

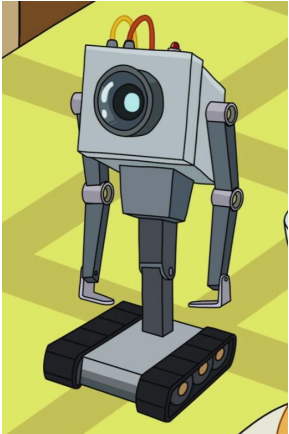
Think worker bees
or
specialized machinery



Main is in charge of everything

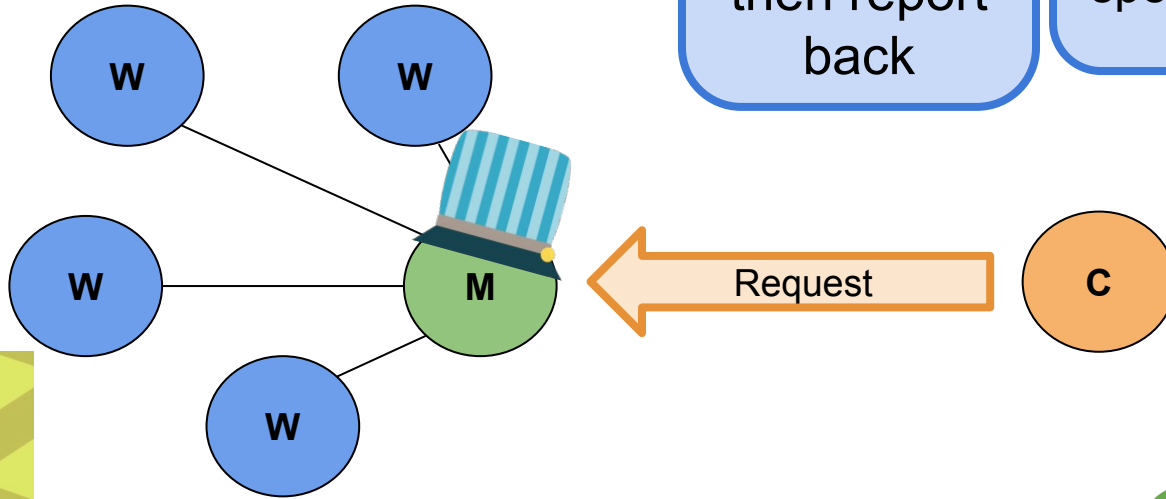
Similar to _____
in our previous
implementations

Check out the recording for the discussion!



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Communication



Workers
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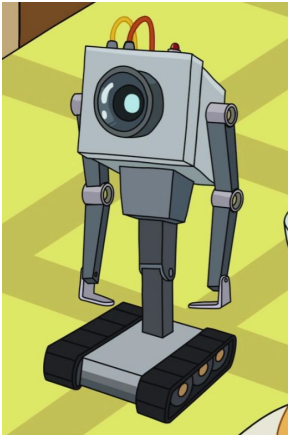
Think worker bees
or
specialized machinery

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!

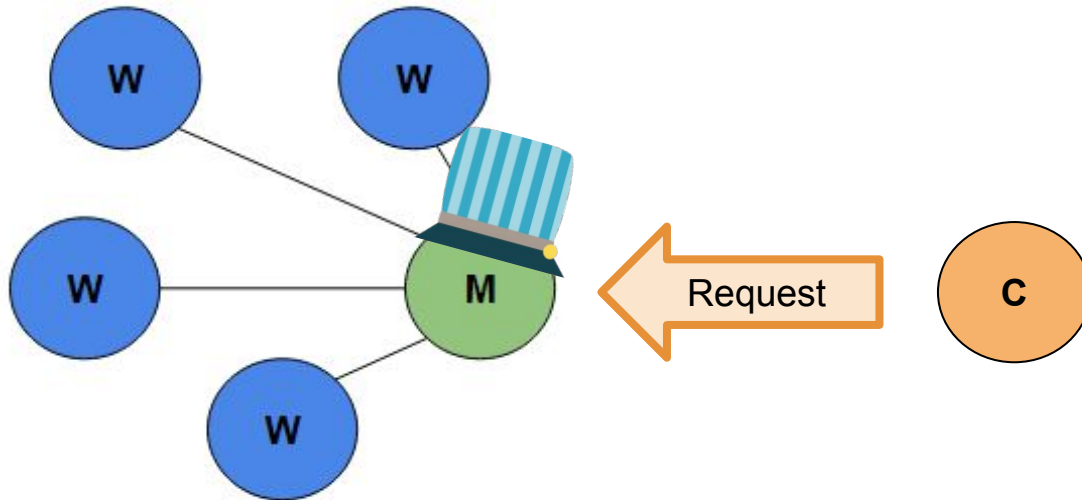


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Distributed Systems

Process Flow!

DATA



Check out the recording for the discussion!

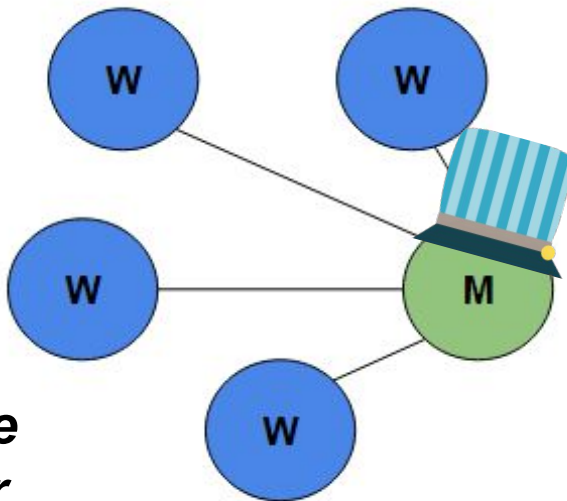
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Distributed Systems

Process Flow!

Workers
only do
their task
then report
back

*Check out the
recording for
the discussion!*



DATA



D1

D2

D3

D4

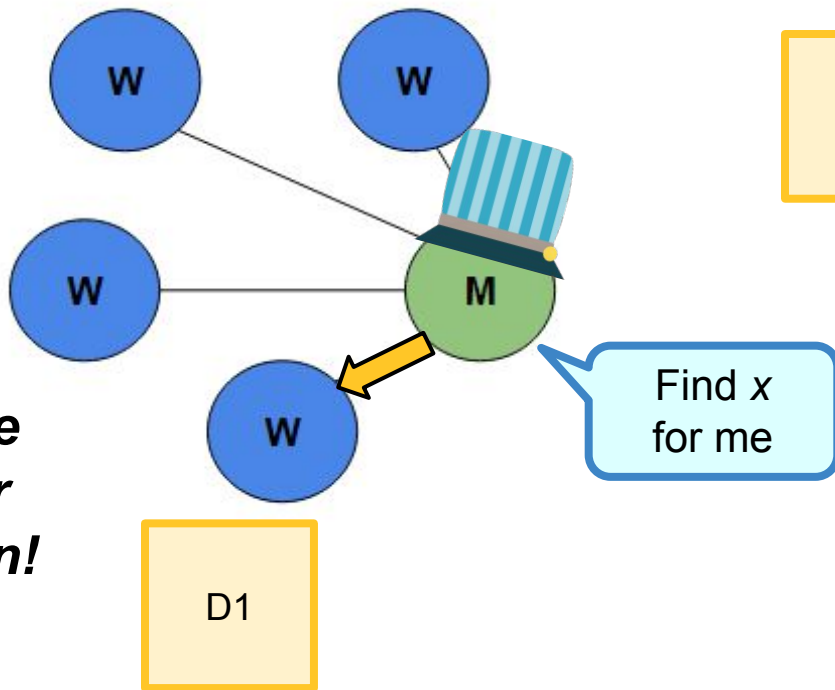
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Distributed Systems

Process Flow!

Workers
only do
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*Check out the
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DATA



D1

D2

D3

D4

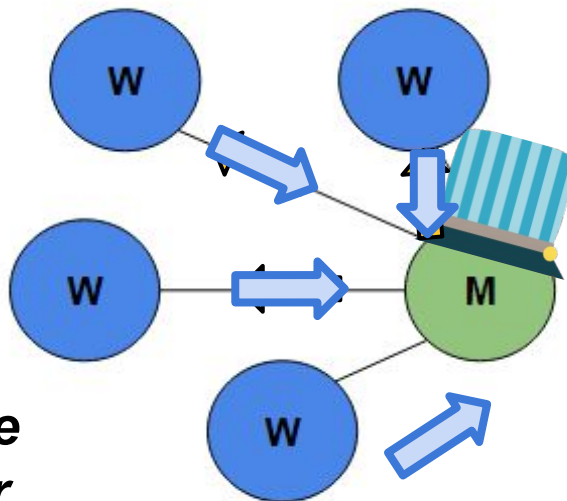
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Distributed Systems

Process Flow!

Workers
only do
their task
then report
back

*Check out the
recording for
the discussion!*



DATA



D1

D2

D3

D4

D1
Result

D2
Result

D3
Result

D4
Result

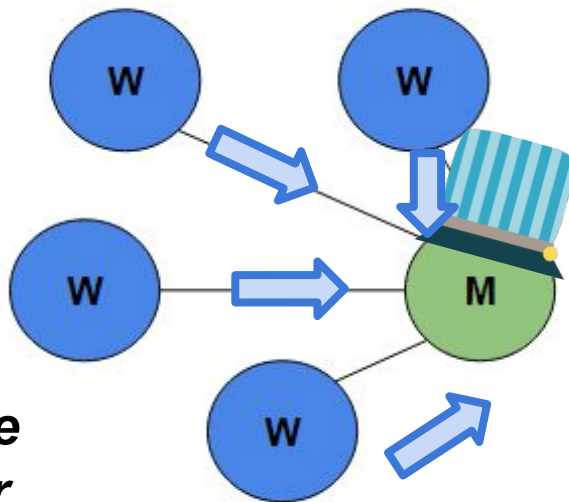
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Distributed Systems

Process Flow!

Workers
only do
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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



RESULTS

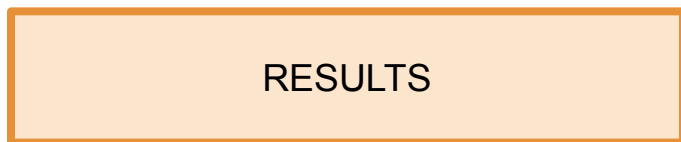
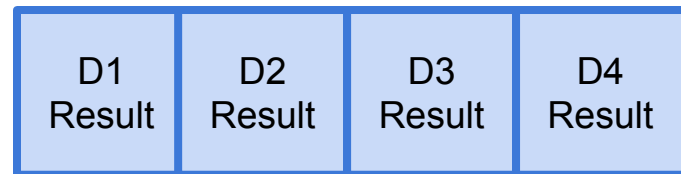
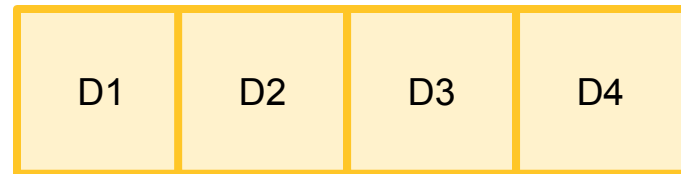
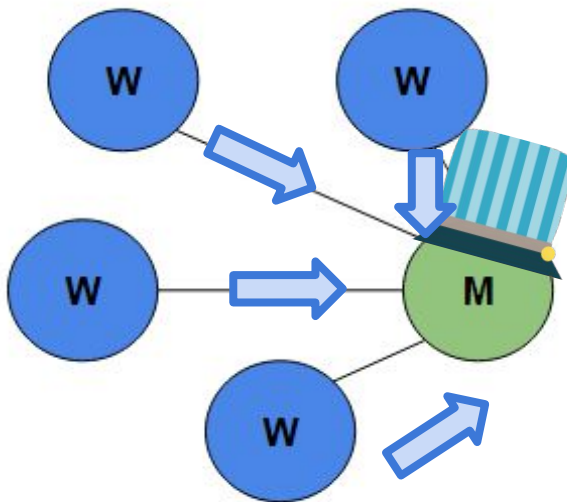
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Distributed Systems

Does this look familiar?

How is this different from a parallel processing model?

Check out the recording for the discussion!



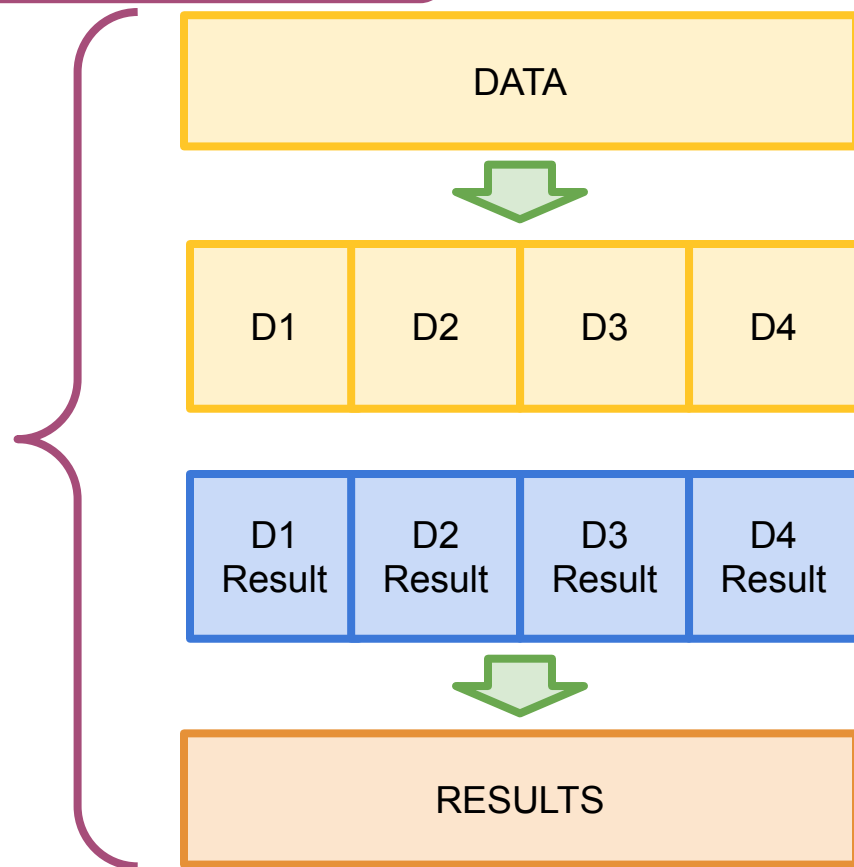
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Distributed Systems

What about Peer to Peer?

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

***Check out the
recording for
the discussion!***

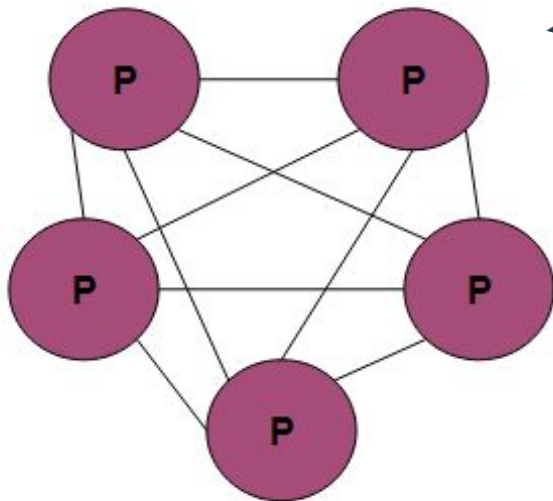


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Distributed Systems

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?

DATA



D1

D2

D3

D4

D1
Result

D2
Result

D3
Result

D4
Result



RESULTS

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Distributed Systems

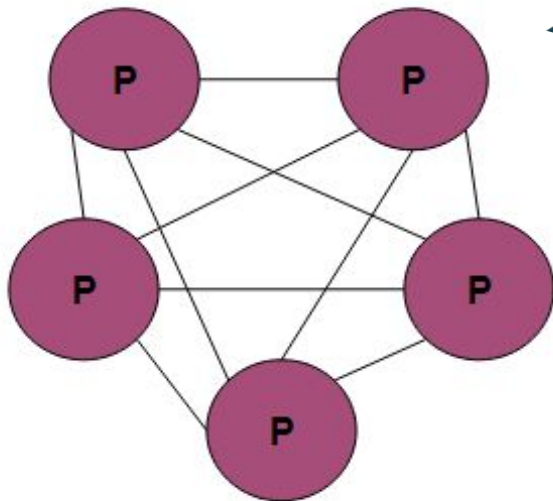
What about Peer to Peer?

*Check out the
recording for
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We want
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A **LEADER**



Leader Election!

DATA



D1

D2

D3

D4

D1
Result

D2
Result

D3
Result

D4
Result



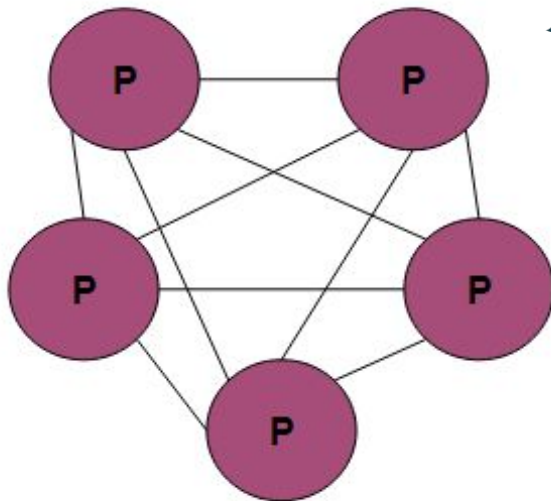
RESULTS

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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**

Leader Election!

Type of
CONSENSUS

What's
consensus?



“General agreement or
trust amongst a group”

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Consensus

“General agreement or trust amongst a group”

Types of Consensus?

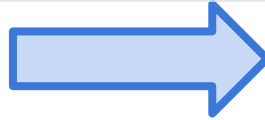
Leader Election



Who's in charge or keeping the beat

Check out the recording for the discussion!

Result Verification



Check your work with a neighbor

Log Replication



Verify and maintain my copy of the data

Node Validation



Do I want to let you into my network

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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!

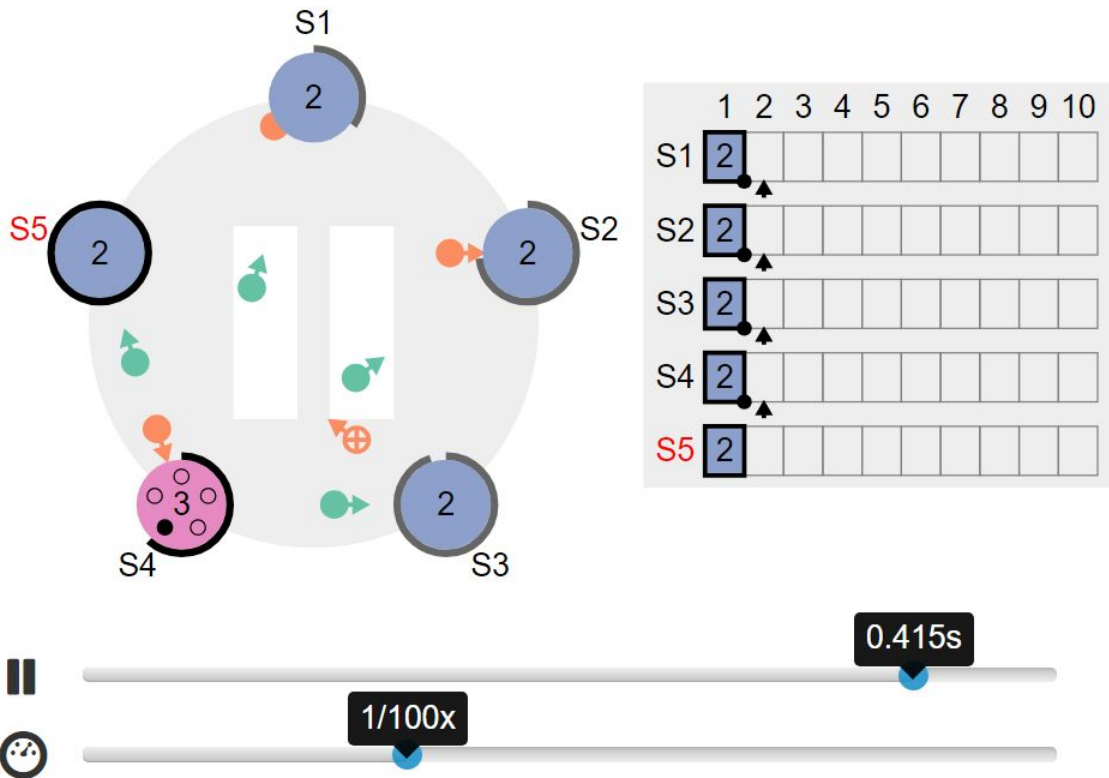
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RAFT

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

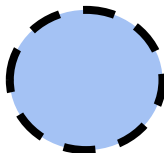
Leader Election

Nodes have 3 states:

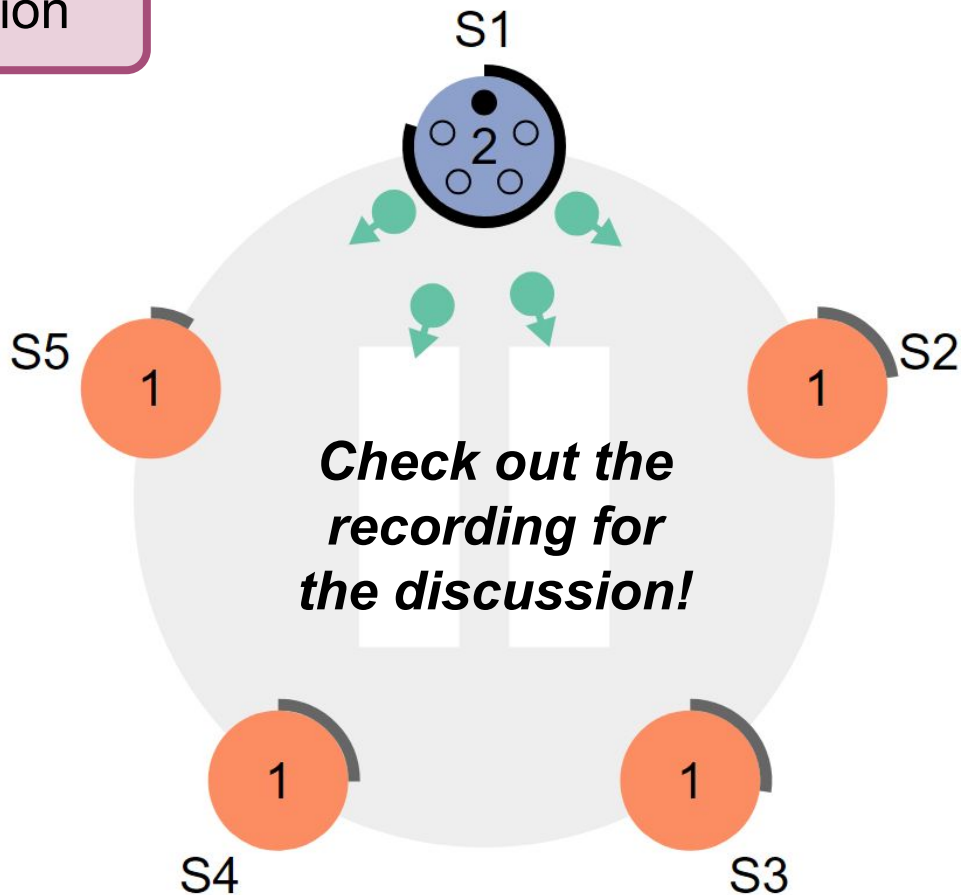
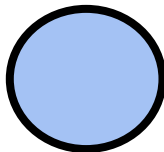
Follower



Candidate



Leader

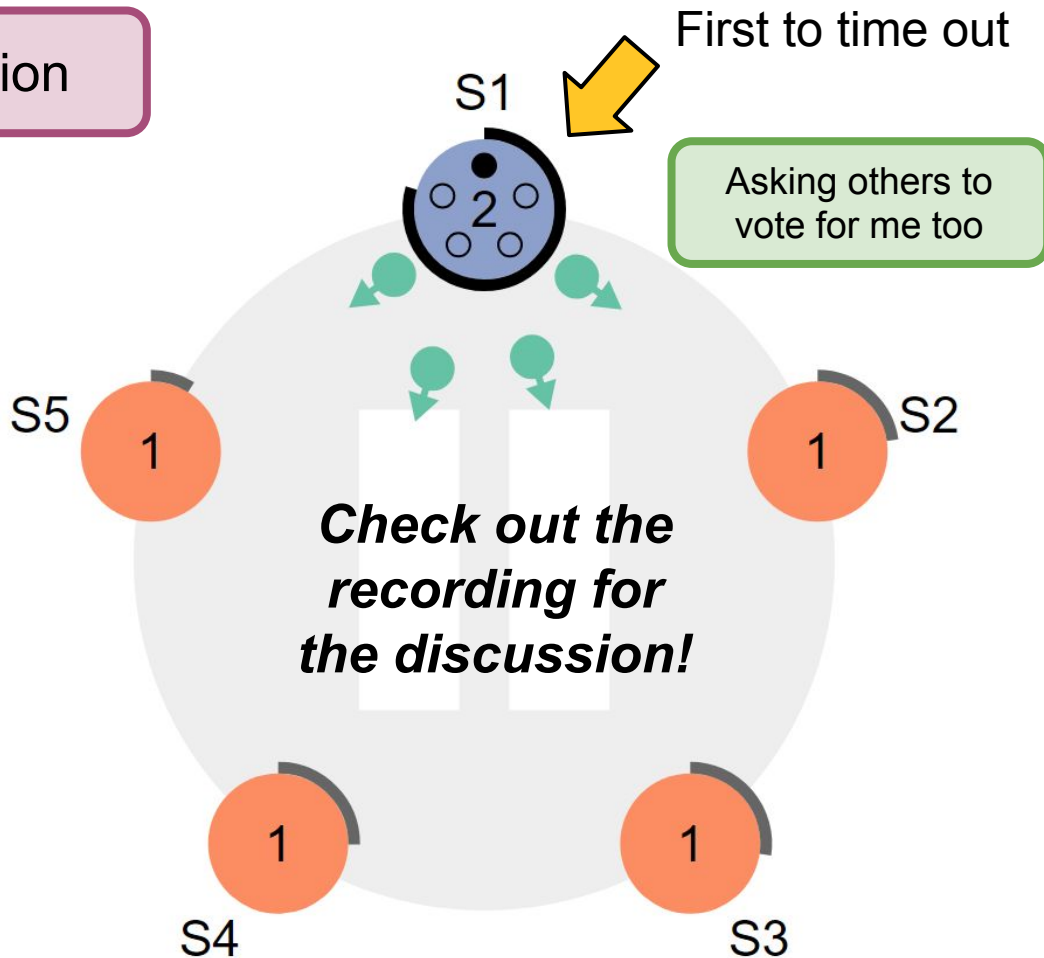


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RAFT

Leader Election

This is the first election

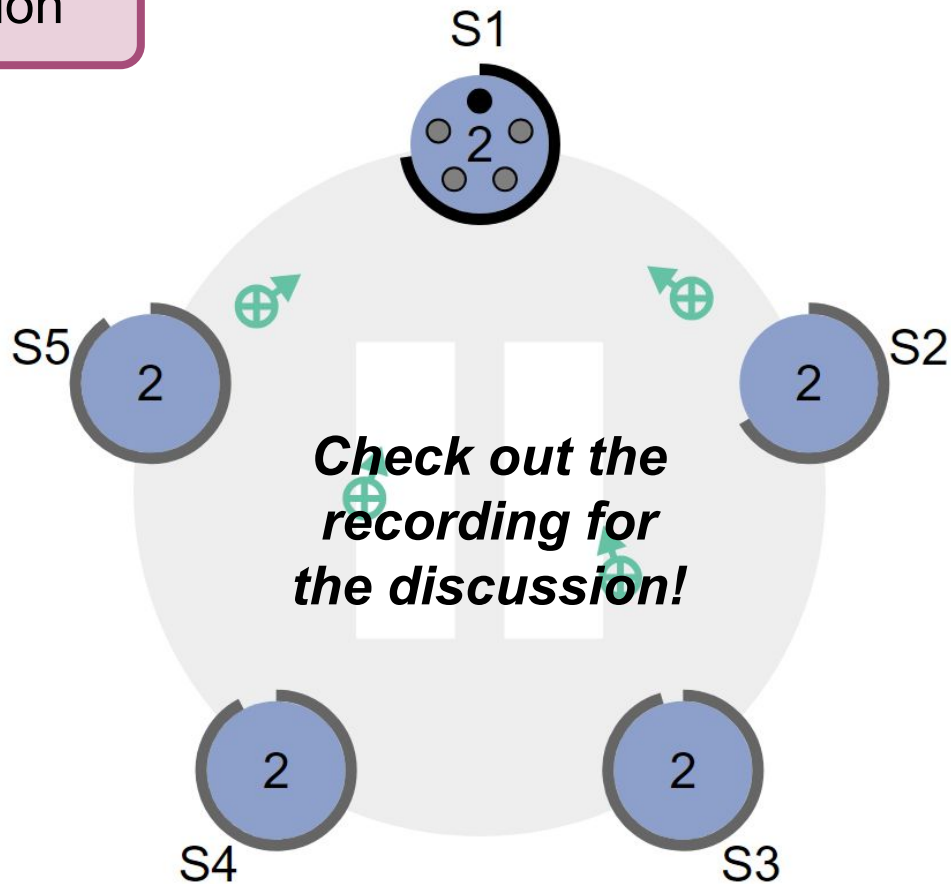


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RAFT

Leader Election

Other nodes said
sure whatever

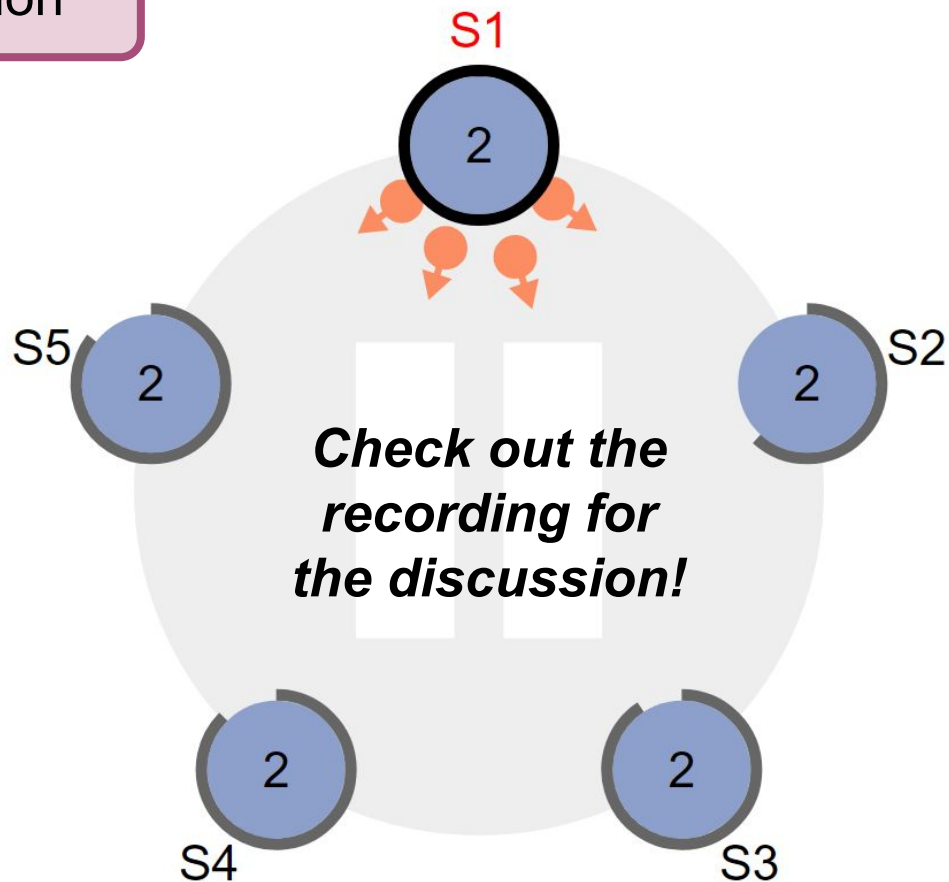


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RAFT

Leader Election


Now confirmed
as Leader



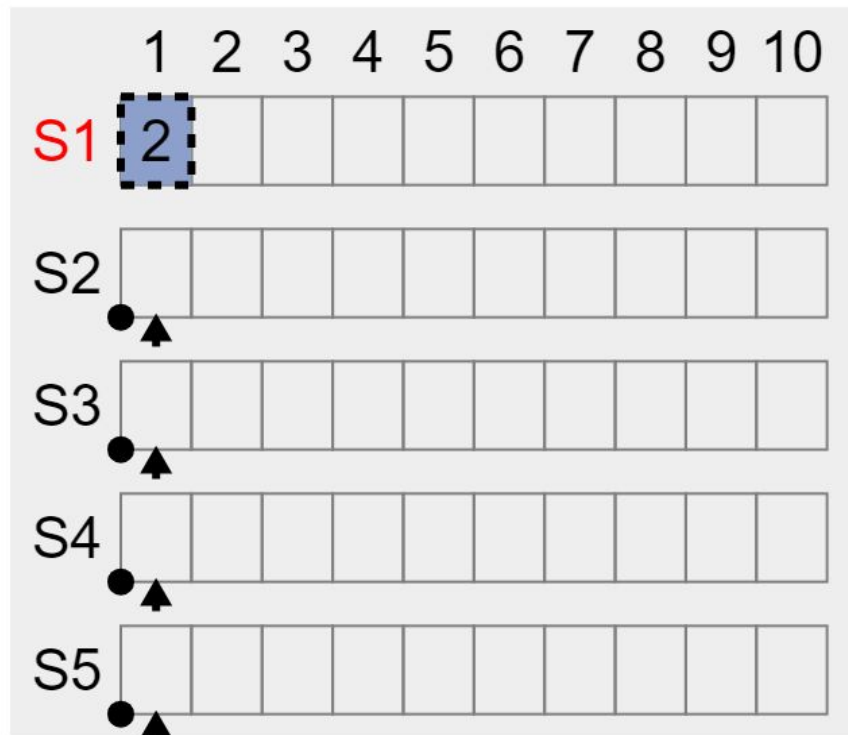
RAFT

Log Replication

Same Pattern!



Check out the recording for the discussion!



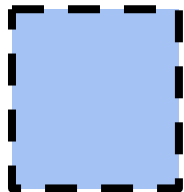
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RAFT

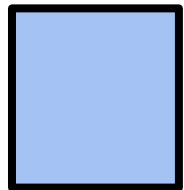
Log Replication

Same Pattern!

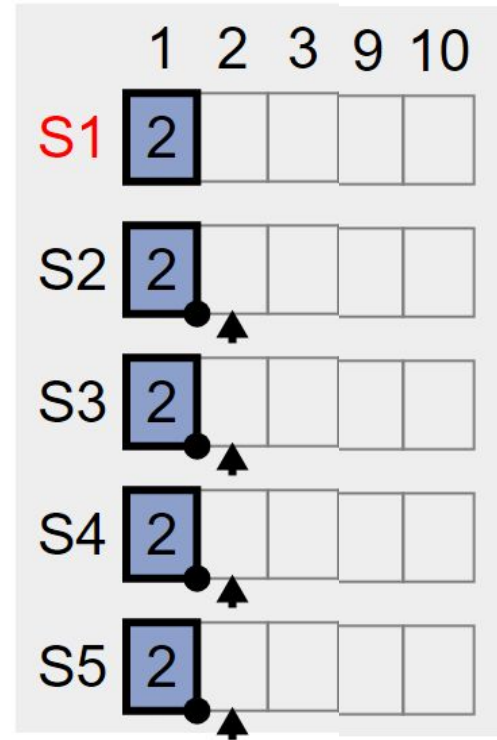
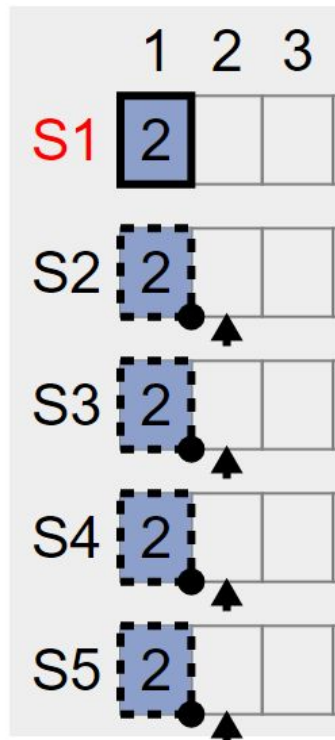
Candidate



Added



***Check out the
recording for
the discussion!***

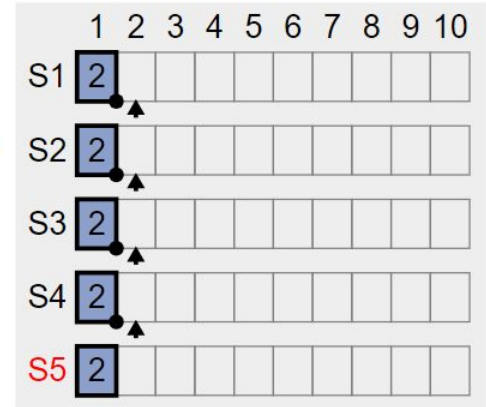
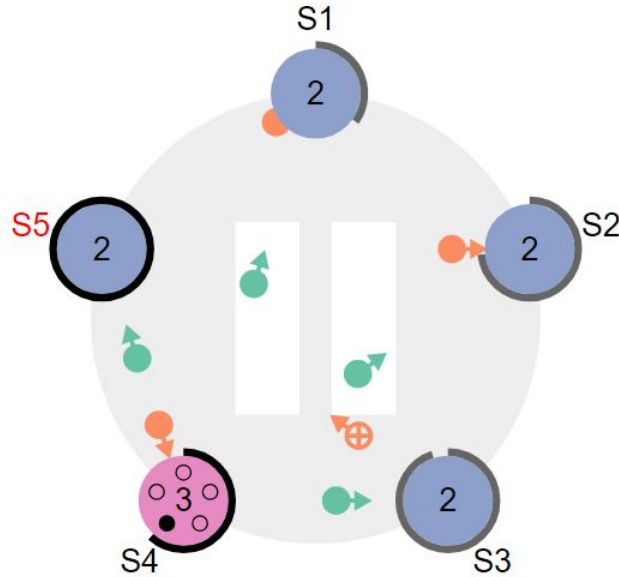


Check out the recording for a look at RAFT!

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RAFT

RAFT



1/100x

0.415s

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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**
- Tuesday, April 29th, at 10:00 am MST - **Q&A Session**

Questions?

Survey:

<https://asuasn.info/ASNSurvey>



More Questions?

Check out our other resources!

tutoring.asu.edu



Academic Support

Academic Support Network (ASN) provides a variety of free services in-person and online to help currently enrolled ASU students succeed academically.

Services



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Need in-person or online help with math, science, business, or engineering courses? Just hop into our Zoom room or drop into a center for small group tutoring. We'll take it from there.

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[Access your appointment link](#)

[Access the drop-in queue](#)

Schedule Appointment



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Now supporting courses in Math, Science, Business, Engineering, and Writing.

Online Study Hub

1-

Go to Zoom

2-

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[View digital resources](#)





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

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Online Study Hub

Online peer communities for students and tutors, YouTube channels, and Tutorbots.



What are online peer communities?

Individual courses have an online peer community that allows you to connect with your peers to post and answer questions and to develop study groups.



How can tutoring center videos help?

Videos can help supplement the learning you're doing in and outside of class and include step-by-step methods for how to understand concepts.



How does the Tutorbot work?

You can ask the Tutorbot questions about course concepts and the Tutorbot will recommend additional resources and examples to help address your questions.

Select a subject

- Any -

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- Any -

Apply

Business

ACC 231

Uses of Accounting Info I

 [Peer Community](#)

ACC 241

Uses of Accounting Info II

 [Peer Community](#)

CIS 105

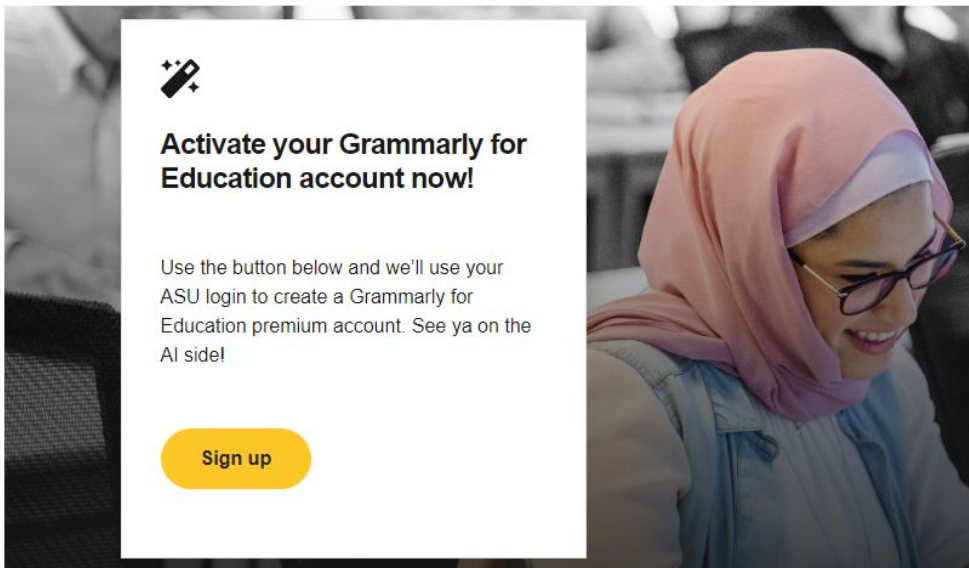
Computer Applications and Information Technology


 [Peer Community](#)

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

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[Sign up](#)



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](#)
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- [Swing Tutorials](#)
- [Dining Philosophers Interactive](#)
- [Austin G Walters Traffic Comparison](#)
- [RAFT](#)