SER 321 B Session

SI Session

Sunday, April 14th 2024

7:00 pm - 8:00 pm MST

Agenda

- Parallel vs. Distributed Systems
- When to Distribute
- Distributed Structures
- Consensus

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.

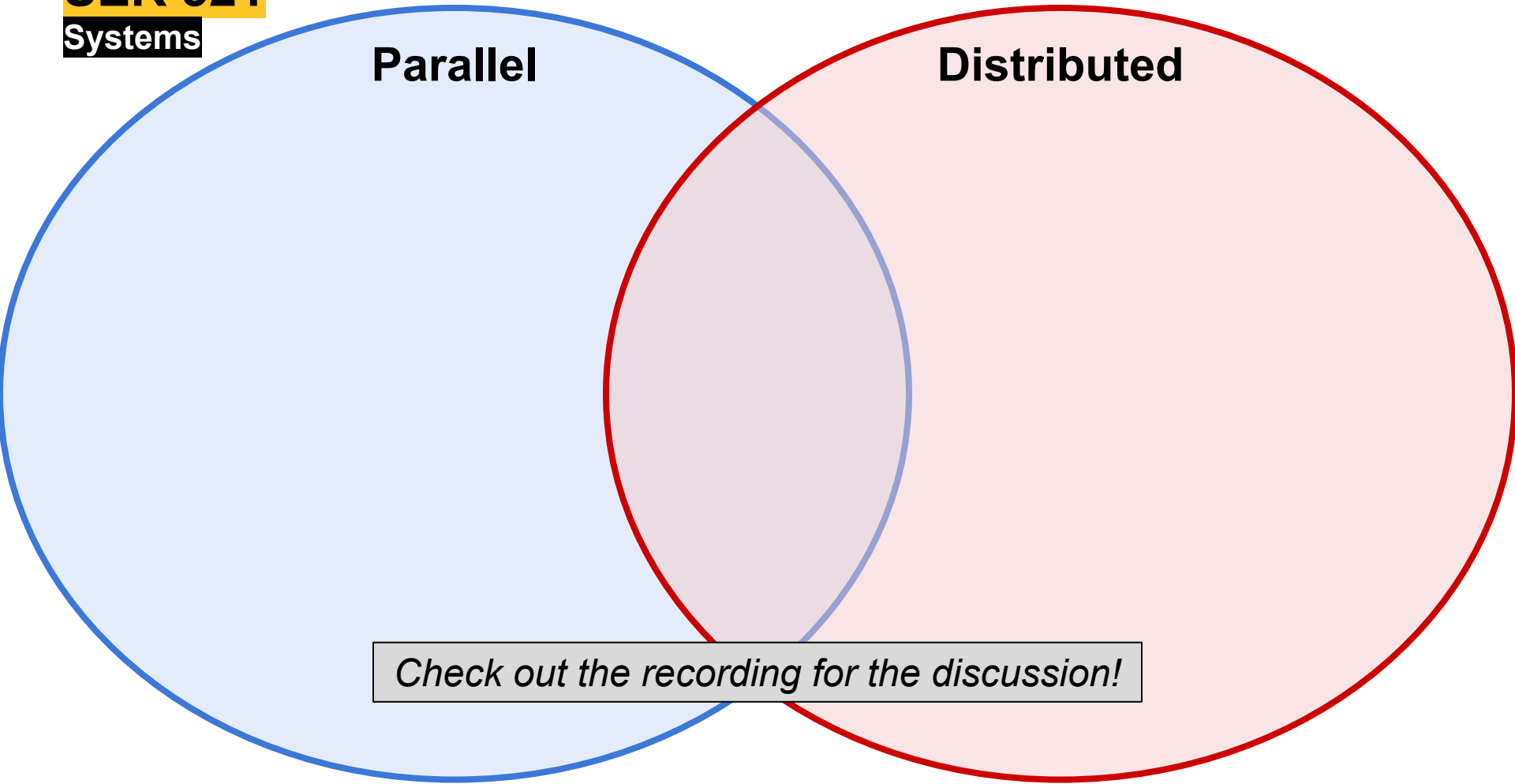
Interact with us:

Zoom Features

Zoom Chat

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

SER 321
Systems



Check out the recording for the discussion!

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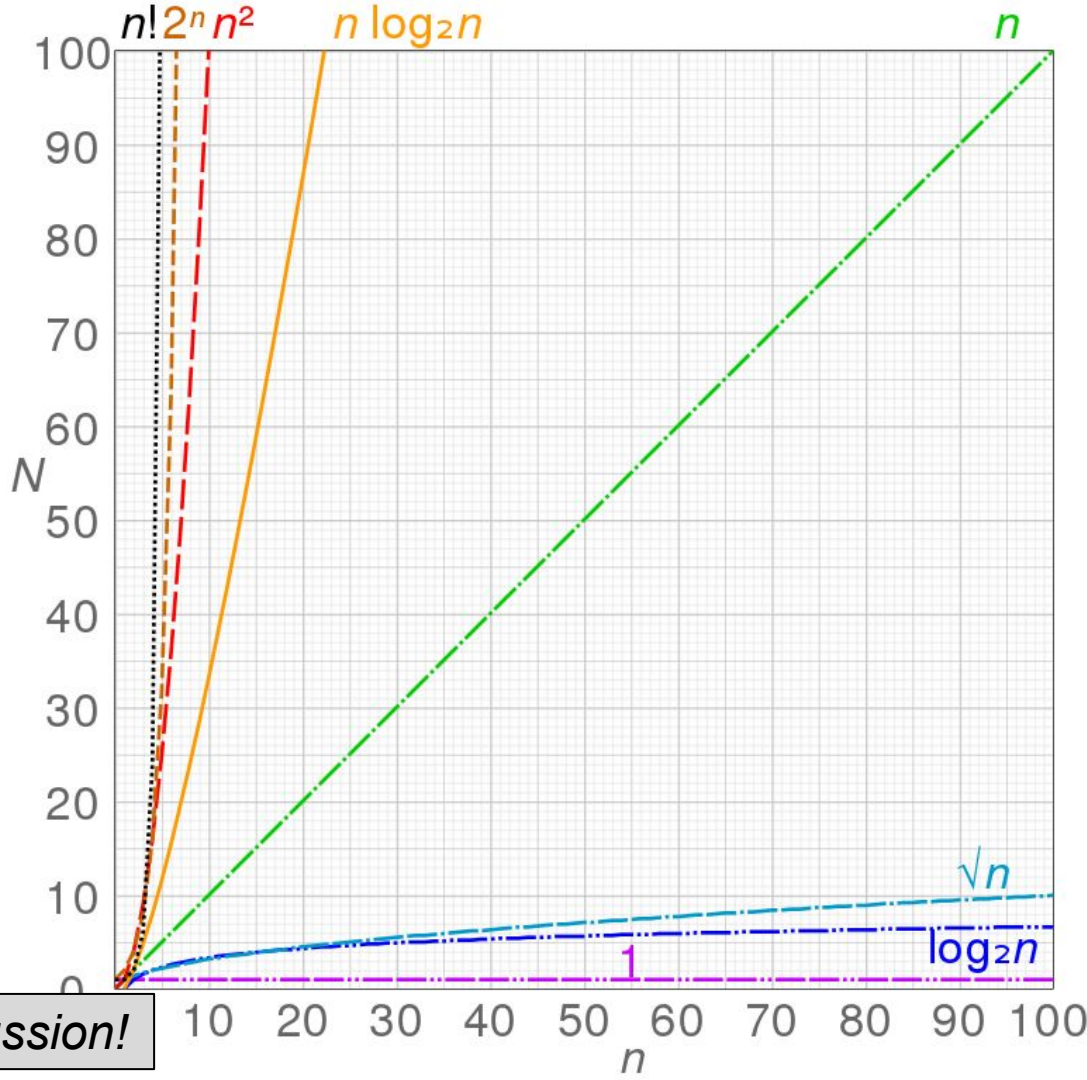
Distributed Systems

When should we *consider* distributing?



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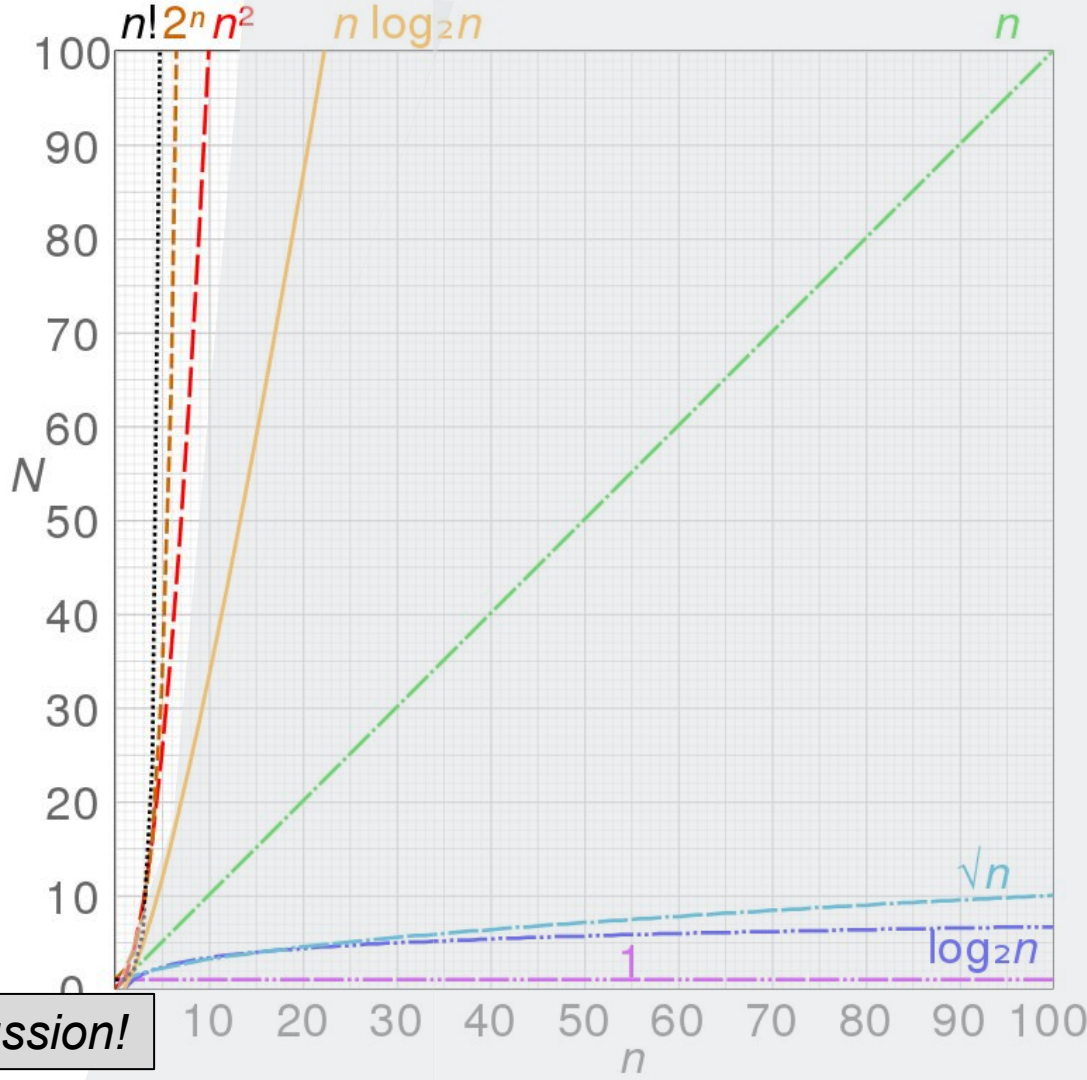
Distributed Systems

When should we *consider* distributing?

Super Duper Extra Extra Large Orders of Magnitude!

Check out the recording for the discussion!



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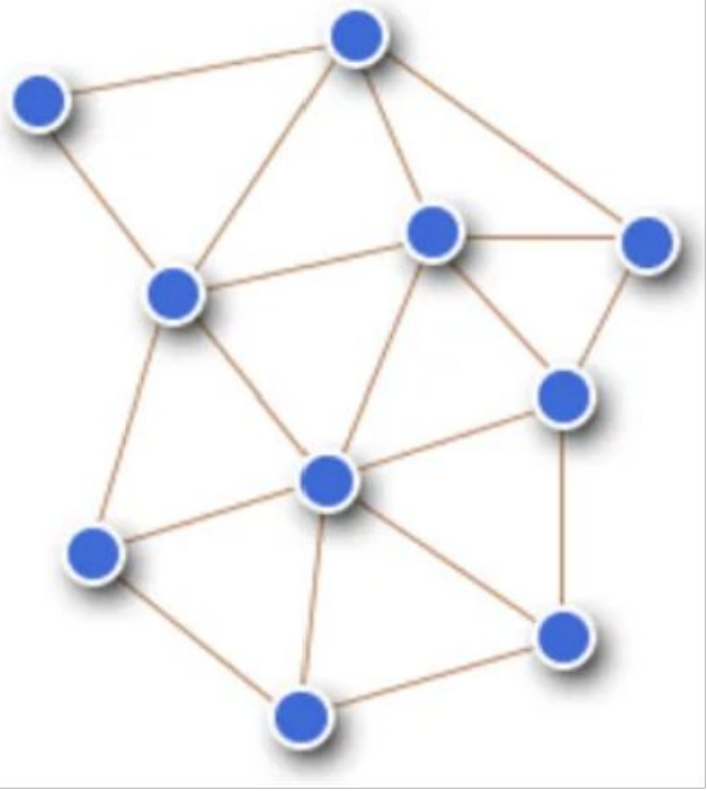
Distributed Systems

Remember that we are operating in ***reality***



- Nodes *will* fail
- Web of nodes *will constantly* change
- Network is not *always* reliable
- Latency is *always present*
- The path traversed *changes*
- Some resources *must be shared*
- *You* need to prevent the pitfalls!
  - No deadlocks
  - No starvation
  - No error states

Check out the recording for the discussion!

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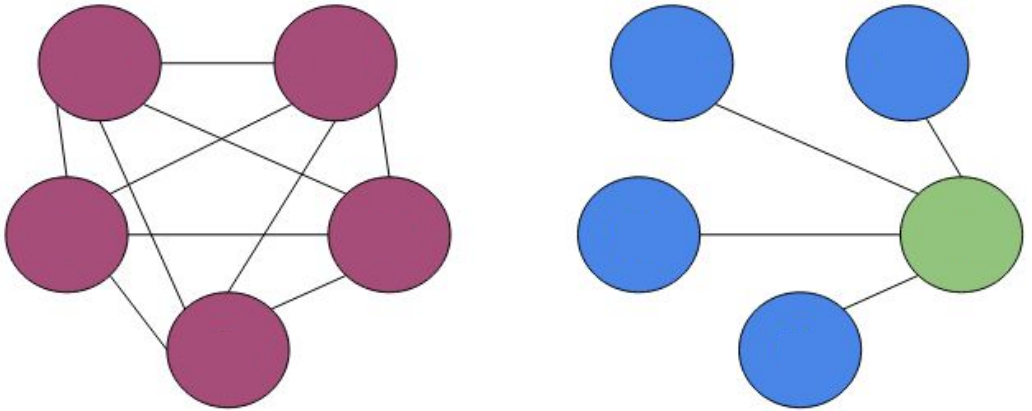
Distributed Systems

Main and Worker

Peer to Peer

Which is which?



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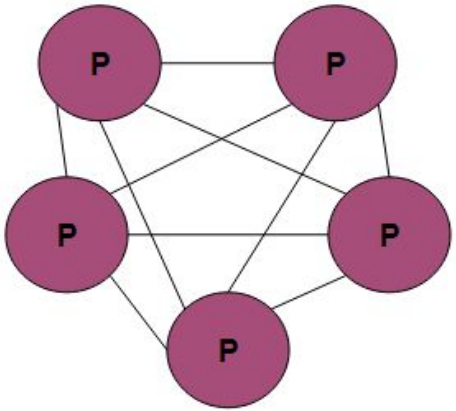
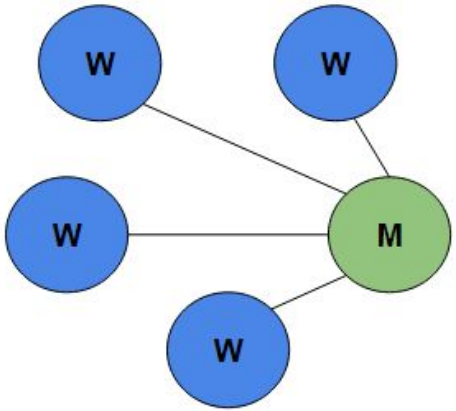
Main and Worker

Peer to Peer

Which is which?

Peer to Peer





Main and Worker

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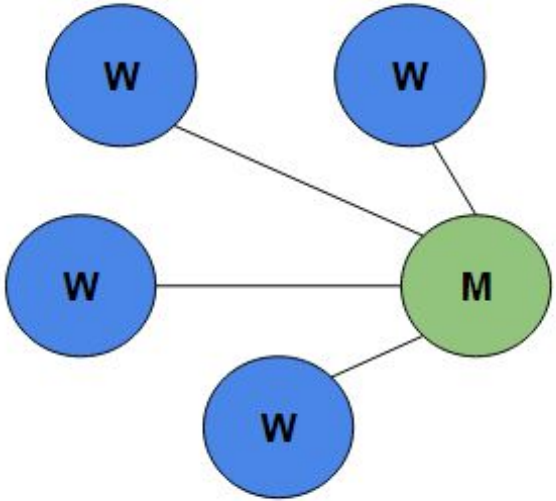
Pros and Cons

Check out the recording for the discussion!



Pros:

- Straightforward setup
- Logic is centralized
- Communication is linear

Cons:

- Single point of failure

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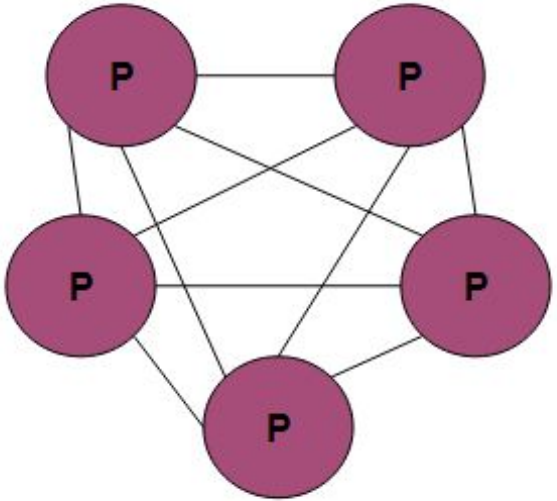
Pros and Cons

Check out the recording for the discussion!



Pros:

- Peers can join or leave as needed
- Robust - no single point of failure

Cons:

- Communication is *complex*
- Setup is not as straightforward
- Client connections are handled *differently*

We will cover this in a moment!

Process Flow!

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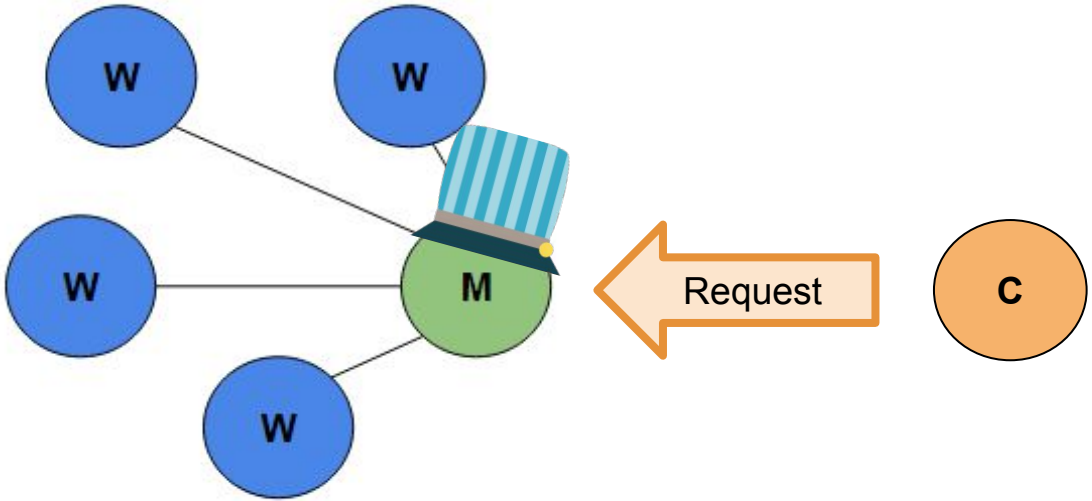
Distributed Systems

Check out the recording for the discussion!

DATA

Workers only do their task then report back



Main is like our server

Process Flow!

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Distributed Systems

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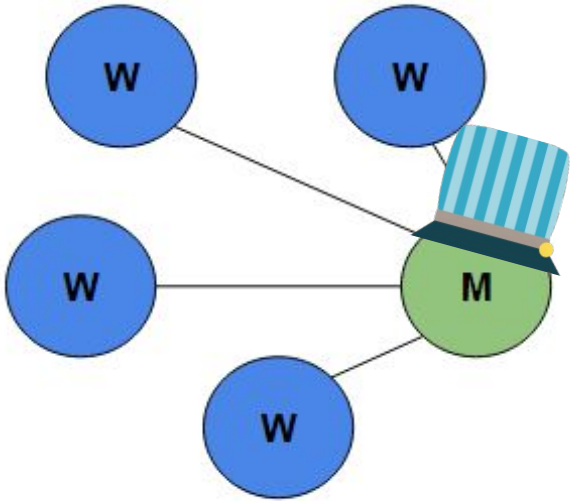
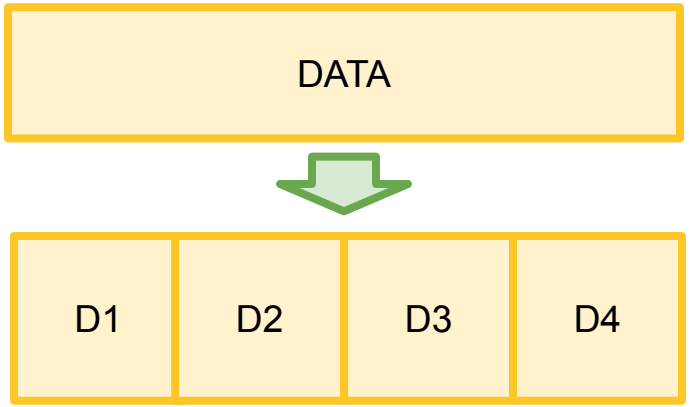
Workers only do their task then report back





Process Flow!

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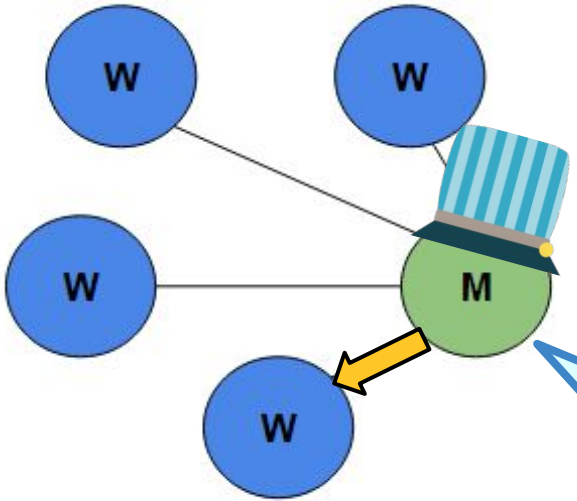
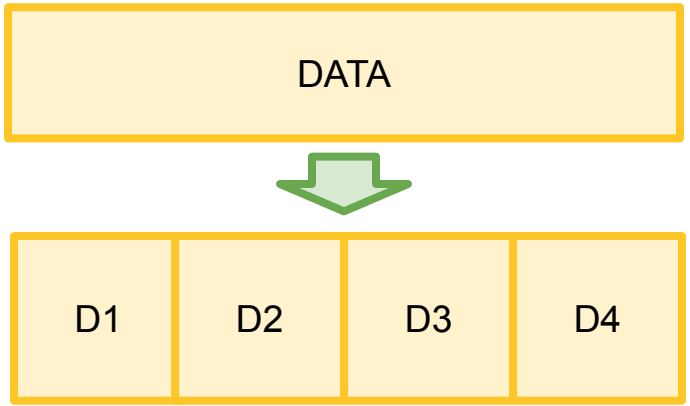
Workers only do their task then report back





Process Flow!

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Distributed Systems

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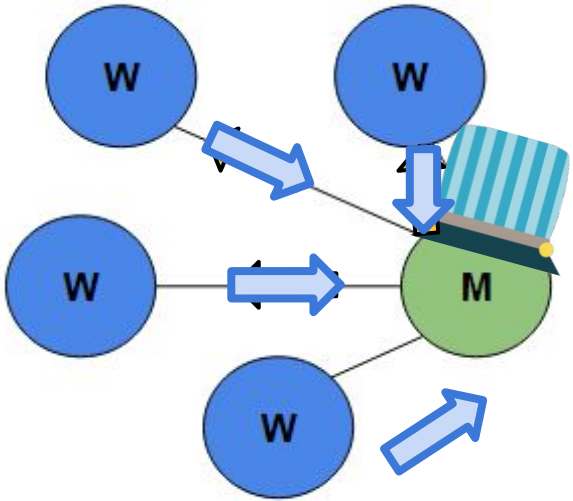

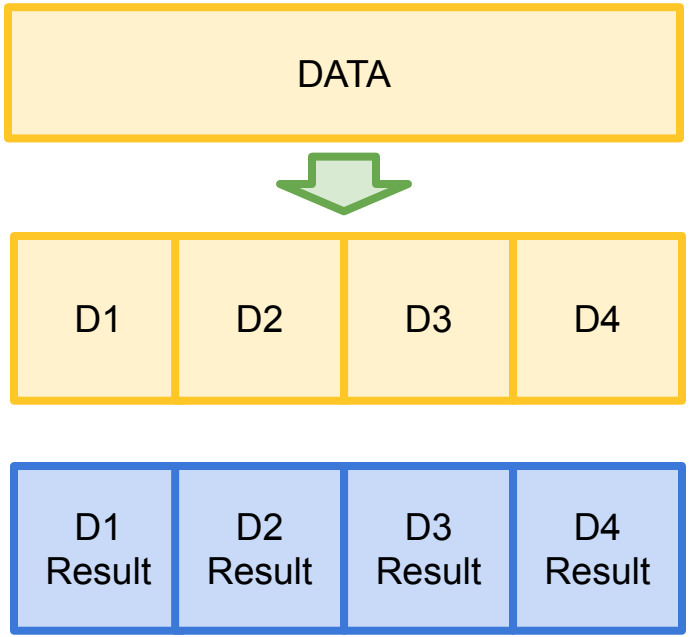

Process Flow!

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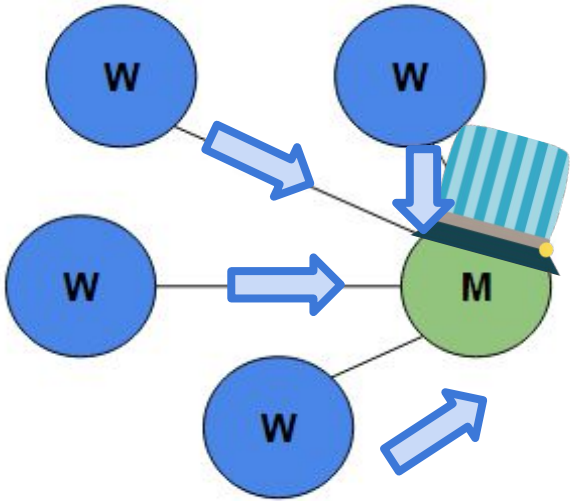

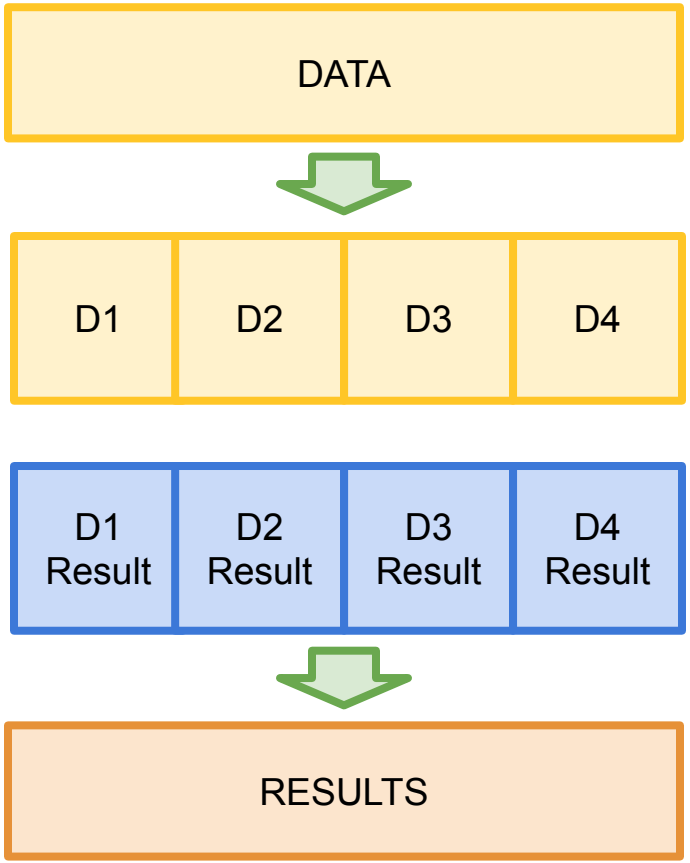

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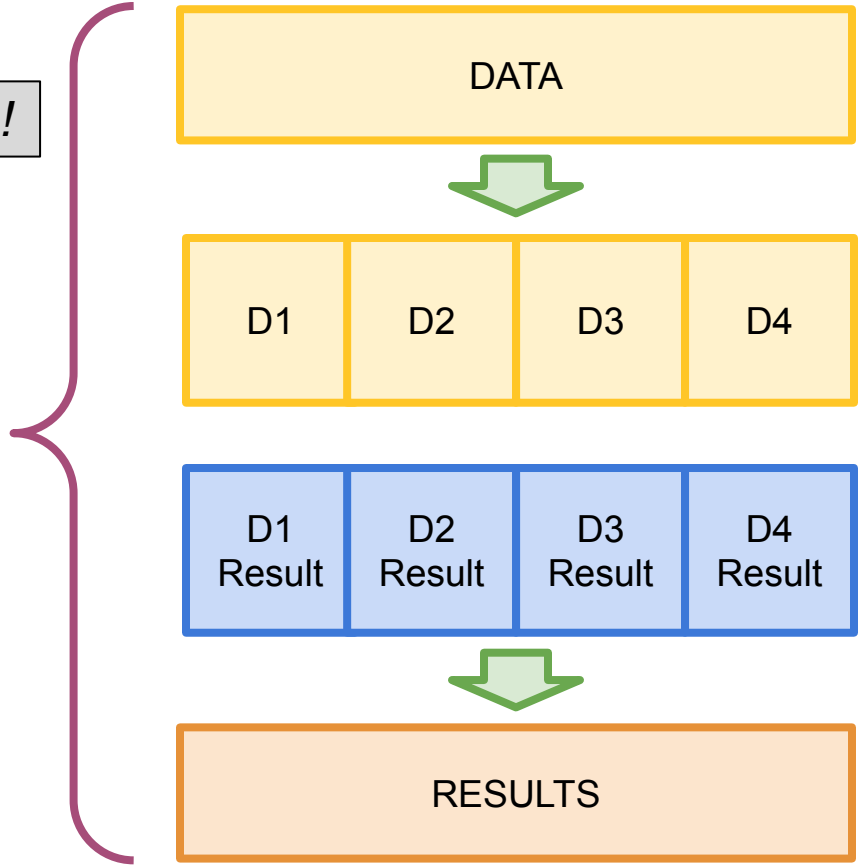
What about Peer to Peer?

Check out the recording for the discussion!

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



What about Peer to Peer?

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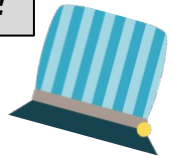
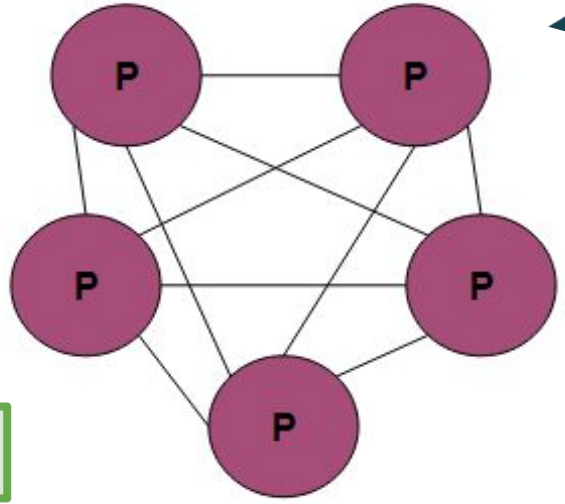
Check out the recording for the discussion!

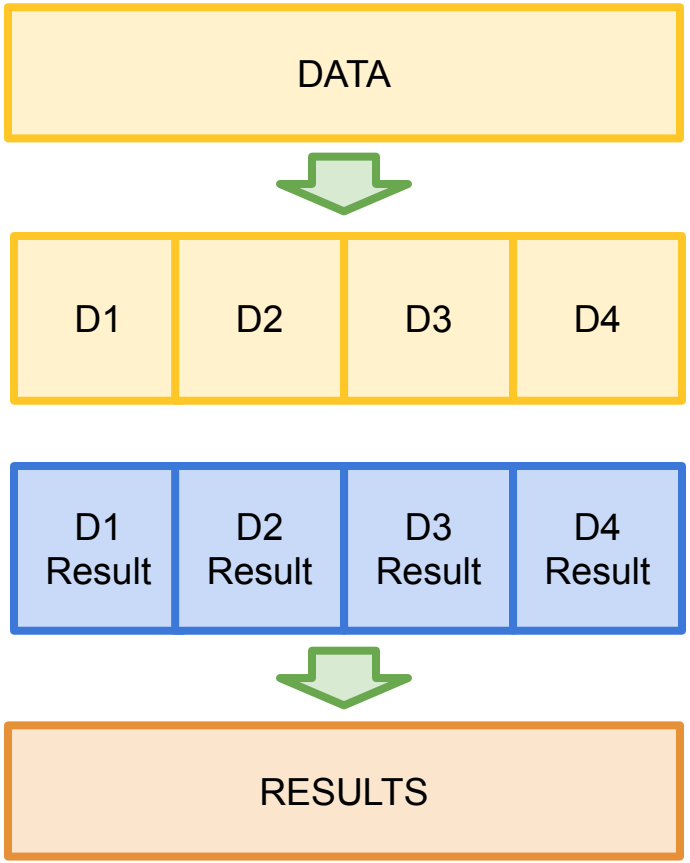
We need someone to wear the conductor hat!





Need a ***LEADER***

How do we choose a leader?



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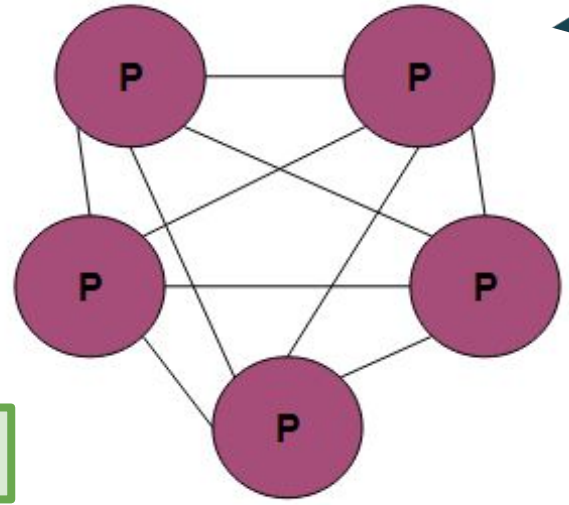

DATA

D1 | D2 | D3 | D4

D1 Result | D2 Result | D3 Result | D4 Result

RESULTS

Leader Election!

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Scratch Space

Questions?

Survey:

http://bit.ly/ASN2324

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Upcoming Events

SI Sessions:

- Monday, April 15th at 7:00 pm MST
- Thursday, April 18th at 7:00 pm MST
- Sunday, April 21st at 7:00 pm MST - **REVIEW SESSION**
- Monday, April 22nd at 7:00 pm MST - **Q&A SESSION**
- ~~*Thursday, April 25th at 7:00 pm MST*~~ **- CANCELLED**

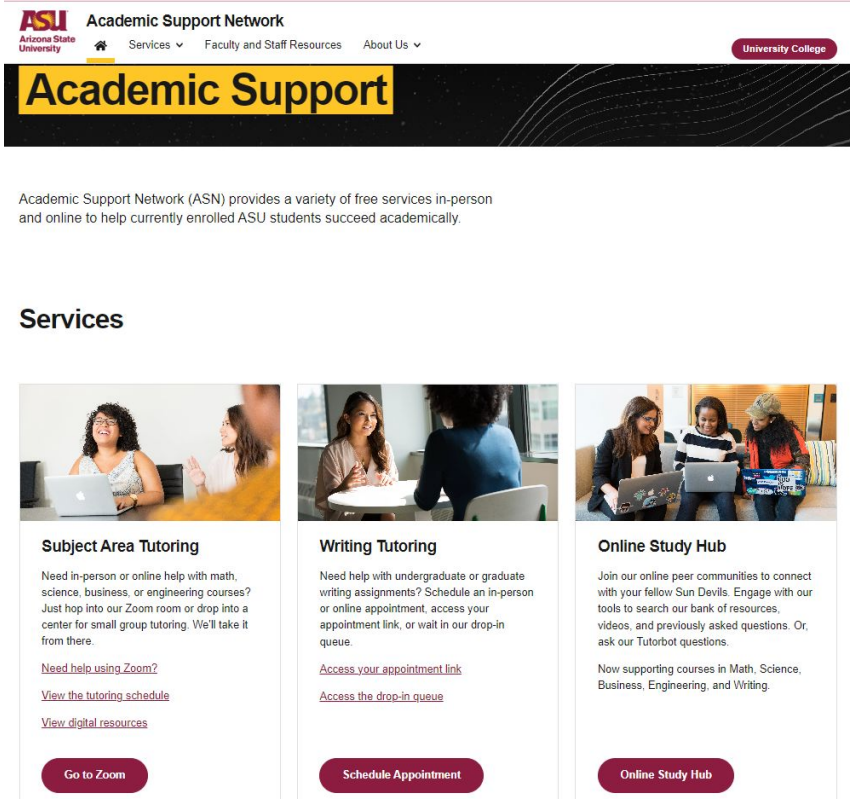
Review Sessions:

- Sunday, April 21st at 7:00 pm MST
- **Thursday, April 25th Session is *cancelled***

More Questions?

Check out our other resources!

tutoring.asu.edu

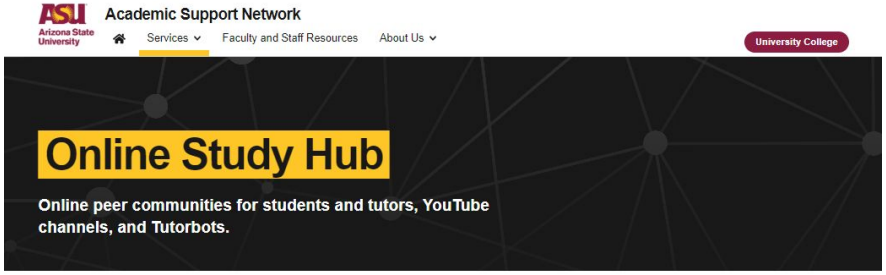


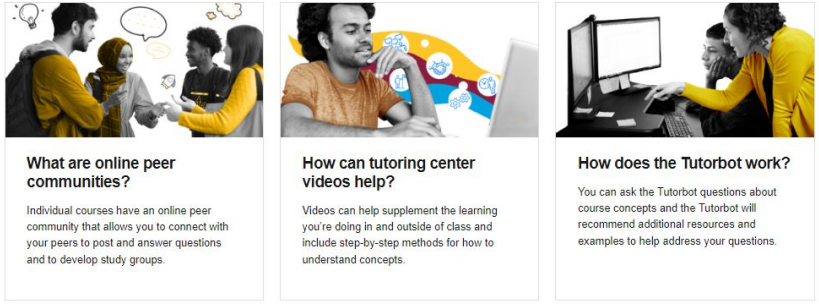
1. **Click on ‘Go to Zoom’ to log onto our Online Tutoring Center.**
2. **Click on ‘View the tutoring schedule’ to see when tutors are available for specific courses.**

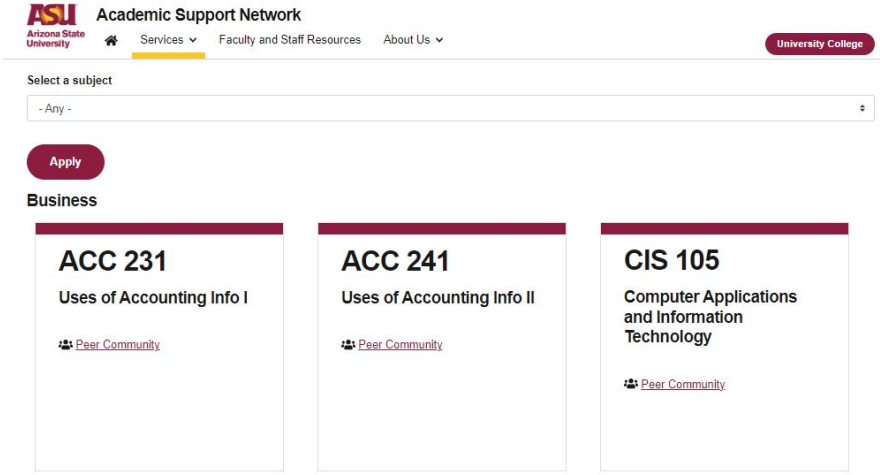
More Questions?

Check out our other resources!

tutoring.asu.edu/online-study-hub



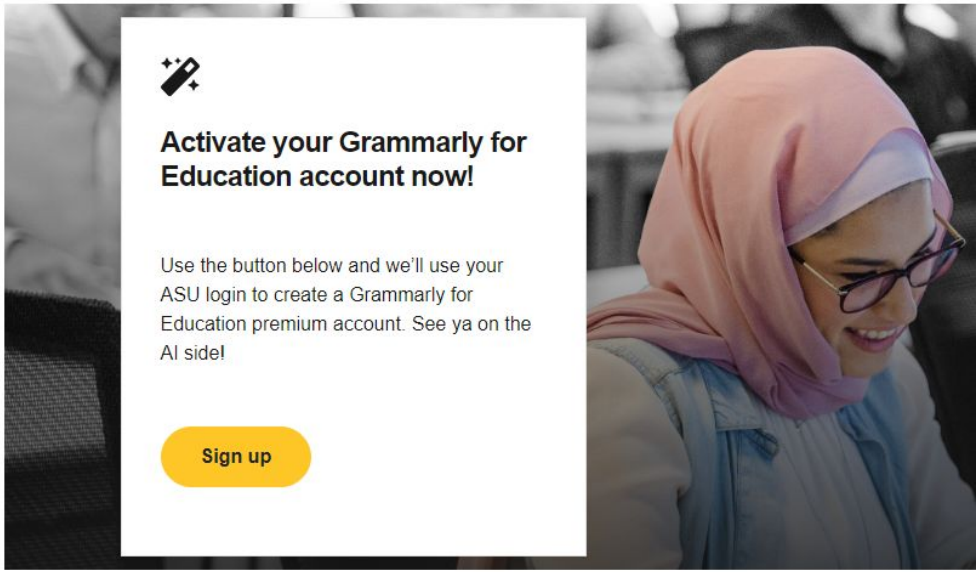




Don't forget to check out the Online Study Hub for additional resources!

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