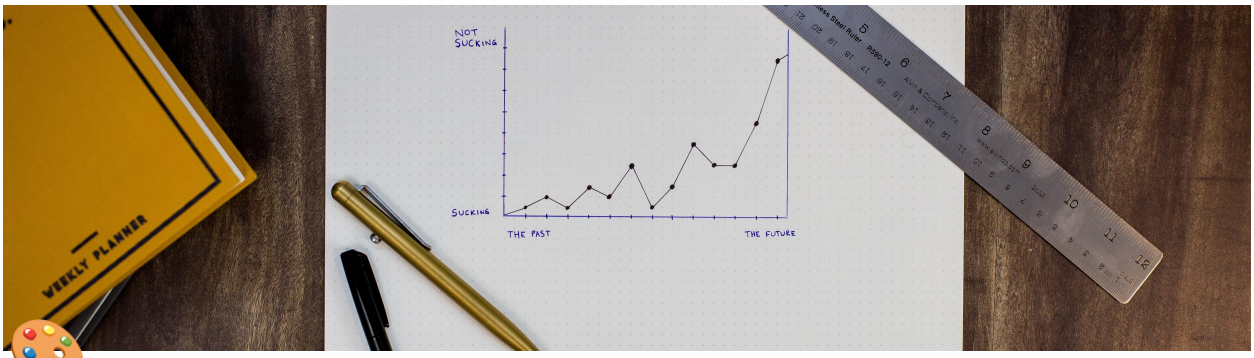


Intro to Software Design

Tags	API, Data Modeling, Domain-Driven Design, Entities, Human Behavior, JSON, Microservices, Object-Oriented Programming, Software Design, Ubiquitous Language, Value Objects
Date	@December 19, 2022
# Week #	7
# Day #	1

Worksheet

INSTRUCTIONS

1. Duplicate this document to your own Notion account.
2. Follow along during the lecture.
3. Fill in the blanks with definitions of terms we talked about in class.
Record the answers to Slido quizzes here, so you can go back and study later!
4. When you're done, share your Notion document with **kaitlin.cort@galvanize.com**

Link to Notion worksheet:
https://kaizenpath.notion.site/Intro-to-Software-Design-630c19679d8a4ffba4760e853301d61e

▼ Content Links

1. Domain-Driven Design
2. Advantages of Microservices Architecture
3. Disadvantages of Microservices Architecture
4. Ubiquitous Language
5. Entities
6. Entities vs. Value Objects
7. JSON

- `Class Example:` Making a reservation at Selina
- `Your Turn:` Building a DDD diagram *[Breakout Groups Activity]*
- `Code-Along:` JSON

---

1. Domain-Driven Design

What is Domain-Driven Design?

What is a Domain?

2+3. Advantages & Disadvantages of Microservices Architecture

List five advantages of using microservices architecture.

1.
2.
3.
4.
5.

List three major challenges of using microservices architecture.

1.
2.
3.

---

4. What is Ubiquitous Language?

---

5. What are Entities in Domain-Driven Design?

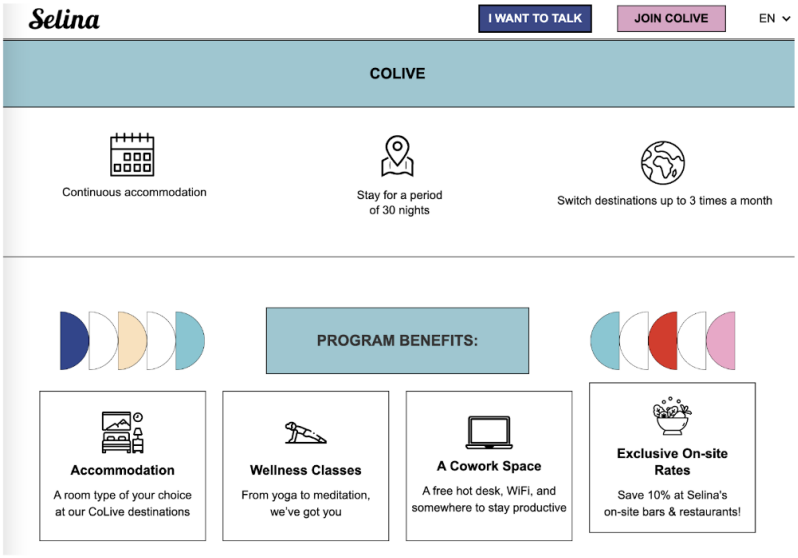
Example: Making a Reservation at Selina

Business Problems:

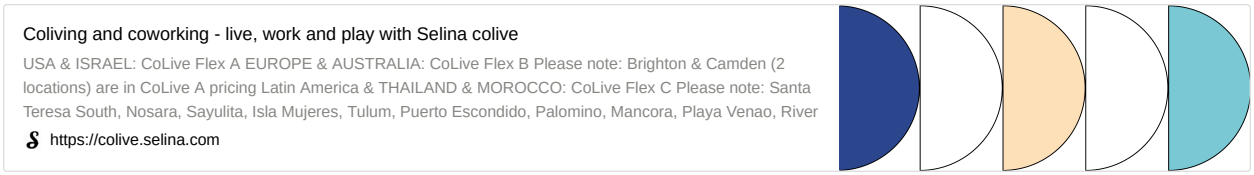
1. **Booking** - Assign rooms by room type, location and availability.

2. **Billing** – Add up all the charges for the reservation, with services and taxes.

HACK REACTOR BY GALVANIZE



Link: https://colive.selina.com



▼ Name some attributes for a room reservation at Selina CoLive:

▼ Name some methods for generating a bill at Selina CoLive:

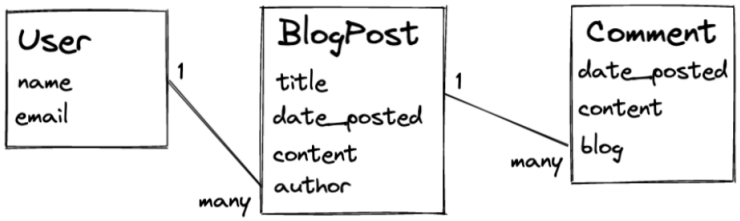
▼ Take a screenshot of the ExCalidraw for the example hotel app, and drag the screenshot down below, for reference later.

Your Turn: Model a Hotel Reservation

Business Problems:

1. **Booking** - Assign rooms by room type, location and availability.

2. **Billing** – Add up all the charges for the reservation, with services and taxes.



- Object Names
- Attributes & Methods
- Relationships between objects:
  - One-to-one
  - One-to-many

HACK REACTOR BY GALVANIZE

▼ **Some examples of attributes:**

This is the list of different kinds of taxes and fees that can occur for rooms:

- City sales tax calculated based on how much the room costs per night
- Local sales tax calculated based on how much the room costs per night
- State sales tax calculated based on how much the room costs per night
- Hospitality fee which is only applied on weekends and is based on the city
- Cleaning fee which may be applied for special circumstances

This is the list of the different services that can accrue

on a guest's bill:

- Room service based on what is ordered to the room, plus the gratuity
- Valet service for the number of nights the guest's vehicle is parked in valet parking
- Wi-Fi service upgrade based on the number of days that it is upgraded
- Breakfast service based on the number of people from a room that have breakfast service

▼ Export a .png image of your group’s Hotel Reservation diagram here:

---

6. Entities vs. Value Objects

What is an entity? List three examples of an entity.

What is a value object? List three examples of a value object.

QUIZ GAME

Drag-and-Drop below:

Aa Name	Tags
Hotel Room	ENTITY
Room Type	
Guest	ENTITY
Bill	
Currency	

---

7. What is JSON? Write down the rules of JSON.

JSON is…

1.
2.
3.
4.

How do you transform Python dictionaries into JSON strings?

How do you transform JSON strings into Python dictionaries?

Code-Along

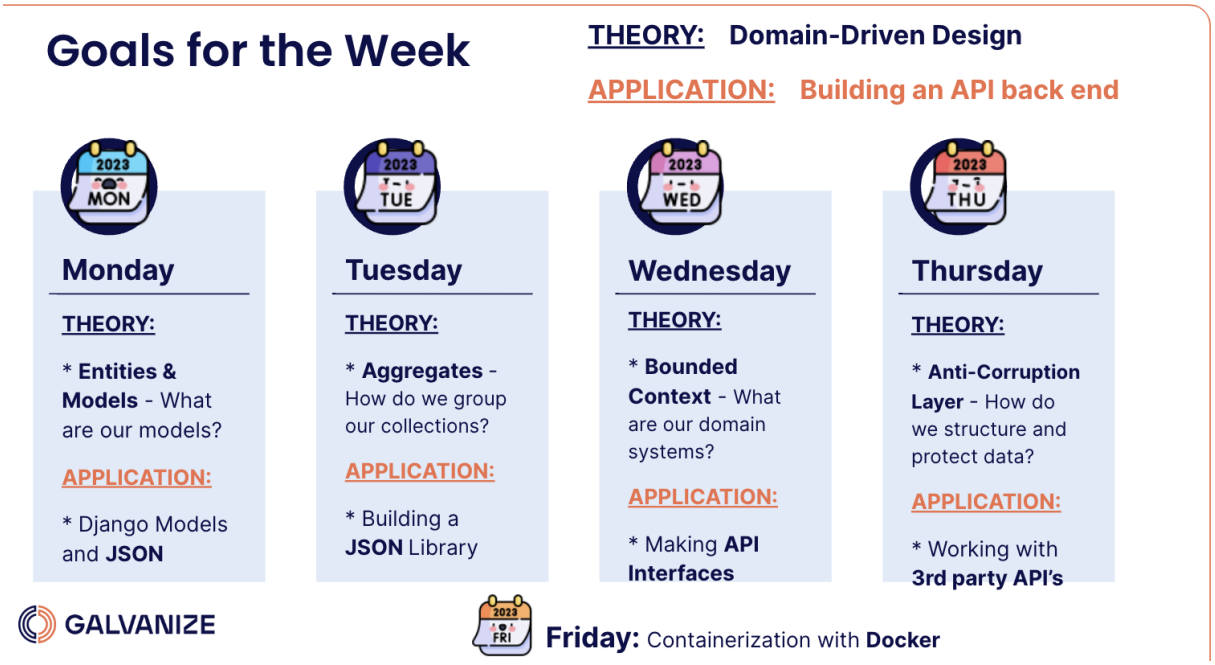
You can load the following JSON data types:

- String
- Number
- Boolean
- Array
- Object
- Null

```python
import json

json.loads("3")
json.loads("6.28")
json.loads("3") + json.loads("6.28")

json.loads('"Hello"')
json.loads("true")
json.loads("false")

json.loads("null")
```

```
import json

# encoding/writing (serializing) Python object
init_data = {"id":1,"first_name":"Hilary","last_name":"Croome","email":"hcroome0@seesaa.net","ip_address":"135.225.193.5","assets":[187,114

# writing a file
with open("init_data_file.json", "w") as file_data:
    json.dump(init_data, file_data)

# storing encoded data in a variable
json_data = json.dumps(init_data)
type(json_data)

# Mocking a requests.get(url) response
api_call_result = """
{
    "researcher": {
        "name": "Ford Prefect",
        "species": "Betelgeusian",
        "relatives": [
            {
                "name": "Zaphod Beeblebrox",
                "species": "Betelgeusian"
            }
        ]
    }
}
"""

# what will be the type of this variable?
data_from_api = json.loads(api_call_result)

type(data_from_api)
```

Wrap-Up



What are the three major themes for this week?

1.
2.
3.

Feedback:

How are you feeling about the material in Module 2 right now? Gimme an emoji.

Share your Notion document with ***kaitlin.cort@galvanize.com***