

SER 321 B Session

SI Session

Sunday, March 23rd 2025

7:00 pm - 8:00 pm MST

Agenda



Gradle Review

OSI Model

Importance/Why We Care

Lower & Upper Layers

HTTP

JSON

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**Gradle**

Which if statement will execute with
gradle SocketClient -Phost=localhost -Pmessage=hi ?

```
if (project.hasProperty("host") && project.hasProperty("message") && project.hasProperty("number")) {  
    args(project.getProperty('host'),  
        project.getProperty('message'),  
        project.getProperty('number'));  
} else if (project.hasProperty("host") && project.hasProperty("message")) {  
    args(project.getProperty('host'),  
        project.getProperty('message'));  
} else if (project.hasProperty("host") && project.hasProperty("number")) {  
    args(project.getProperty('host'),  
        "Set by Gradle, since nothing provided: https://gph.is/2y76sj4",  
        project.getProperty('number'));  
} else if (project.hasProperty("host")) {  
    args(project.getProperty('host'));  
}
```

A.

B.

C.

D.

SER 321**Gradle**

Which if statement will execute with
gradle SocketClient -Phost=localhost -Pmessage=hi ?

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SER 321**Gradle**

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SER 321**Gradle**

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        project.getProperty('message'));  
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        "Set by Gradle, since nothing provided: https://gph.is/2y76sj4",  
        project.getProperty('number'));  
} else if (project.hasProperty("host")) {  
    args(project.getProperty('host'));  
}
```

NONE!

How could we change that?

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Gradle Defaults

Have we set any defaults here?

Network/HTTP-JSON

Let's modify this code to have *both* defaults and command line properties!

```
task API(type: JavaExec) {  
    classpath = sourceSets.main.runtimeClasspath  
    main = 'API'  
    // default args  
    args 'kgary' // port  
}
```

First let's make the *if* statement:

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Gradle Defaults

Let's modify this code to have *both* defaults and command line properties!

```
task API(type: JavaExec) {  
    classpath = sourceSets.main.runtimeClasspath  
    main = 'API'  
  
    //OPTION 1  
  
    // default args  
    args 'kgary' // port  
  
    //OPTION 2  
  
}
```

First let's make the *if* statement:

Okay, now where do we put it?

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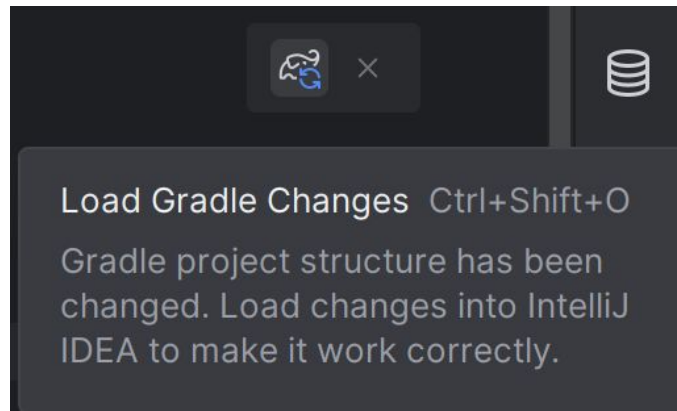
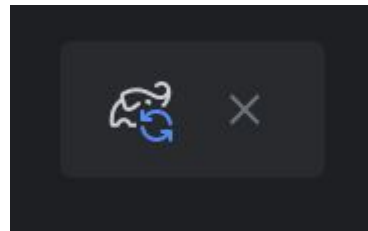
Gradle Defaults

IMPORTANT NOTE!

So you need to *refresh* the project in your IDE!

```
task API(type: JavaExec) {  
    classpath = sourceSets.main.runtimeClasspath  
    main = 'API'  
  
    //OPTION 1  
  
    // default args  
    args 'kgary' // port  
  
    //OPTION 2  
    if (project.hasProperty("port")) {  
        args(project.getProperty("port"));  
    }  
}
```

We changed the
content of
build.gradle



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OSI Model

Unit

Layer

What we are *really*
talking about

Data	Application	
Data	Presentation	
Data	Session	
Segment	Transport	
Packet	Network	
Frame	Data Link	
Bits	Physical	

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Network Layer - IP

Given the following IP address, identify the...

Port

128.148.32.110

8080

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Network Layer - IP

Given the following IP address, identify the...

Subnet

128.148.32.110:8080

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Network Layer - IP

Given the following IP address, identify the...

Network

128.148.32.110:8080

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Network Layer - IP

Given the following IP address, identify the...

Host

128.148.32.110:8080

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TCP/UDP

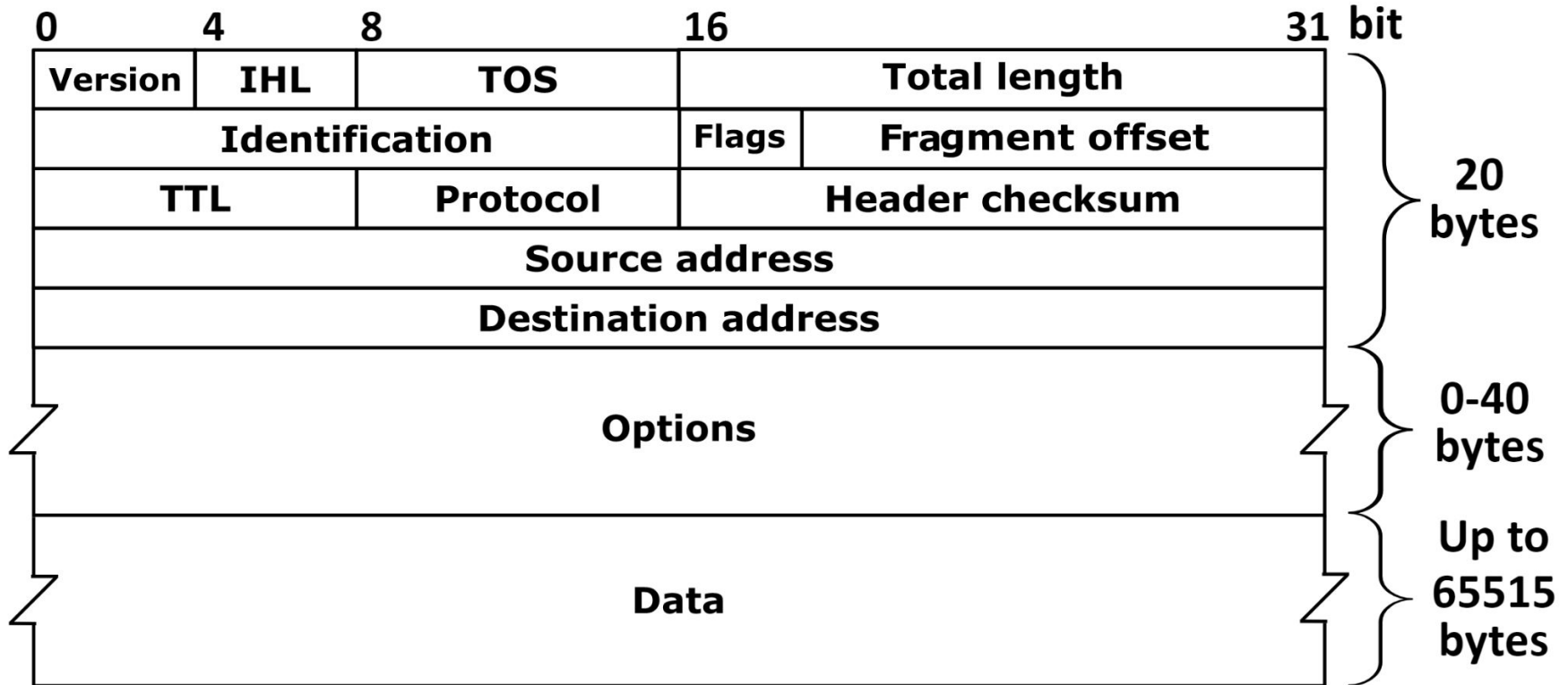
TCP	UDP

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Headers

What type of header is this?

IP Header



Headers

TCP or UDP Header?

Offsets		0								1								2								3							
Octet	Bit	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
0	0	Source port																Destination port															
4	32	Sequence number																															
8	64	Acknowledgment number (if ACK set)																															
12	96	Data offset				Reserved 0 0 0 0				C W R	E C E	U R G	A C K	P S H	R S T	S Y N	F I N	Window Size															
16	128	Checksum																Urgent pointer (if URG set)															
20	160	Options (if <i>data offset</i> > 5. Padded at the end with "0" bits if necessary.)																															
:	:																																
56	448																																

Headers

TCP or UDP Header?

Offset	Octet	0								1								2								3							
Octet	Bit	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
0	0	Source Port																Destination Port															
4	32	Length																Checksum															
8	64	Data																															
12	96																																
⋮	⋮																																

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OSI Model

Unit

Layer

What we are *really*
talking about

Data	Application	
Data	Presentation	
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Bits	Physical	

What **is** the
OSI Model?



Can someone give a
TL;DR summary?

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OSI Model

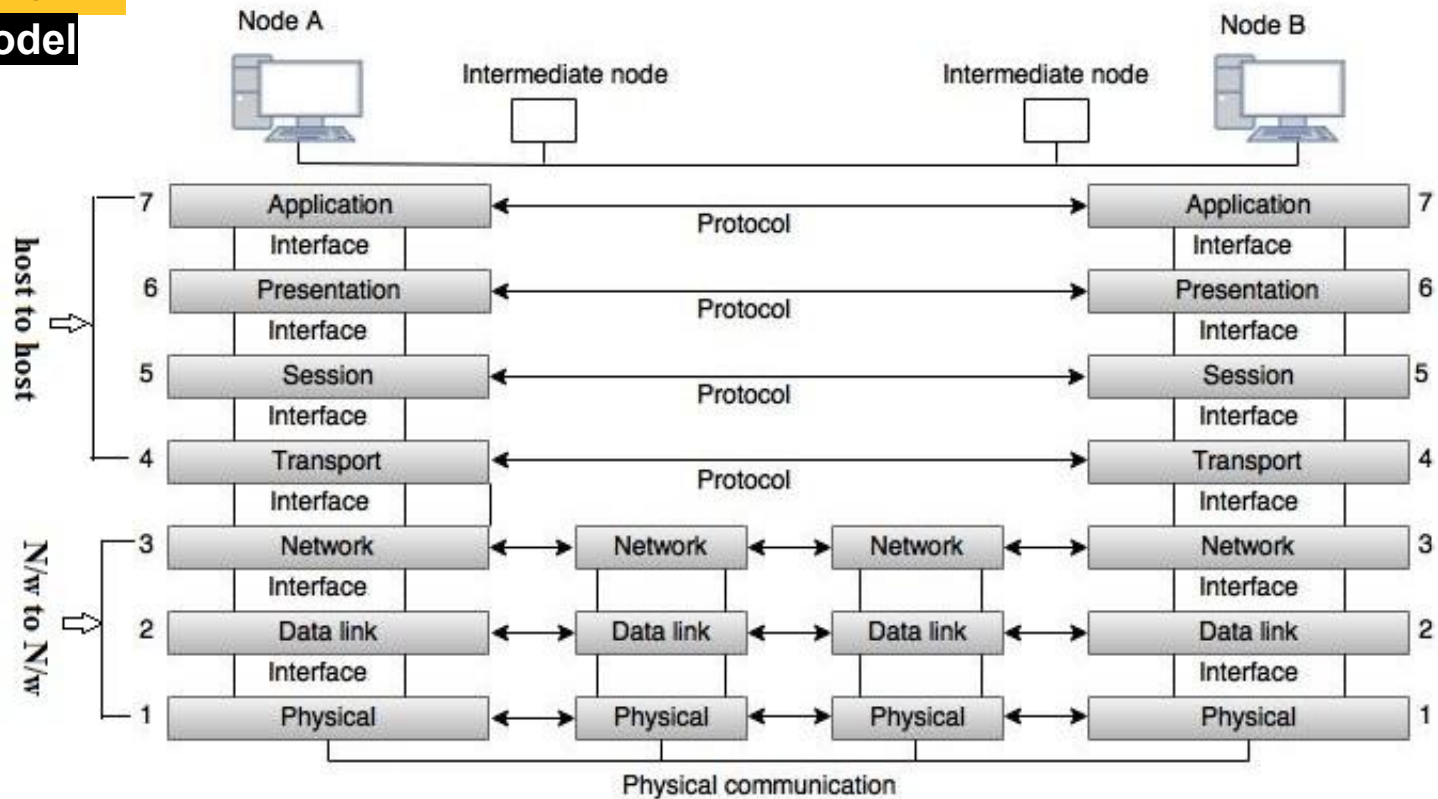


Fig: OSI Model

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OSI Model

Unit

Layer

What we are *really*
talking about

Data	Application	
Data	Presentation	
Data	Session	
Segment	Transport	
Packet	Network	
Frame	Data Link	
Bits	Physical	

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OSI Model

Unit

Layer

What we are *really*
talking about

Data	Application	
Data	Presentation	
Data	Session	
Segment	Transport	TCP/UDP
Packet	Network	IP address, routing and delivery
Frame	Data Link	LLC, MAC, data transmission in LAN
Bits	Physical	Signal, Binary transmission

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OSI Model

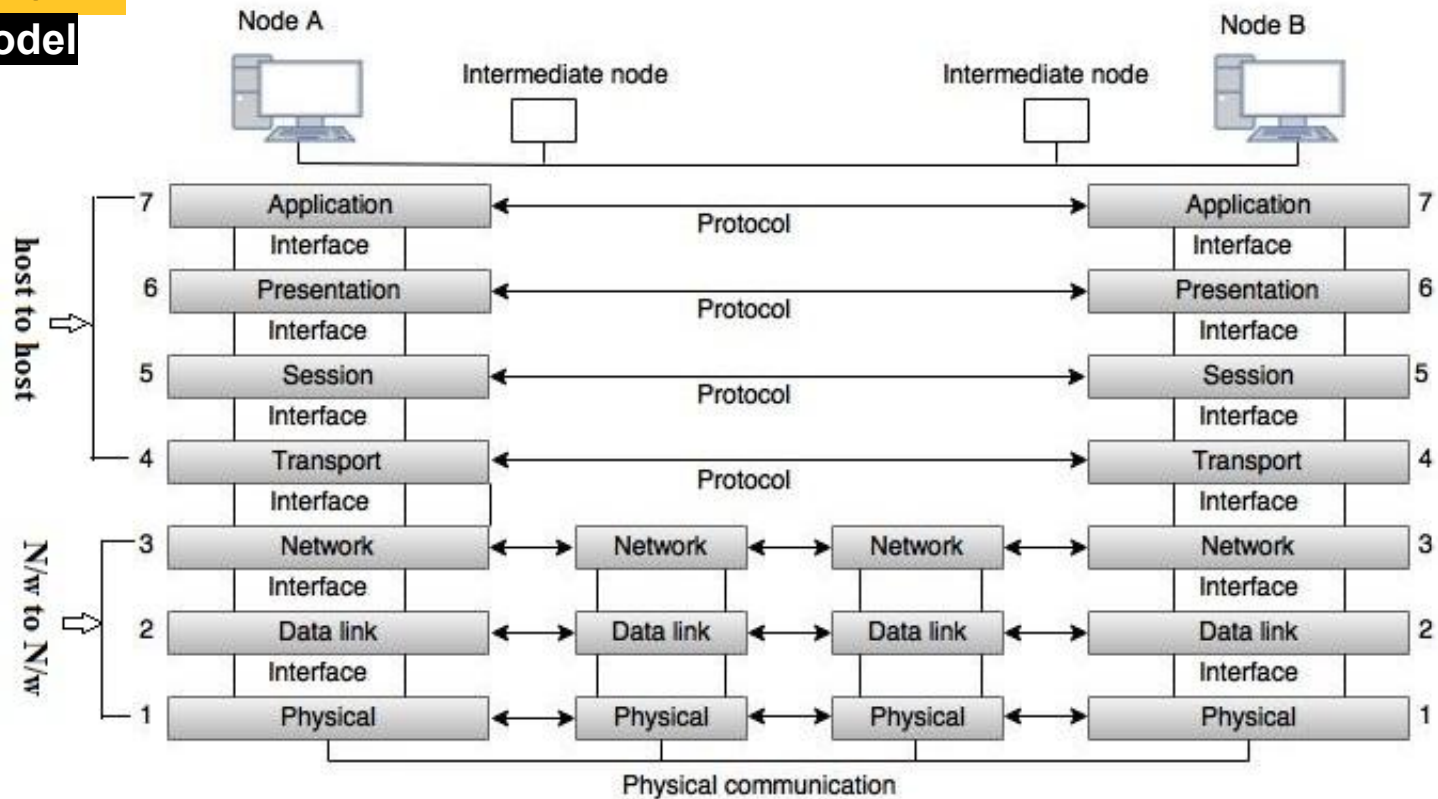
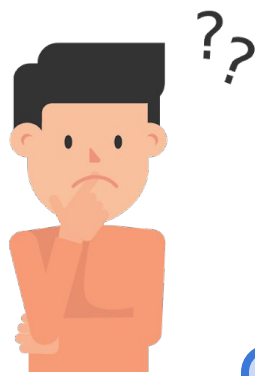


Fig: OSI Model

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HTTP(S)



Stateful

OR

Stateless

Synchronous

OR

Asynchronous

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URLS

Given the following URL, identify the...

Query

<https://www.google.com/search?q=asu>

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URLS

Given the following URL, identify the...

Protocol

https://www.google.com/search?q=asu

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URLS

Given the following URL, identify the...

Path

<https://www.google.com/search?q=asu>

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URLS

Given the following URL, identify the...

Host

<https://www.google.com/search?q=asu>

We will focus on ***FOUR*** request types

1.

2.

3.

4.

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HTTP Requests

What's the difference?

1. GET

2. POST

3. PUT

4. DELETE

Idempotent

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HTTP Responses

Status Codes →

1XX

2XX

3XX

4XX

5XX

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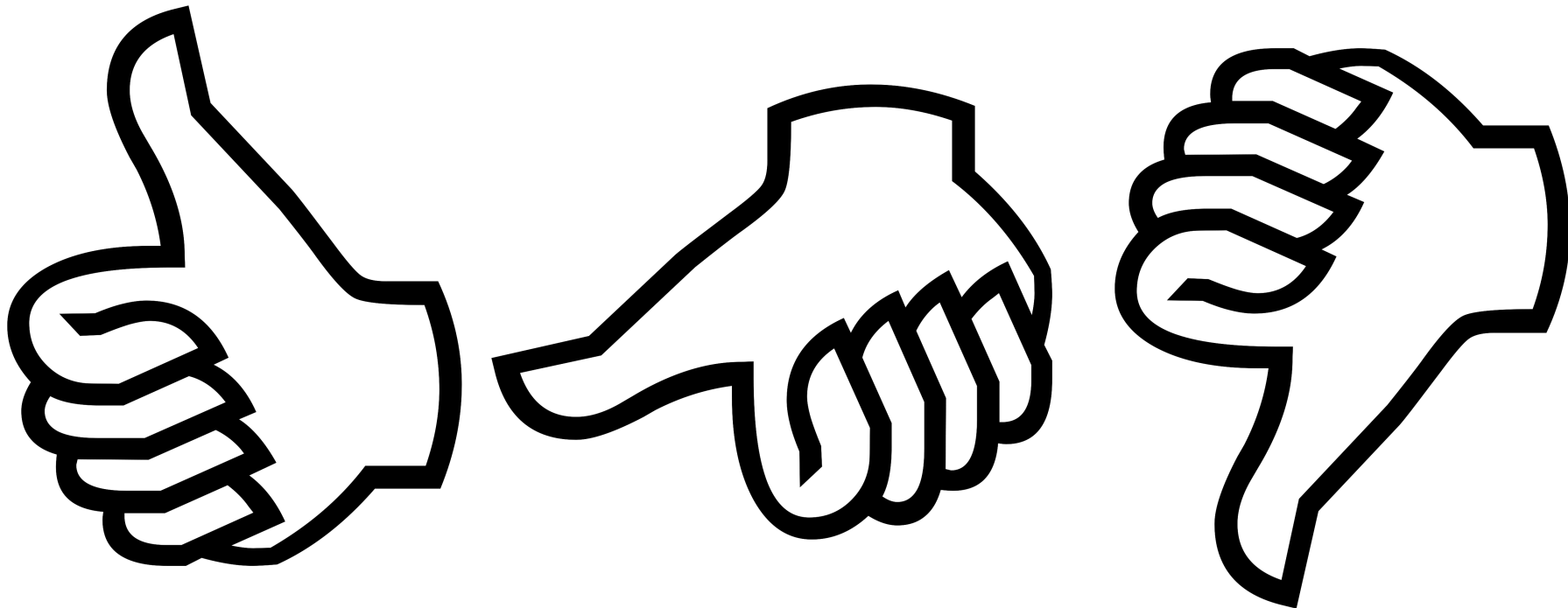
HTTP Responses

1XX	Information	Rare			
2XX	Success	200	201	204	
3XX	Redirect	301			
4XX	User Error	400	403	404	405
5XX	Server Error	501	503		

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JSON

How comfortable are we with JSON?



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JSON

Object

Array

Member

{ }

[]

“name” : value

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JSON

What do we see?

```
1. {
    "name" : "katie",
    "role" : "student",
    "course" : "ser321"
}
```

```
2. [
    {"name" : "katie"}
]
```

```
3. {
    "name" : "katie",
    "pets" : {
        "dog" : "smokey"
    }
}
```

```
4. {
    "submissions" : [
        {"name" : "katie"},
        {"name" : "zac"}
    ]
}
```

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JSON

Do you see any errors?

```
1. {  
    "name" : "katie",  
    "role" : "student",  
    "course" : "ser321"  
}
```

```
2. [{  
    "name" : "katie",  
    "name" : "zac"  
}]
```

```
3. {  
    "name" : "katie",  
    "pets" : {  
        "dog" : "smokey",  
        "dog" : "samie"  
    }  
}
```

```
4. {  
    "submissions" : [  
        {"name" : "katie"},  
        {"name" : "zac"}  
    ]  
}
```

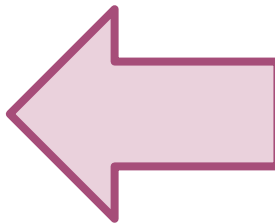
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JSON

Can we fix these?

```
[  
  {"name": "katie"},  
  {"name": "zac"}  
]
```

Correct!



```
[{  
  "name": "katie",  
  "name": "zac"  
}]
```

WRONG

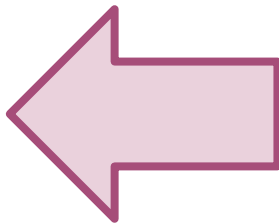
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JSON

Can we fix these?

```
[  
  {"name": "katie"},  
  {"name": "zac"}  
]
```

Correct!

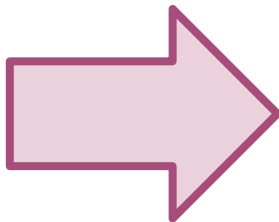


```
[{  
  "name": "katie",  
  "name": "zac"  
}]
```

WRONG

```
{  
  "name": "katie",  
  "pets": {  
    "dog": "smokey",  
    "dog": "samie"  
  }  
}
```

WRONG



```
{  
  "name": "katie",  
  "pets": {  
    {"dog": "smokey"},  
    {"dog": "samie"}  
  }  
}
```

Correct!

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JSON

How many Objects?

How many Arrays?

How many Members?

```
{
  "name": "lab3vue_act3_kgrinne3",
  "version": "0.0.0",
  "private": true,
  "scripts": {
    "dev": "vite",
    "build": "vite build",
    "preview": "vite preview"
  },
  "dependencies": {
    "vue": "^3.3.4"
  },
  "devDependencies": {
    "@vitejs/plugin-vue": "^4.3.1",
    "vite": "^4.4.9"
  }
}
```

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JSON in Assignments

Starter Code files use **org.json**

If you have a different JSON library you would prefer to use, you *can* use that

This library is **very** intuitive, so I recommend using it!

JSONObject

A JSONObject is an unordered collection of name/value pairs.

JSONArray

A JSONArray is an ordered sequence of values.

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JSON in Assignments

Very Similar to a **MAP** object

JSONObject

A JSONObject is an unordered collection of name/value pairs.

boolean

`has(String key)`

Determine if the JSONObject contains a specific key.

```
boolean hasStu = json.has("student");
```

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JSONObject	<code>put(String key, boolean value)</code> Put a key/boolean pair in the JSONObject.
JSONObject	<code>put(String key, Collection<?> value)</code> Put a key/value pair in the JSONObject, where the value will be a JSONArray which is produced from a Collection.
JSONObject	<code>put(String key, double value)</code> Put a key/double pair in the JSONObject.
JSONObject	<code>put(String key, float value)</code> Put a key/float pair in the JSONObject.
JSONObject	<code>put(String key, int value)</code> Put a key/int pair in the JSONObject.
JSONObject	<code>put(String key, long value)</code> Put a key/long pair in the JSONObject.
JSONObject	<code>put(String key, Map<?,?> value)</code> Put a key/value pair in the JSONObject, where the value will be a JSONObject which is produced from a Map.
JSONObject	<code>put(String key, Object value)</code> Put a key/value pair in the JSONObject.

Put will add to the Object

```
json.put("term", "spring");
```

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JSON in Assignments

Need to know the data type
when pulling from the
JSONObject!

```
JSONObject json = {  
    "Student" : "katie",  
    "term" : "fall"  
}
```

```
String term = json.get("term");
```



```
String term = json.getString("term");
```



Object	<code>get(String key)</code> Get the value object associated with a key.
BigDecimal	<code>getBigDecimal(String key)</code> Get the BigDecimal value associated with a key.
BigInteger	<code>getBigInteger(String key)</code> Get the BigInteger value associated with a key.
boolean	<code>getBoolean(String key)</code> Get the boolean value associated with a key.
double	<code>getDouble(String key)</code> Get the double value associated with a key.
<code><E extends Enum<E>></code> E	<code>getEnum(Class<E> clazz, String key)</code> Get the enum value associated with a key.
float	<code>getFloat(String key)</code> Get the float value associated with a key.
int	<code>getInt(String key)</code> Get the int value associated with a key.
JSONArray	<code>getJSONArray(String key)</code> Get the JSONArray value associated with a key.
JSONObject	<code>getJSONObject(String key)</code> Get the JSONObject value associated with a key.
long	<code>getLong(String key)</code> Get the long value associated with a key.
static String[]	<code>getNames(JSONObject jo)</code> Get an array of field names from a JSONObject.
static String[]	<code>getNames(Object object)</code> Get an array of public field names from an Object.
	<code>getNumber(String key)</code> Get the Number value associated with a key.
	<code>getString(String key)</code> Get the string associated with a key.

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JSON in Assignments

JSONArray

No HAS

Can target indices

Object	<code>get(int index)</code> Get the object value associated with an index.
BigDecimal	<code>getBigDecimal(int index)</code> Get the BigDecimal value associated with an index.
BigInteger	<code>getBigInteger(int index)</code> Get the BigInteger value associated with an index.
boolean	<code>getBoolean(int index)</code> Get the boolean value associated with an index.
double	<code>getDouble(int index)</code> Get the double value associated with an index.
<code><E extends Enum<E>> E</code>	<code>getEnum(Class<E> clazz, int index)</code> Get the enum value associated with an index.
float	<code>getFloat(int index)</code> Get the float value associated with a key.
int	<code>getInt(int index)</code> Get the int value associated with an index.
JSONArray	<code>getJSONArray(int index)</code> Get the JSONArray associated with an index.
JSONObject	<code>getJSONObject(int index)</code> Get the JSONObject associated with an index.
long	<code>getLong(int index)</code> Get the long value associated with an index.
Number	<code>getNumber(int index)</code> Get the Number value associated with a key.
String	<code>getString(int index)</code> Get the string associated with an index.

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JSON Practice

JSONObject json =

How would we...

Check for the name member?

boolean hasName =

Get the project name?

String name =

```
{
  "name": "lab3vue_act3_kgrinne3",
  "version": "0.0.0",
  "private": true,
  "scripts": {
    "dev": "vite",
    "build": "vite build",
    "preview": "vite preview"
  },
  "dependencies": {
    "vue": "^3.3.4"
  },
  "devDependencies": {
    "@vitejs/plugin-vue": "^4.3.1",
    "vite": "^4.4.9"
  }
}
```

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JSON Practice

[org.json Docs](#)

[JSON Guide](#)

JSONObject json =

How would we...

Get the dev value?

JSONObject scripts =

String dev=

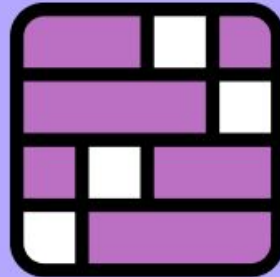
```
{
  "name": "lab3vue_act3_kgrinne3",
  "version": "0.0.0",
  "private": true,
  "scripts": {
    "dev": "vite",
    "build": "vite build",
    "preview": "vite preview"
  },
  "dependencies": {
    "vue": "^3.3.4"
  },
  "devDependencies": {
    "@vitejs/plugin-vue": "^4.3.1",
    "vite": "^4.4.9"
  }
}
```

Step 1:
Get the scripts
Object

Step 2:
Get the dev
value

Connections!

The New York Times **Games**



Connections

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Scratch Space

Upcoming Events

SI Sessions:

- Tuesday, March 25th at 10:00 am MST
- Thursday, March 27th at 7:00 pm MST
- Sunday, March 30th at 7:00 pm MST

Review Sessions:

- TBD

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



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[Access the drop-in queue](#)

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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?

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tutoring.asu.edu/online-study-hub

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[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.

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- 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

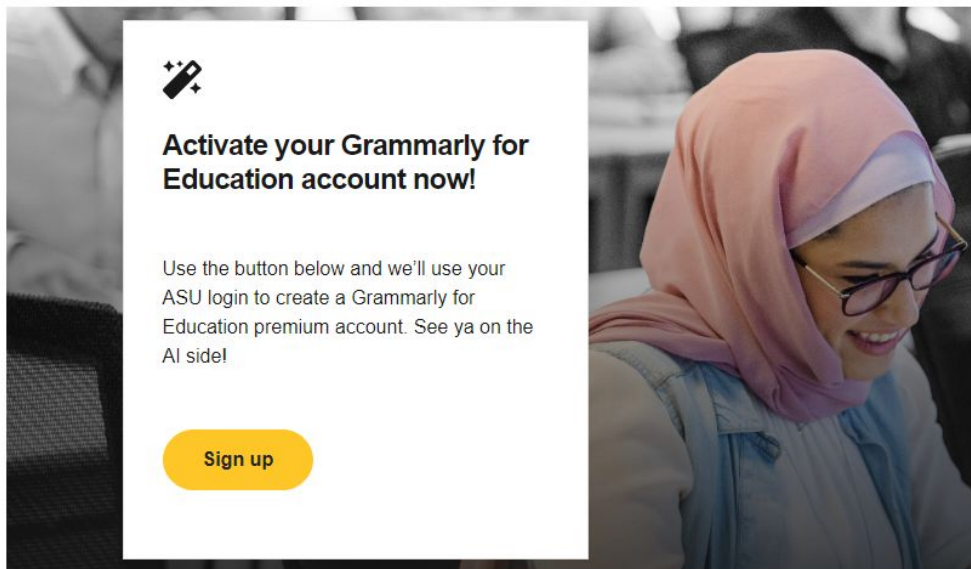
Computer Applications and Information Technology

 [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

*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](#)