

# 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](https://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

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**Systems**

**Parallel**



A Venn diagram with two overlapping circles. The left circle is light blue with a blue outline and is labeled 'Parallel'. The right circle is light red with a red outline and is labeled 'Distributed'. The intersection of the two circles is shaded with a mix of blue and red. A text box is located at the bottom of the intersection.

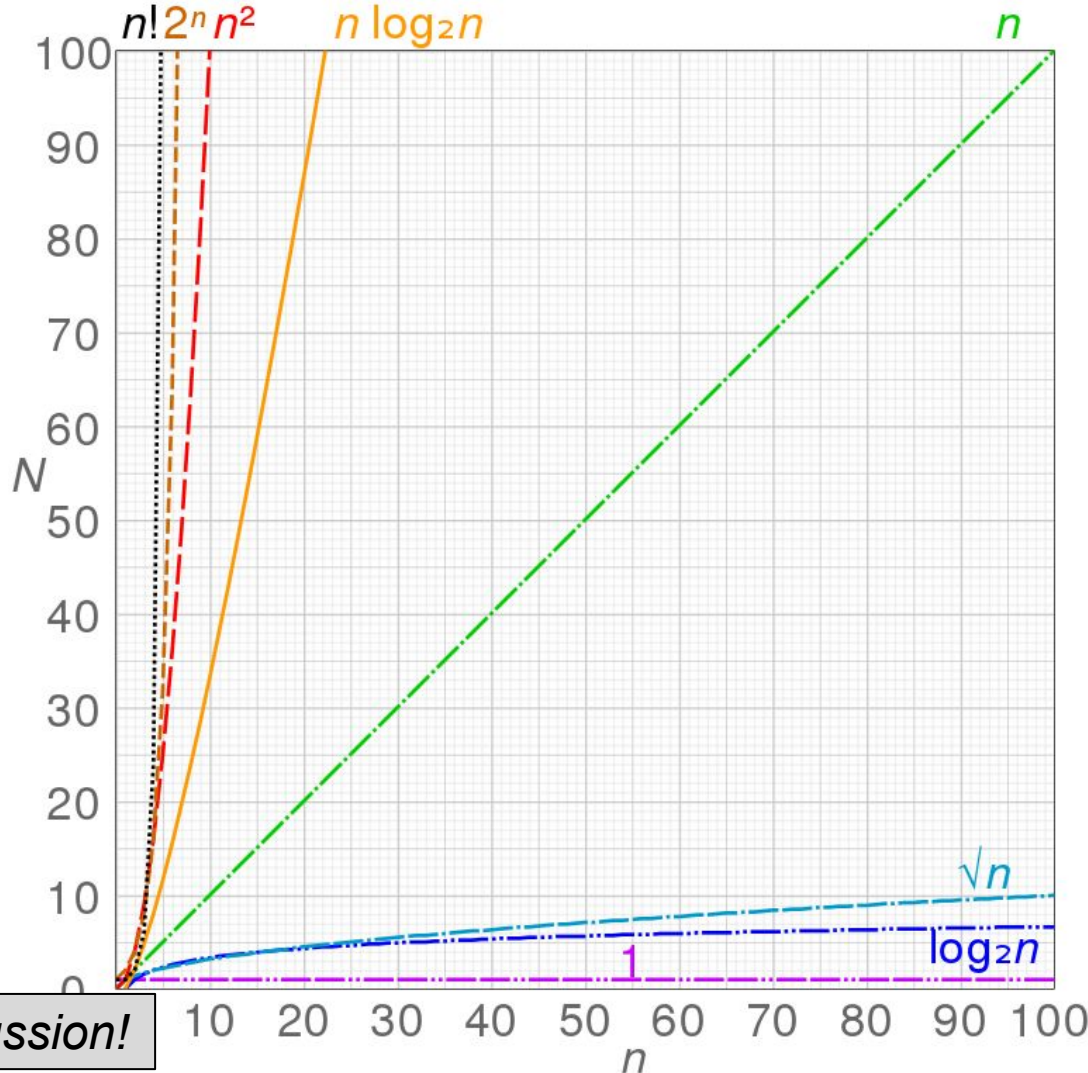
**Distributed**

*Check out the recording for the discussion!*

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## Distributed Systems

When should  
we *consider*  
distributing?



Check out the recording for the discussion!

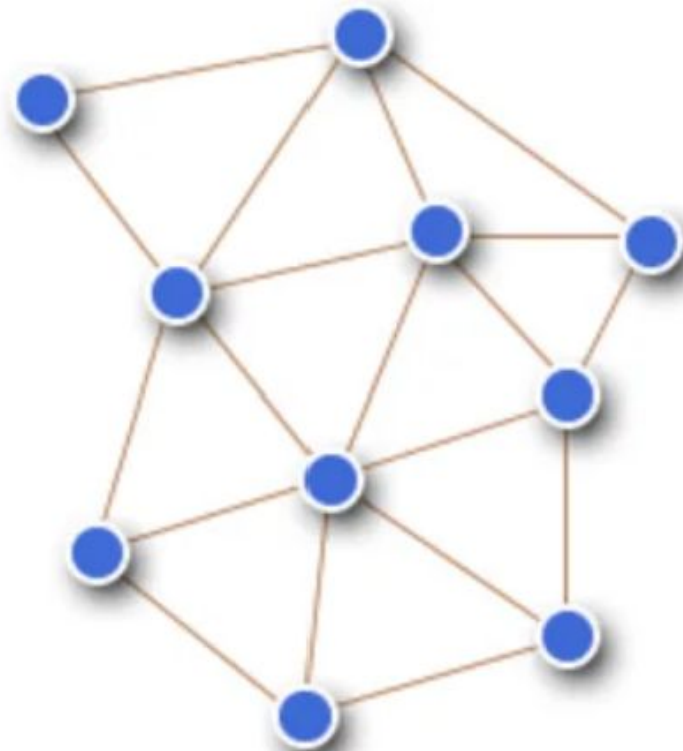


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## Distributed Systems

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!

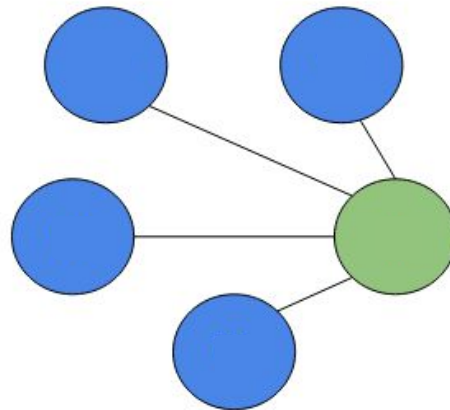
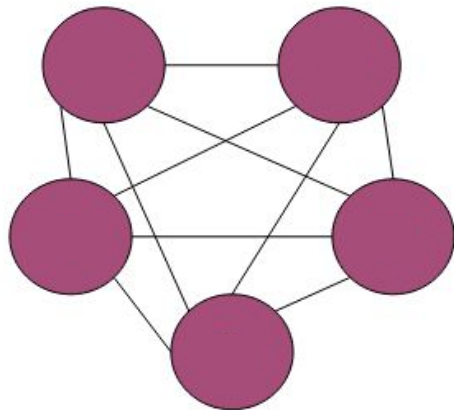




Main and Worker

Peer to Peer

Which is which?



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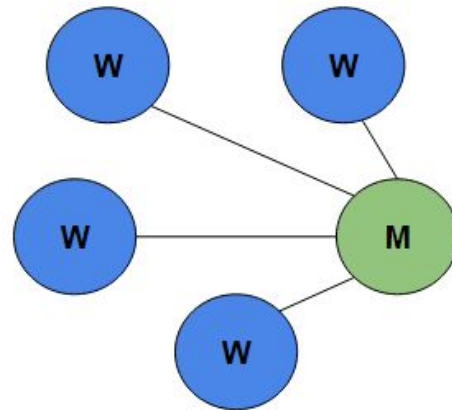
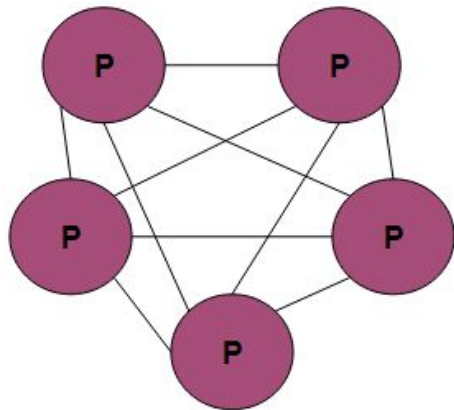
**Distributed Systems**

Main and Worker

Peer to Peer

Which is which?

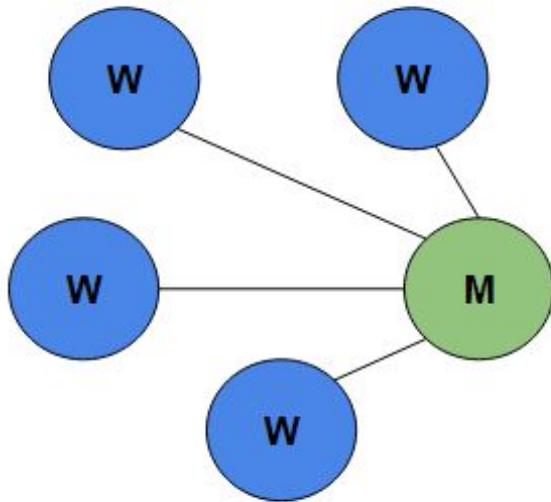
Peer to Peer



Main and  
Worker

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## Distributed Systems



## Pros and Cons

*Check out the recording for the discussion!*

### Pros:

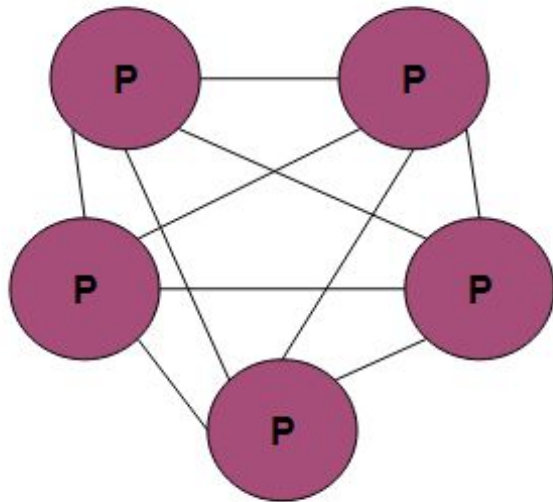
- Straightforward setup
- Logic is centralized
- Communication is linear

### Cons:

- Single point of failure

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## Distributed Systems



## 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!

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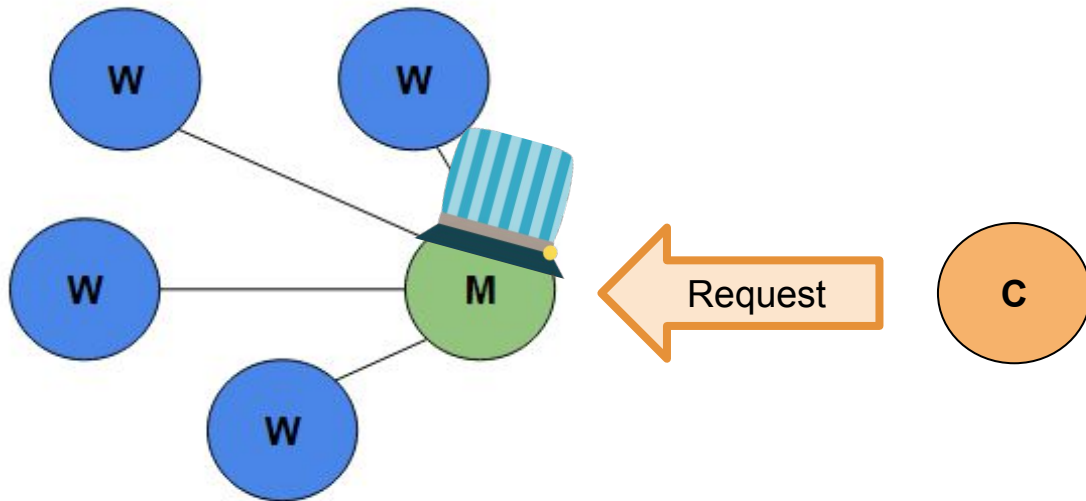
**Distributed Systems**

*Check out the recording for the discussion!*

Process Flow!

DATA

Workers  
only do  
their task  
then report  
back



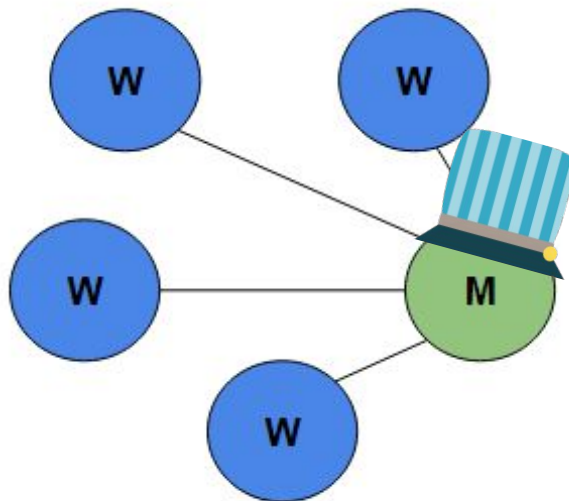
Main is like our server

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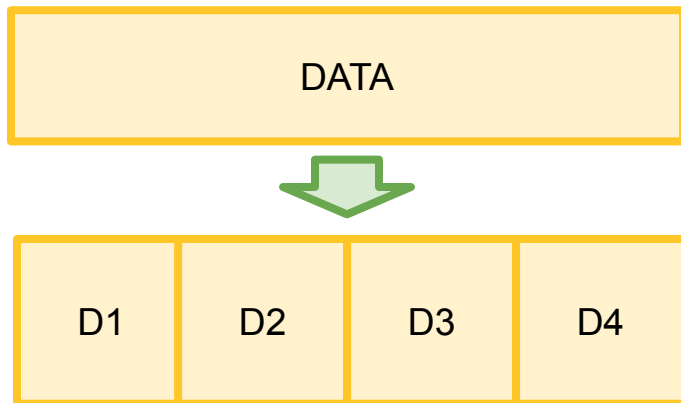
**Distributed Systems**

*Check out the recording for the discussion!*

Workers  
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then report  
back



Process Flow!



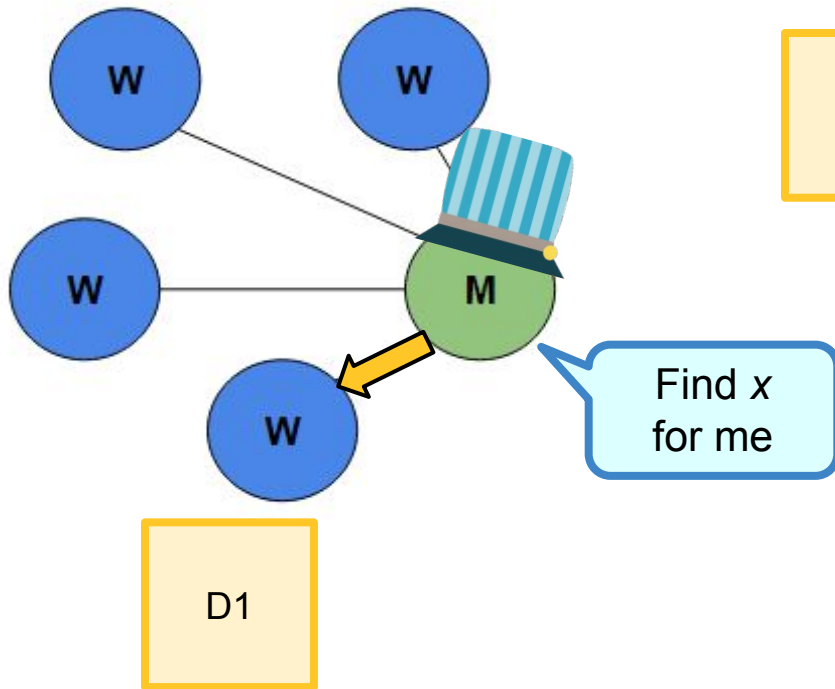
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**Distributed Systems**

*Check out the recording for the discussion!*

## Process Flow!

Workers  
only do  
their task  
then report  
back



DATA



D1

D2

D3

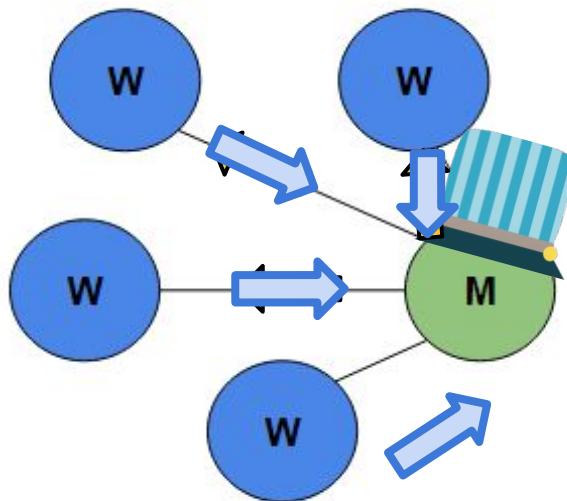
D4

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**Distributed Systems**

*Check out the recording for the discussion!*

Workers  
only do  
their task  
then report  
back



Process Flow!

DATA



D1

D2

D3

D4

D1  
Result

D2  
Result

D3  
Result

D4  
Result

D1

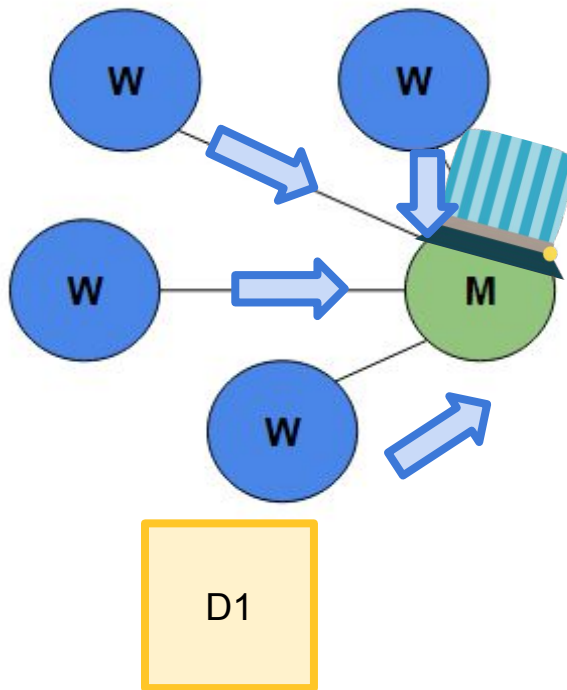


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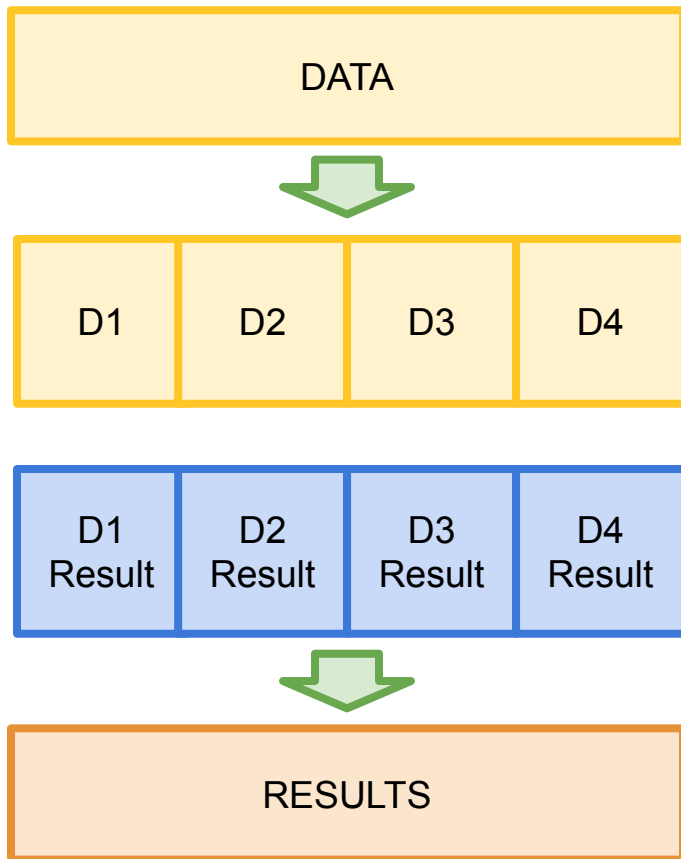
**Distributed Systems**

*Check out the recording for the discussion!*

Workers  
only do  
their task  
then report  
back



Process Flow!



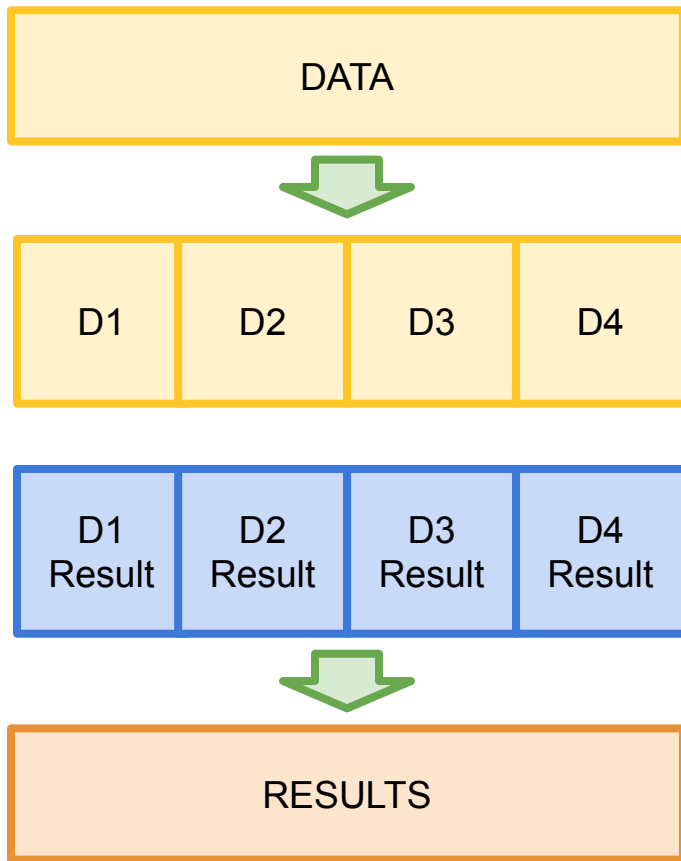
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**Distributed Systems**

*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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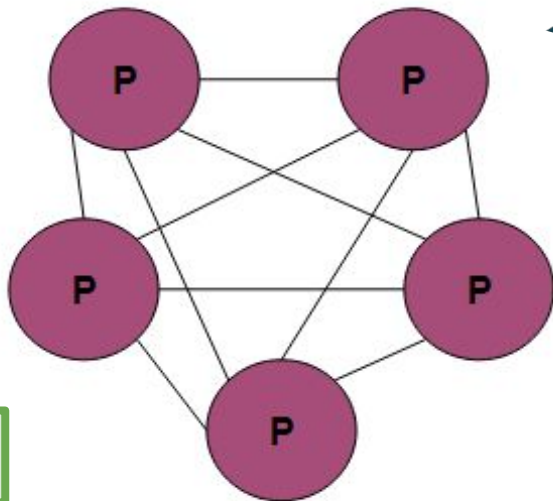
**Distributed Systems**

What about Peer to Peer?

*Check out the recording for the discussion!*

We need  
someone to  
wear the  
conductor  
hat!

Need a **LEADER**



How do we choose a leader?

DATA



D1

D2

D3

D4

D1  
Result

D2  
Result

D3  
Result

D4  
Result



RESULTS

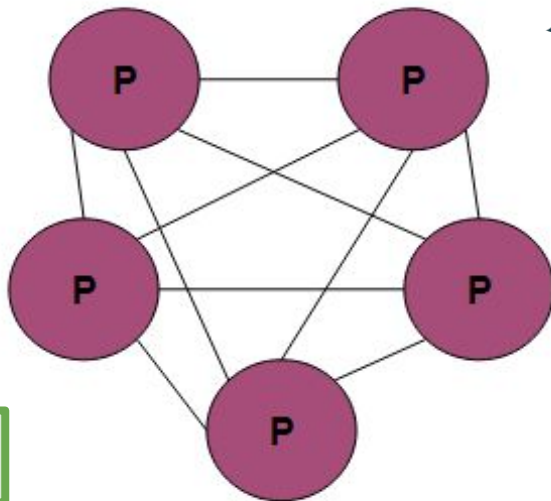
**SER 321**

**Distributed Systems**

What about Peer to Peer?

We need  
someone to  
wear the  
conductor  
hat!

Need a **LEADER**



**Leader Election!**

DATA



D1

D2

D3

D4

D1  
Result

D2  
Result

D3  
Result

D4  
Result



RESULTS

# SER 321

Scratch Space

# Questions?

## Survey:

<http://bit.ly/ASN2324>



## 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



## 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



#### Subject Area Tutoring

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.

[Need help using Zoom?](#)

[View the tutoring schedule](#)

[View digital resources](#)

Go to Zoom



#### Writing Tutoring

Need help with undergraduate or graduate writing assignments? Schedule an in-person or online appointment, access your appointment link, or wait in our drop-in queue.

[Access your appointment link](#)

[Access the drop-in queue](#)

Schedule Appointment



#### Online Study Hub

Join our online peer communities to connect with your fellow Sun Devils. Engage with our tools to search our bank of resources, videos, and previously asked questions. Or, ask our Tutorbot questions.

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

Online Study Hub

1-

Go to Zoom

2-

[Need help using Zoom?](#)

[View the tutoring schedule](#)

[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](https://tutoring.asu.edu/online-study-hub)

 **Academic Support Network**

 [Services](#)  [Faculty and Staff Resources](#) [About Us](#) 

[University College](#)

## 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 -

[Apply](#)



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Select a subject

- Any -

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Business


### ACC 231

Uses of Accounting Info I

 [Peer Community](#)

### ACC 241

Uses of Accounting Info II

 [Peer Community](#)

### CIS 105

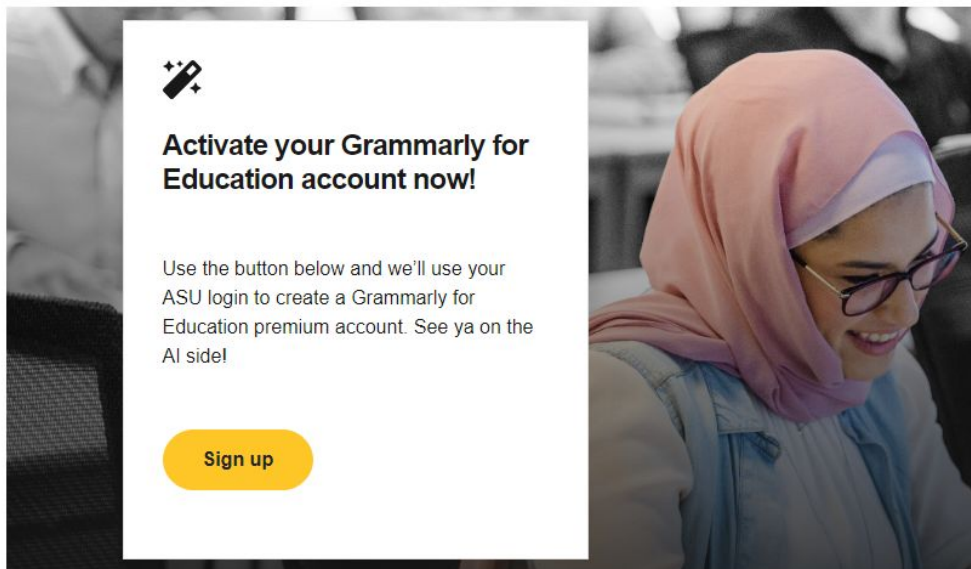
Computer Applications and Information Technology

 [Peer Community](#)

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

# Expanded Writing Support Available

Including Grammarly for Education, at no cost!



[tutoring.asu.edu/expanded-writing-support](https://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](#)