

# SER 321 B Session

**SI Session**

**Tuesday, November 12th 2024**

*10:00 am - 11:00 am MST*

# Agenda



OSI Matching Activity

Threads!

Relevance

Pitfalls

Concurrency Structures

# 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

**SER 321**

**OSI Matching Activity!**

*Check out the recording for the activity!*

Let's try something new today!

# SER 321

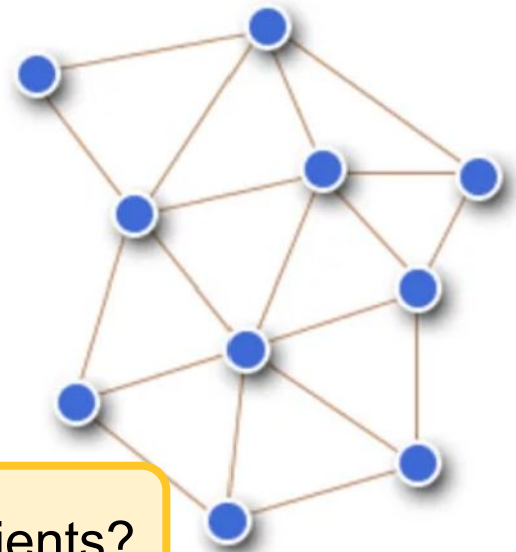
## System Layout

Goal →

But you have two systems...

*Check out the recording for the discussion!*

How can we test our server with multiple clients?



?



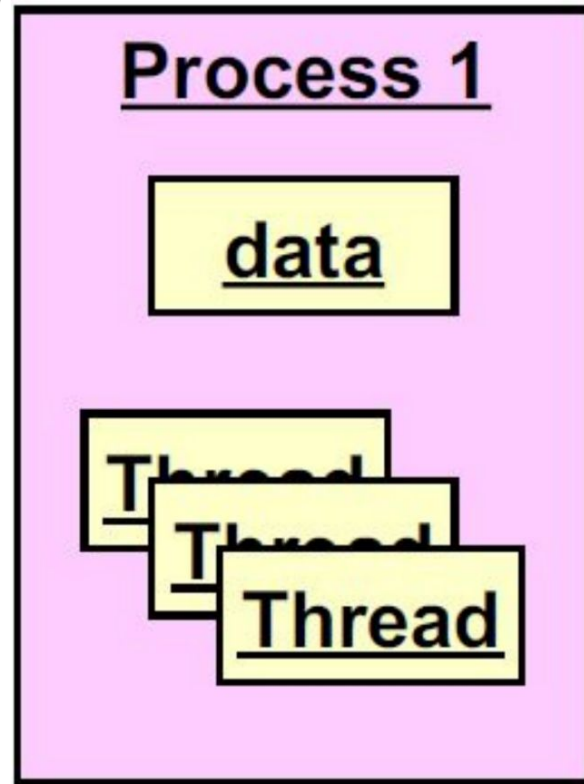
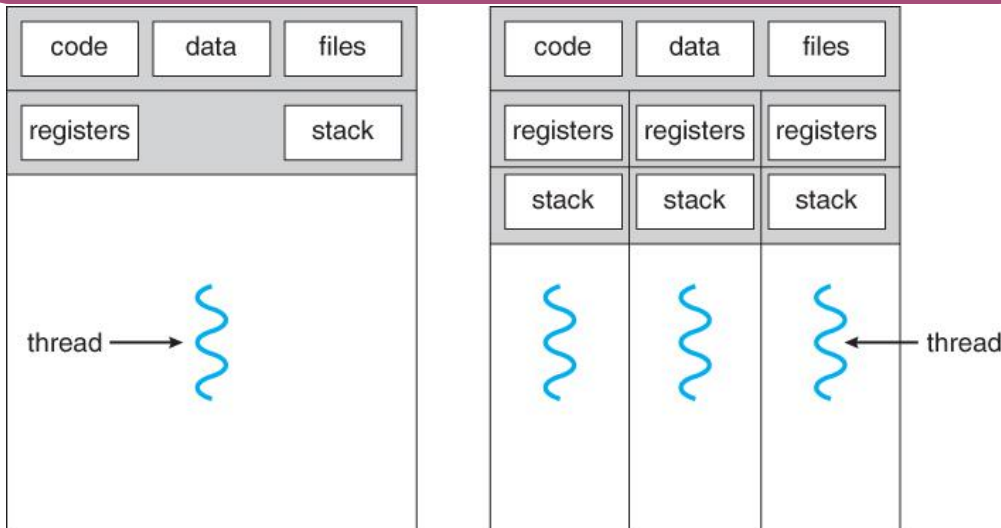
Check out the recording for the discussion!

**SER 321**

**Threads**

What does that imply?

Remember that they exist  
*within* the parent process



# SER 321

## Threading Pitfalls

*Check out the recording for the solution!*

Race Condition

A thread never gains access to the resource it needs

Starvation

A thread is only able to acquire some of the resources it needs

Deadlock

More than one thread accesses a single resource at the same time



# SER 321

## Threading Pitfalls

As the project name implies, we encounter a **deadlock**.

But what happened?

```
class SockClient {
    public static void main (String args[]) throws Exception {
        Socket      sock = new Socket( host: "localhost", port: 8888);    //Any IP name

        ObjectInputStream in = new ObjectInputStream(sock.getInputStream());
        ObjectOutputStream out = new ObjectOutputStream(sock.getOutputStream());

        String s = (String) in.readObject();
        out.writeObject("Back at you");

        in.close();
        out.close();
        sock.close();
    }
}
```

Client

```
class SockServer {
    public static void main (String args[]) throws Exception {

        int count = 0;
        ServerSocket  serv = new ServerSocket( port: 8888);

        Socket sock = serv.accept();

        ObjectInputStream in = new ObjectInputStream(sock.getInputStream());
        ObjectOutputStream out = new ObjectOutputStream(sock.getOutputStream());

        String s = (String) in.readObject();
        System.out.println("Received " + s);
        out.writeObject("Back at you");
        System.out.println("Received " + s);

        in.close();
        out.close();
        sock.close();
    }
}
```

Server

```
PS C:\ASU\SER321\examples_repo\ser321examples\Threads\NetworkDeadlock> gradle
server
<=====--> 75% EXECUTING [1m 33s]
> :server
```

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

```
PS C:\ASU\SER321\examples_repo\ser321examples\Threads\NetworkDeadlock> gradle
client
Starting a Gradle Daemon, 1 busy and 1 stopped Daemons could not be reused, use
--status for details
<=====--> 75% EXECUTING [53s]
> :client
```

SER 321  
Threading Pitfalls

What does *Spaghetti Consumed* represent?

What does *Thinking* represent?

What does *Hungry* represent?

Check out the recording for the discussion!

powered by NetLogo

Dining Philosophers

File: New Revert to Original

Export: NetLogo HTML

Mode: Interactive    Commands and Code: Bottom

model speed ticks: 6712

num-philosophers 12

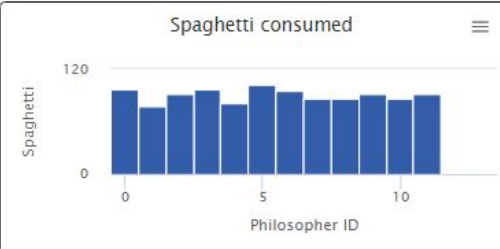
setup    go    go once

hungry-chance 0.5


full-chance 0.5

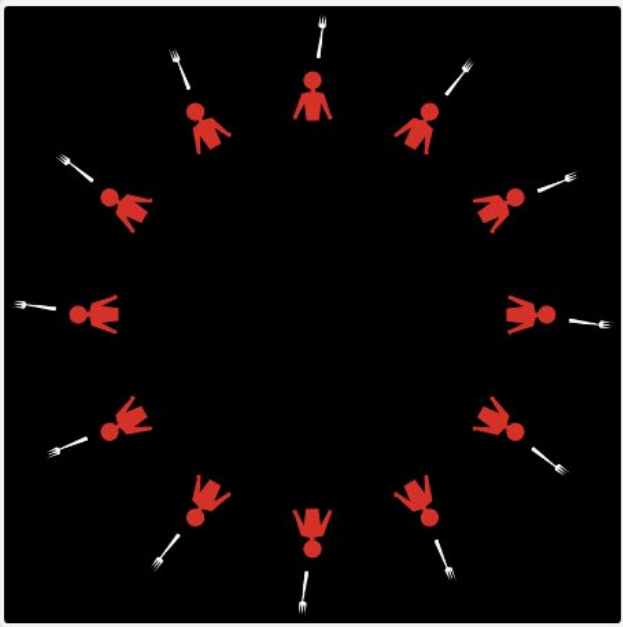
☐ cooperation?

Spaghetti consumed



Resource allocation



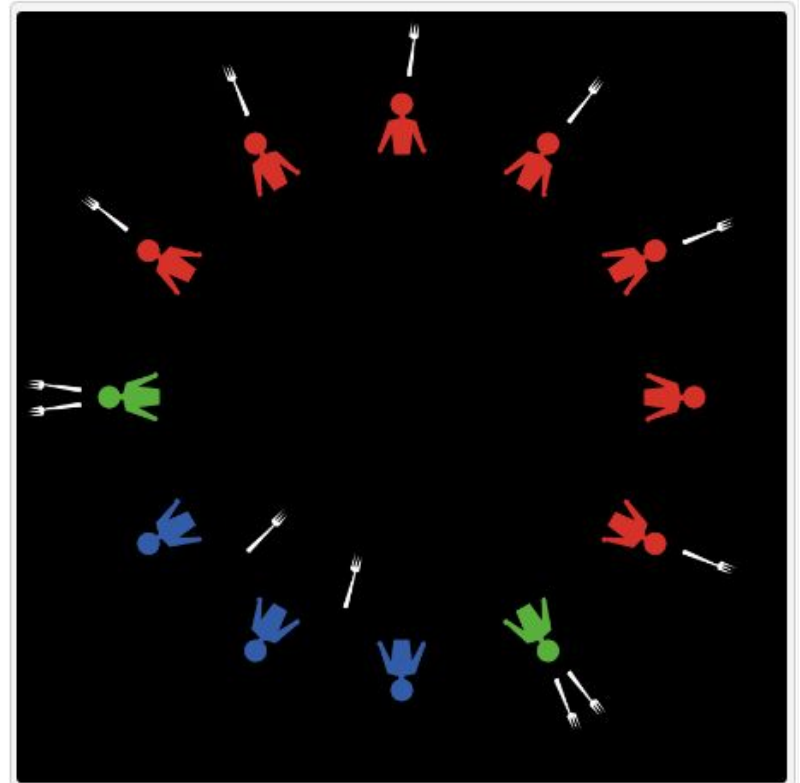


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## Threading Pitfalls

Can we take a guess at what is happening here?

*Check out the recording for the discussion!*



# SER 321

Scratch Space

## Upcoming Events

### SI Sessions:

- Thursday, November 14th at 7:00 pm MST
- Sunday, November 17th at 7:00 pm MST
- Tuesday, November 19th at 10:00 am MST

### Review Sessions:

- Sunday, December 1st at 7:00 pm MST - **2 hour Review Session**
- Tuesday, December 3rd 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



#### 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?](#)

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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-

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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)

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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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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

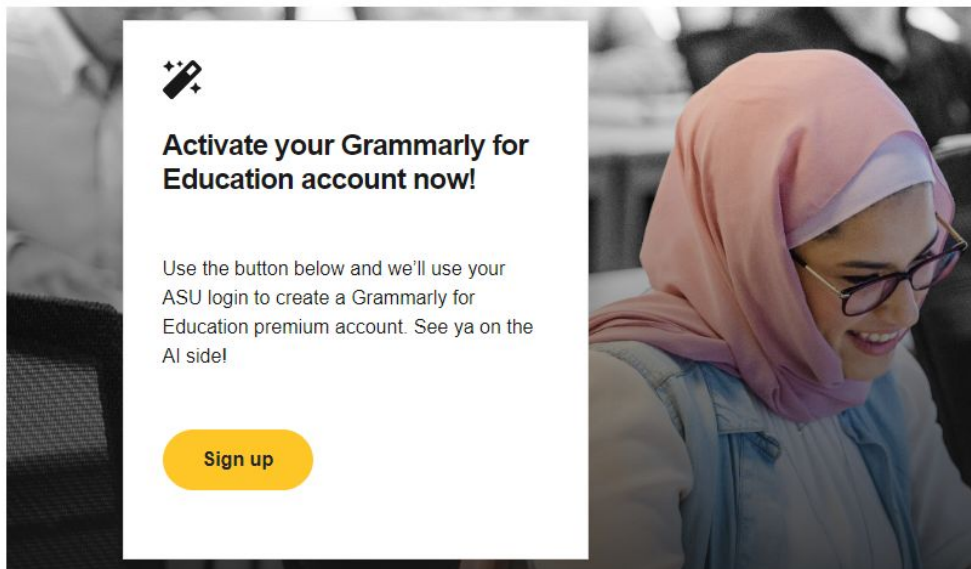
 [Peer Community](#)

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](#)
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