

# SER 321 B Session

**SI Session**

**Thursday, April 4th 2024**

*7:00 pm - 8:00 pm MST*

# Agenda



Last Minute 3-2 Questions

Serialization

Using Threads

Threading Pitfalls

# 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**

**Serialization**

Any last-minute  
3-2 Questions?

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**Serialization**

What is *Serialization*?

*Why* do we care?

*Check out the recording for the solution!*

Can we recall some of the formats?

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## Serialization

Binary

Text

Two main  
approaches for  
storing the  
content...

*Check out the recording for the solution!*

What about the data format?



Binary

Text

*Check out the recording for the solution!*

Who uses ***TEXT***?

**SER 321**  
**Serialization**

Binary

Text

*Check out the recording for the solution!*

What does  
this imply?

Who uses ***BINARY***?

# Quick PSA for Protobufs!

*If you use IntelliJ, you must do this first!!*

## IntelliJ users!

- `gradle generateProto` will generate the protocol buffer files but may not be recognized by IntelliJ because it may not be able to locate them. Add this block of code into your `build.gradle` file →

```
sourceSets {  
    main {  
        java {  
            srcDirs 'build/generated/source/proto/main/java/proto'  
        }  
    }  
}
```

The file path needs to point to the generated Protobuf files so make sure the file path you are declaring in the `sourceSets` block matches the actual path to your generated Protobuf files for your project

- In the `protobuf` files, the `java_package` declaration determines the package name for the generated files and `java_outer_classname` determines this Protobuf's generated file name → in the given starter code's Protobuf files the package name is declared as "proto" so generated Protobuf files will be placed in a package called "proto" (under `build/generated/source/proto/main/java`)

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## Protobufs

### Step 1

The screenshot shows an IDE with the following components:

- Project View (Left):** Displays the project structure for 'WordGuessingStudents'. The 'src/main/java' directory is expanded, showing sub-packages 'client' (containing 'Player' and 'SockBaseClient') and 'server' (containing 'Game' and 'SockBaseServer'). A 'proto' directory contains 'request.proto' and 'response.proto'. The 'build.gradle' file is selected and highlighted.
- Editor View (Right):** Shows the content of 'build.gradle' with the following code:

```
1 plugins {  
2     id 'java'  
3     id "com.google.protobuf" version "0.8.13" apply true  
4 }  
5  
6  
7 description = "Protocol Buffers Socket Example"  
8  
9 repositories {  
10     mavenCentral()  
11 }  
12  
13 // json and protobuf dependencies  
14 dependencies {  
15     implementation group: 'org.json', name: 'json', version: '20200518'  
16     implementation group: 'com.google.protobuf', name: 'protobuf-java', version: '3.18.0'  
17 }  
18  
19 protobuf {  
20     protoc {  
21         artifact = 'com.google.protobuf:protoc:3.21.1'  
22     }  
23     generateProtoTasks {  
24         all().each { task ->  
25             task.builtins {  
26                 }  
27             }  
28         }  
29     }  
30     def host :String = 'localhost'  
31     def port :Integer = 9099  
32  
33     // task reading in the arguments if any given, if not the default from above will be used
```
- Status Bar (Bottom):** Shows the current file is 'WordGuessingStudents > build.gradle', the time is 33:90, and the encoding is UTF-8 with 4 spaces.

# SER 321

## Protobufs

### Step 1

The screenshot shows an IDE with the following components:

- Project View (Left):** Displays the project structure for 'WordGuessingStudents'. The 'proto' directory contains 'request.proto' and 'response.proto' files. The 'build.gradle' file is selected.
- Code Editor (Center):** Shows the 'build.gradle' file with the following content:

```
1 plugins {  
2     id 'java'  
3     id "com.google.protobuf" version "0.8.13" apply true  
4 }  
5  
6  
7 description = "Protocol Buffers Socket Example"  
8  
9 sourceSets {  
10     main {  
11         java {  
12             srcDirs 'build/generated/source/proto/main/java/proto'  
13         }  
14     }  
15 }  
16  
17 repositories {  
18     mavenCentral()  
19 }  
20  
21 // json and protobuf dependencies  
22 dependencies {  
23     implementation group: 'org.json', name: 'json', version: '20200518'  
24     implementation group: 'com.google.protobuf', name: 'protobuf-java', version: '3.18.0'  
25 }  
26  
27 protobuf {  
28     protoc {  
29         artifact = 'com.google.protobuf:protoc:3.21.1'  
30     }  
31     generateProtoTasks {  
32         all().each { task ->  
33             task.builtins {
```

- Right Panel:** Shows 8 warnings and 3 errors.

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## Protobufs

### Step 2

The screenshot shows an IDE with the following components:

- Project Explorer:** Displays the project structure for 'WordGuessingStudents'. The 'src/main/java/server' directory is expanded, showing 'Game.java' and 'SockBaseServer.java'.
- Code Editor:** Shows the 'SockBaseServer.java' file with the following code:

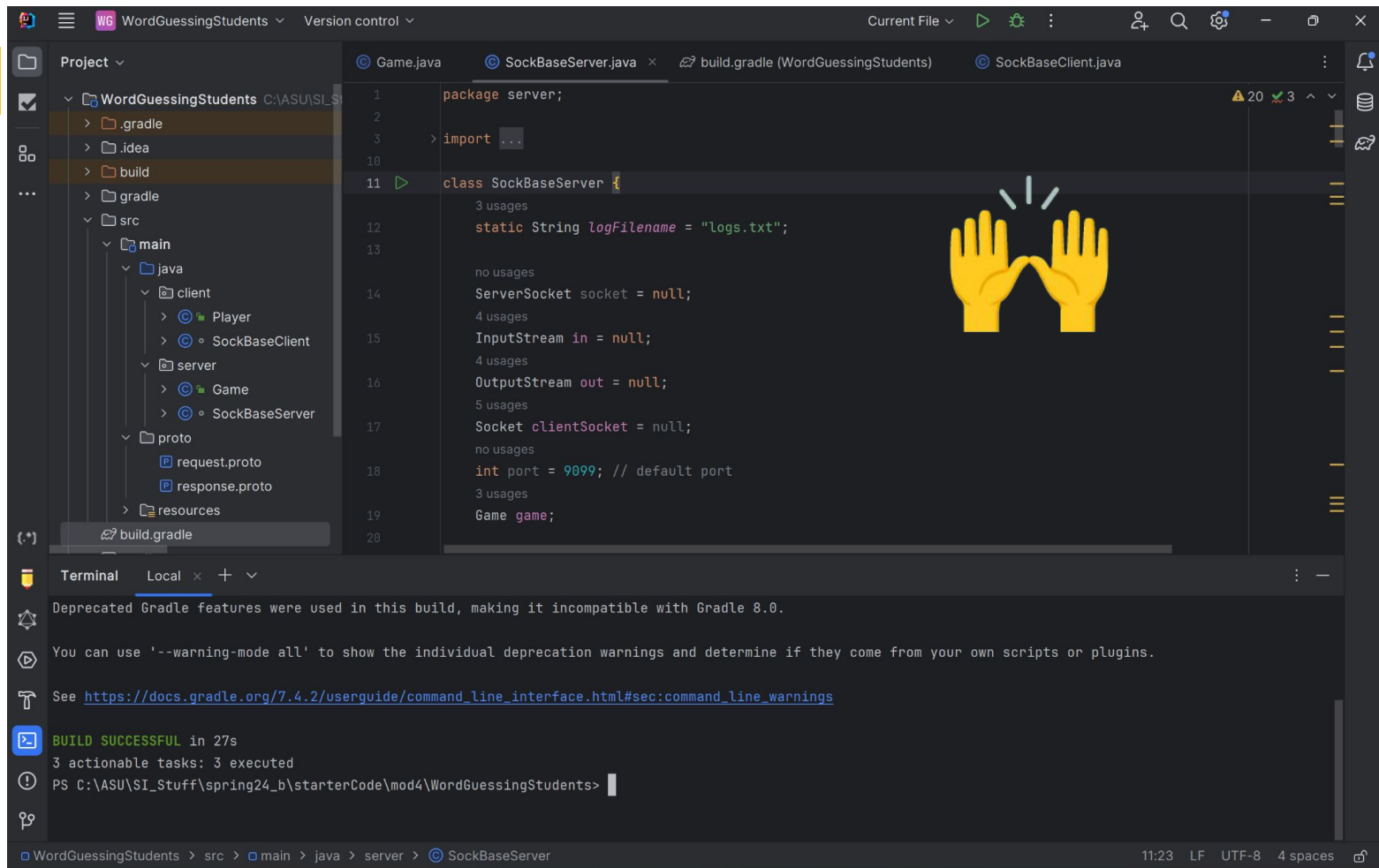
```
1 package server;
2
3 > import ...
4
11 class SockBaseServer {
12     3 usages
13     static String logFilename = "logs.txt";
14
15     no usages
16     ServerSocket socket = null;
17     4 usages
18     InputStream in = null;
19     4 usages
20     OutputStream out = null;
21     5 usages
22     Socket clientSocket = null;
23     no usages
24     int port = 9099; // default port
25     3 usages
26     Game game;
```
- Terminal:** Shows the command 'gradle generateProto' being executed in a Windows PowerShell window.

The status bar at the bottom indicates the current file is 'SockBaseServer.java' and the encoding is UTF-8.

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## Protobufs

### Step 2



The screenshot shows an IDE window for a project named "WordGuessingStudents". The project structure on the left includes a "src/main/java/server" directory containing "Game" and "SockBaseServer" classes, and "proto" files "request.proto" and "response.proto". The "SockBaseServer.java" file is open in the editor, showing the following code:

```
1 package server;
2
3 import ...
4
11 class SockBaseServer {
12     3 usages
13     static String logFilename = "logs.txt";
14
15     no usages
16     ServerSocket socket = null;
17     4 usages
18     InputStream in = null;
19     4 usages
20     OutputStream out = null;
21     5 usages
22     Socket clientSocket = null;
23     no usages
24     int port = 9099; // default port
25     3 usages
26     Game game;
```

The terminal at the bottom shows the following output:

```
Terminal Local x + v
Deprecated Gradle features were used in this build, making it incompatible with Gradle 8.0.
You can use '--warning-mode all' to show the individual deprecation warnings and determine if they come from your own scripts or plugins.
See https://docs.gradle.org/7.4.2/userguide/command\_line\_interface.html#sec:command\_line\_warnings
BUILD SUCCESSFUL in 27s
3 actionable tasks: 3 executed
PS C:\ASU\SI_Stuff\spring24_b\starterCode\mod4\WordGuessingStudents>
```

The status bar at the bottom indicates the current file is "WordGuessingStudents > src > main > java > server > SockBaseServer" and the time is 11:23.

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**Serialization**

Generic  
Superclass

# Streams and their types

```
OutputStream out = sock.getOutputStream();
```

Buffered Stream

Data Stream

Object Stream

*Check out the  
recording for the  
solution!*

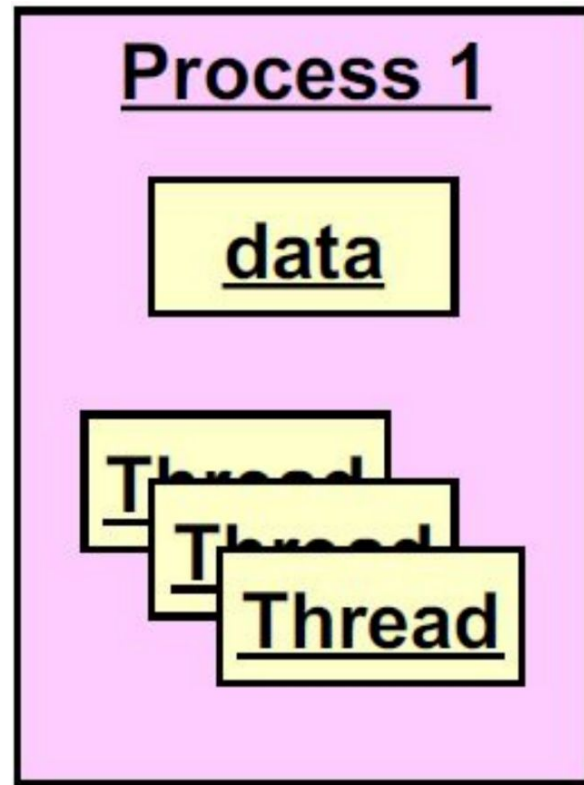


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## Threads

Remember that they exist  
*within* the parent process

What does that imply?



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**Scratch Space**

# Questions?

## Survey:

<http://bit.ly/ASN2324>



## Upcoming Events

### SI Sessions:

- Sunday, April 7th at 7:00 pm MST
- Monday, April 8th at 7:00 pm MST
- Thursday, April 11th at 7:00 pm MST

### 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.

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#### 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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[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)

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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.

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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

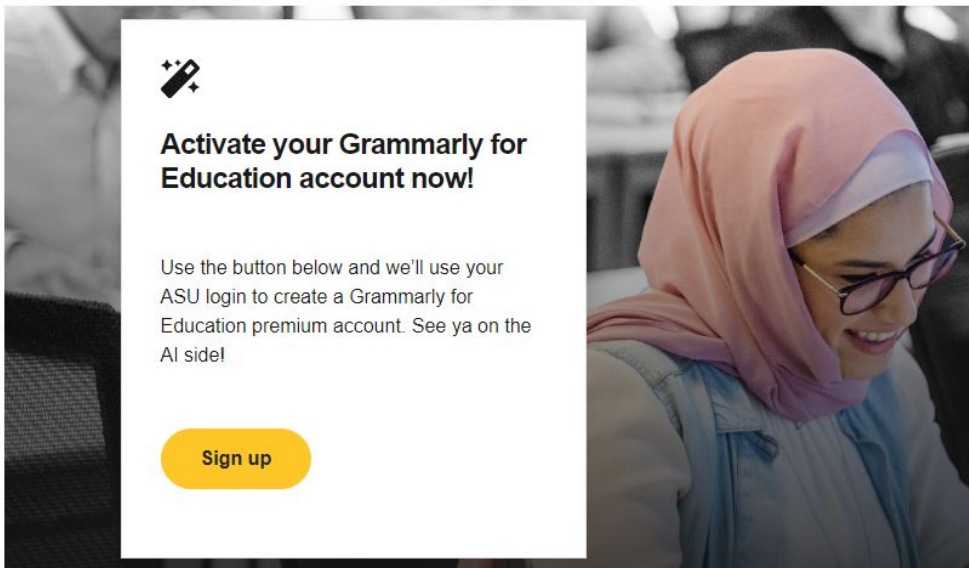
Computer Applications and Information Technology


 [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!





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Use the button below and we'll use your ASU login to create a Grammarly for Education premium account. See ya on the AI side!

[Sign up](#)



[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](#)