

SER 321 B Session

SI Session

Thursday March 28th 2024

7:00 pm - 8:00 pm MST

Agenda



Socket Communication

Properties

Steps

Diagram

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

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Assignment 3 Helper Doc



Helper Document is *super* helpful!

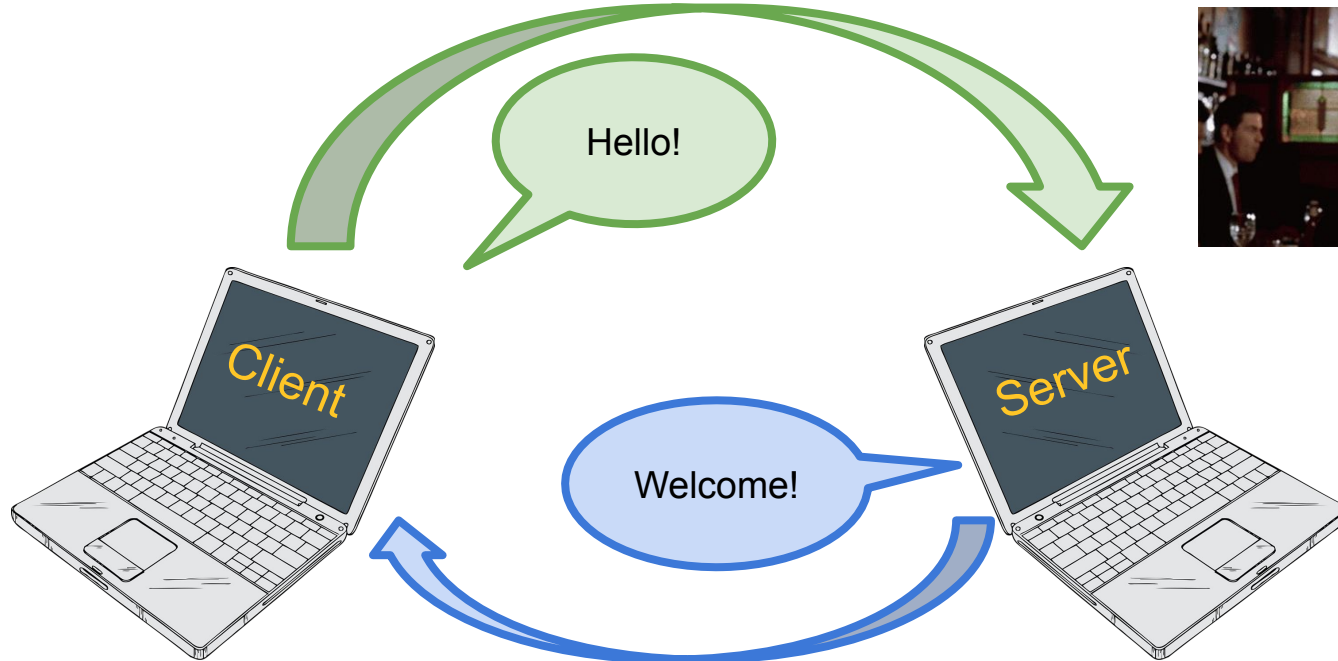
👏 Thank you UGTA Paul Heaton! 👏

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Sockets!

Sockets allow our client and server to communicate!

Enables a client/server **conversation**



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Sockets!

Sockets allow our client and server to communicate!

Location

Connection
Semantics

Message Format

Need to define **3 properties** before usage

IP or DNS

142.251.46.206

www.google.com

TCP or UDP

Connection
Oriented

Connectionless

Protocol Specs

Synchronous

Asynchronous

Stateless

Stateful

Binary

Text

Headers

No Headers



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Sockets!

Two Main Conversation Models

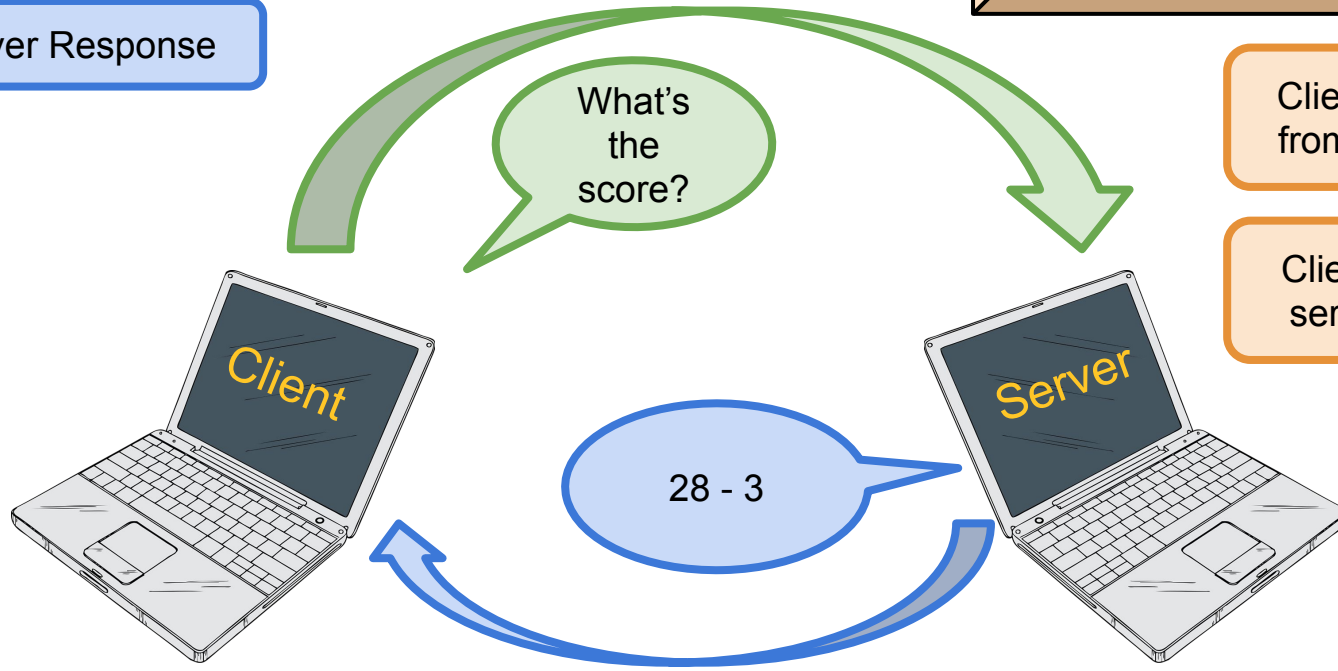
1. Client Request

2. Server Response

Pull/Polling Model

Client *pulls* info from the server

Client *polls* the server for info



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Sockets!

Two Main Conversation Models

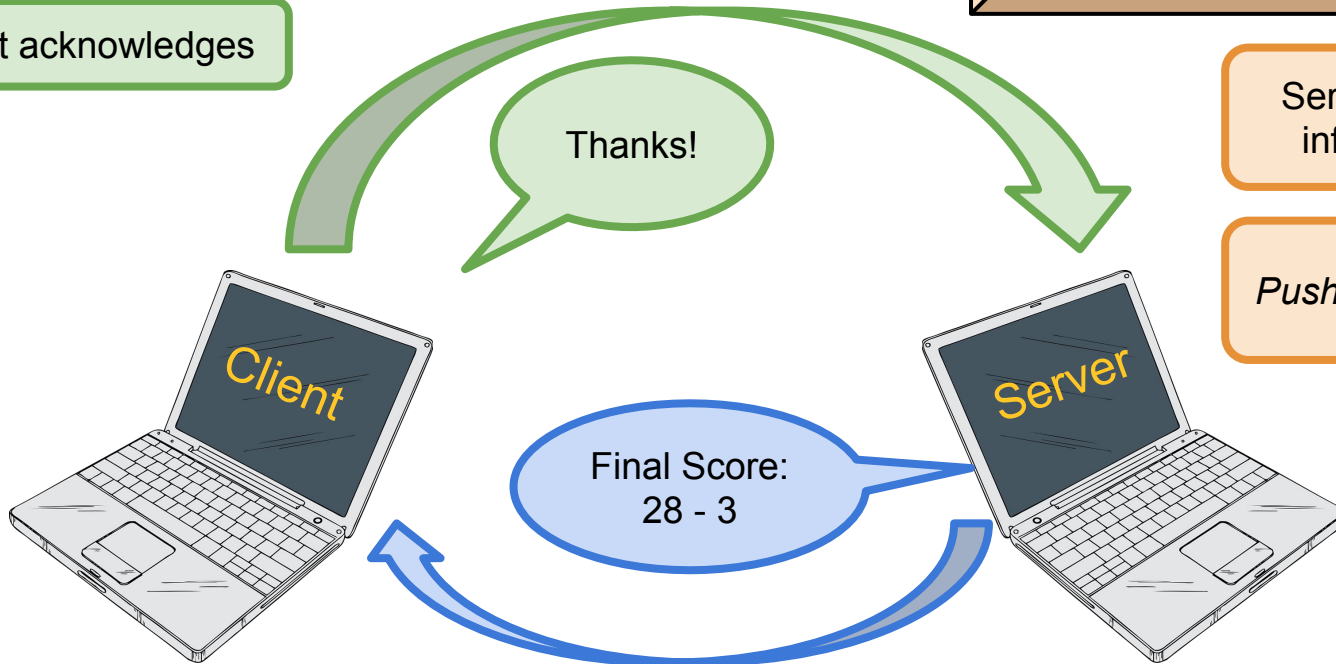
1. Server sends update

2. Client acknowledges

Push Model

Server *pushes* info to client

Push notifications



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Sockets!

Two Main Conversation Models

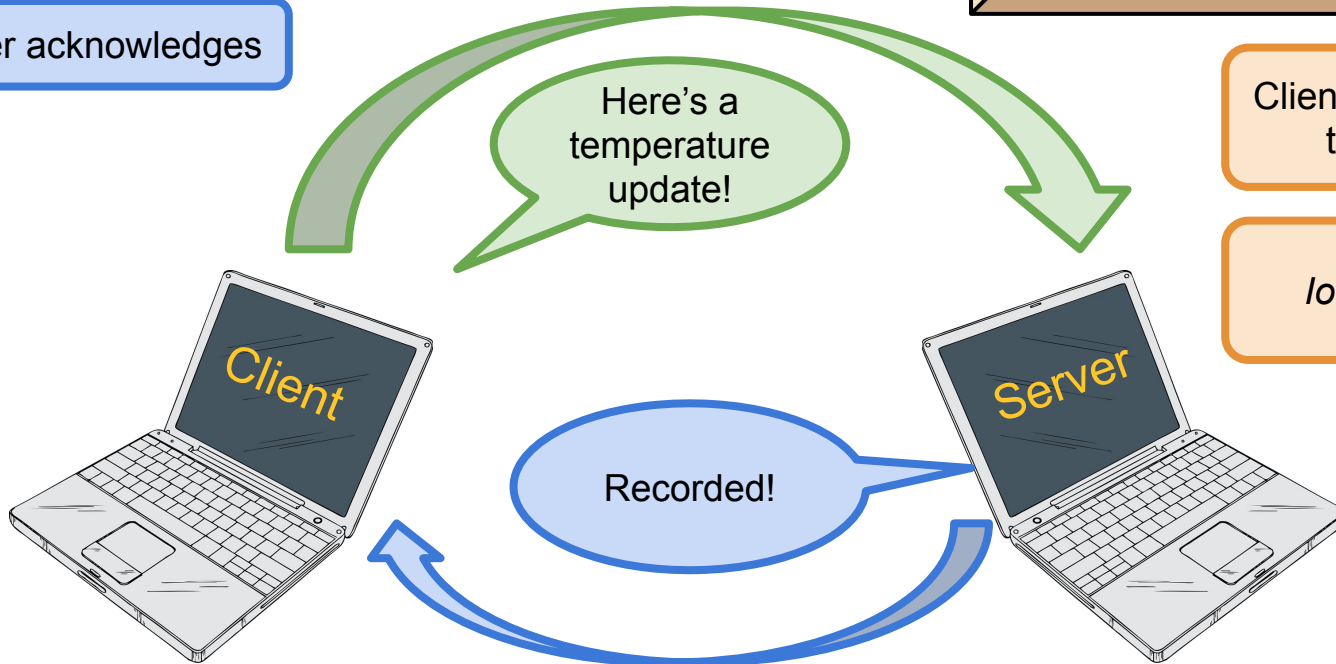
Client Push Model

1. Client sends update

2. Server acknowledges

Client *pushes* info
to Server

IoT sensors



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Client Socket

Steps for the **Client Socket**

1.

2.

3.

4.

5.

6.

7.

8.

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Server Socket

Steps for the **Server Socket**

1.

2.

3.

4.

5.

6.

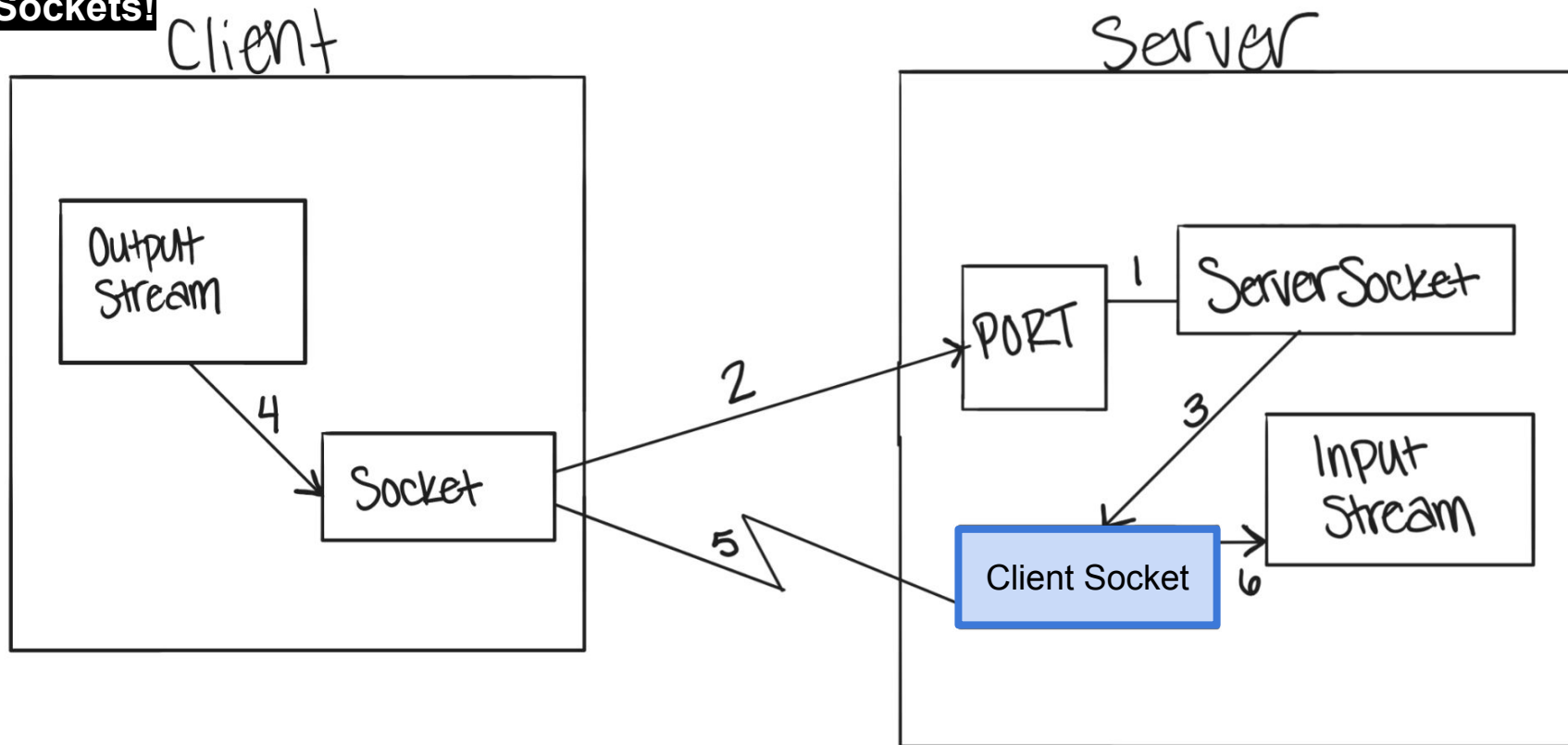
7.

8.

9.

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Sockets!



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Sockets!

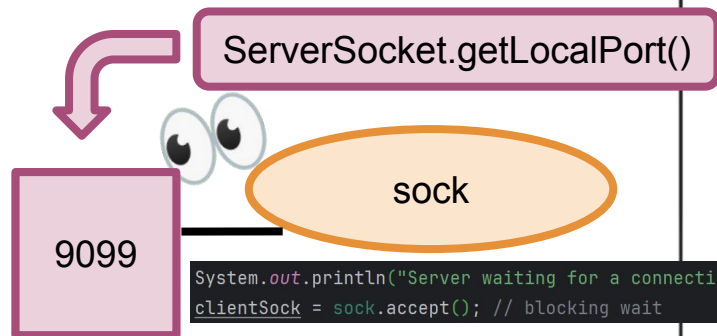
client

```
ServerSocket sock = new ServerSocket(port);  
System.out.println("Server ready for connections");  
System.out.println("Server is listening on port: " + port);  
System.out.println("-----");  
System.out.println("Values of the ServerSocket Object:");  
System.out.println("Inet Address: " + sock.getInetAddress());  
System.out.println("Local Port: " + sock.getLocalPort());
```

> Task :runServer

```
Server ready for connections  
Server is listening on port: 9099  
-----  
Values of the ServerSocket Object:  
Inet Address: 0.0.0.0/0.0.0.0  
Local Port: 9099  
Server waiting for a connection
```

Server



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Sockets!

Client

```
> Task :runClient
Connected to server at localhost:9099
Values of the Socket Object for the Server:
    Host: /127.0.0.1
    Port: 9099
    Local Port: 14507
String to send>
<=====-----> 75% EXECUTING [41s]
> :runClient
```

```
System.out.println("Connected to server at " + host + ":" + port);
System.out.println("Values of the Socket Object for the Server:");
System.out.println("\tHost: " + server.getLocalAddress());
System.out.println("\tPort: " + server.getPort());
System.out.println("\tLocal Port: " + server.getLocalPort());
```

server
(host, port)



```
Socket server = new Socket(host, port);
```

er



9099

sock

```
System.out.println("Server waiting for a connection");
clientSock = sock.accept(); // blocking wait
```

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Sockets!

Client

```
> Task :runClient
Connected to server at localhost:9099
Values of the Socket Object for the Server:
    Host: /127.0.0.1
    Port: 9099
    Local Port: 14507
String to send>
<=====-----> 75% EXECUTING [41s]
> :runClient
```

er

```
System.out.println("Connected to server at " + host + ":" + port);
System.out.println("Values of the Socket Object for the Server:");
System.out.println("\tHost: " + server.getLocalAddress());
System.out.println("\tPort: " + server.getPort());
System.out.println("\tLocal Port: " + server.getLocalPort());
```

server
(host, port)

14507

host:port

9099



sock

```
System.out.println("Server waiting for a connection");
clientSock = sock.accept(); // blocking wait
```


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Sockets!

Client

```
System.out.println("Values of the Client Socket Object after Connection:");  
System.out.println("\tInet Address: " + clientSock.getInetAddress());  
System.out.println("\tLocal Address: " + clientSock.getLocalAddress());  
System.out.println("\tLocal Port: " + clientSock.getLocalPort());  
System.out.println("\tAllocated Client Socket (Port): " + clientSock.getPort());
```

server
(host, port)

14507

host:port



Server waiting for a connection
Server connected to client

Server

Values of the Client Socket Object after Connection:

Inet Address: /127.0.0.1

Local Address: /127.0.0.1

Local Port: 9099

Allocated Client Socket (Port): 14507

<=====--> 75% EXECUTING [31s]

> :runServer



sock

9099

```
System.out.println("Server waiting for a connection");  
clientSock = sock.accept(); // blocking wait
```

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Sockets!

Client

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System.out.println("Values of the Client Socket Object after Connection:");  
System.out.println("\tInet Address: " + clientSock.getInetAddress());  
System.out.println("\tLocal Address: " + clientSock.getLocalAddress());  
System.out.println("\tLocal Port: " + clientSock.getLocalPort());  
System.out.println("\tAllocated Client Socket (Port): " + clientSock.getPort());
```

Connection

host:port

server
(host, port)

Communication

clientSock.getPort

14507

Server

Server waiting for a connection

Server connected to client

Values of the Client Socket Object after Connection:

Inet Address: /127.0.0.1

Local Address: /127.0.0.1

Local Port: 9099

Allocated Client Socket (Port): 14507

<=====--> 75% EXECUTING [31s]

> :runServer



sock

9099

```
System.out.println("Server waiting for a connection");  
clientSock = sock.accept(); // blocking wait
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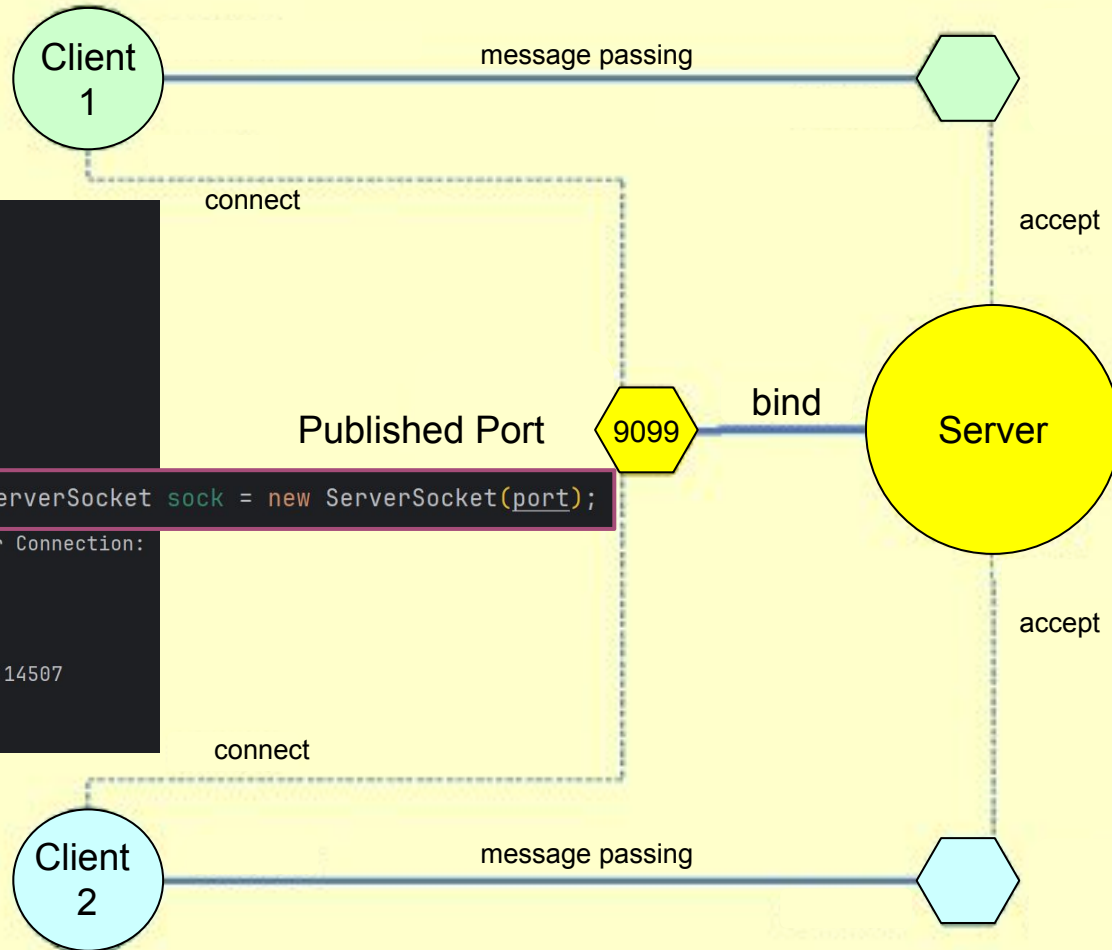
clientSock

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Sockets!

```
> Task :runServer
Server ready for connections
Server is listening on port: 9099
-----
Values of the ServerSocket Object:
Inet Address: 0.0.0.0/0.0.0.0
Local Port: 9099
Server waiting for a connection
Server connected to client
-----
Values of the Client Socket Object after Connection:
Inet Address: /127.0.0.1
Local Address: /127.0.0.1
Local Port: 9099
Allocated Client Socket (Port): 14507
<=====75% EXECUTING [31s]
> :runServer
```

```
ServerSocket sock = new ServerSocket(port);
```



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Scratch Space

Questions?

Survey:

<http://bit.ly/ASN2324>



Upcoming Events

SI Sessions:

- Sunday, March 31st at 7:00 pm MST
- Monday, April 1st at 7:00 pm MST
- Thursday, April 4th at 7:00 pm MST

Review Sessions:

- TBD

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

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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



Academic Support Network



Services

Faculty and Staff Resources

About Us

University College

Select a subject

- Any -

Apply

Business

ACC 231

Uses of Accounting Info I

Peer Community

ACC 241

Uses of Accounting Info II

Peer Community

CIS 105

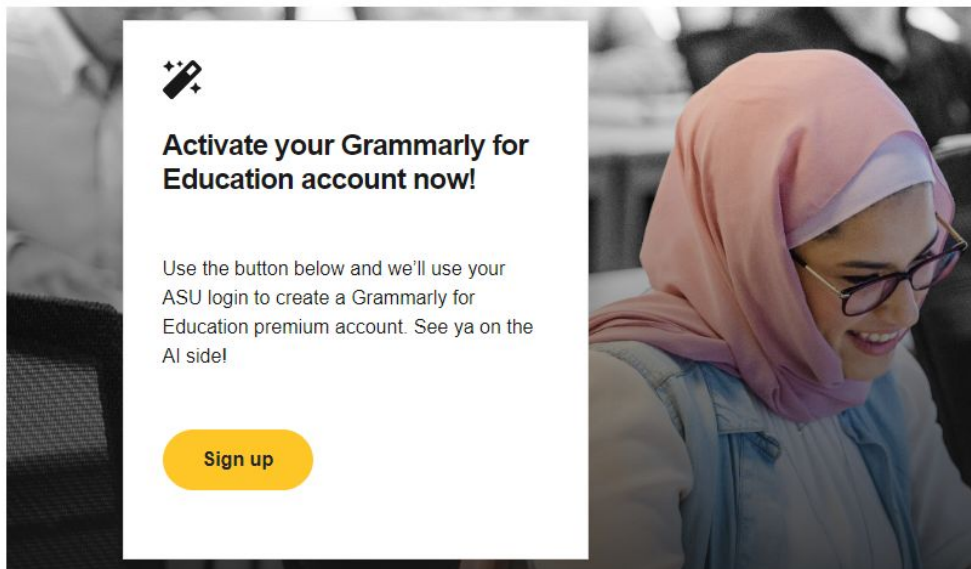
Computer Applications and Information Technology

Peer Community

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

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](#)