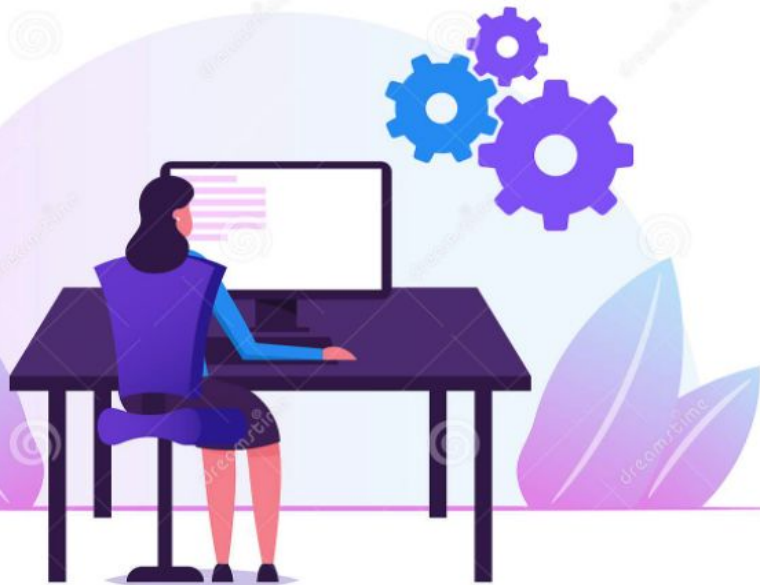


# Welcome!



## WWCode Digital + Backend Backend Study Group

March 31, 2022

- We'll start in a moment :)
- We are NOT recording tonight's event. We may plan to take screenshots for social media.
- ***If you want to remain anonymous***, change your name & keep video off.
- We'll introduce the hosts and break in-between for Q/A.
- We will make some time for Q&A at the end of the presentation as well.
- You can come prepared with questions. And, feel free to take notes.
- Online event best practices:
- Don't multitask. Distractions reduce your ability to remember concepts.
- Mute yourself when you aren't talking.
- We want the session to be interactive.
- Feel free to unmute and ask questions in the middle of the presentation.
- Turn on your video if you feel comfortable.
- Disclaimer: Speaker doesn't know everything!

# Introduction & Agenda

- Welcome from WWCode!
- Our mission: Inspiring women to excel in technology careers.
- Our vision: A world where women are representative as technical executives, founders, VCs, board members and software engineers.
- What is Backend Engineering?
- Introduction to Java Microservices:
- What is Java?
- What is Spring and Spring Boot?
- What are Microservices?
- Demo of a Java Microservice with CRUD operations
- Q/A.



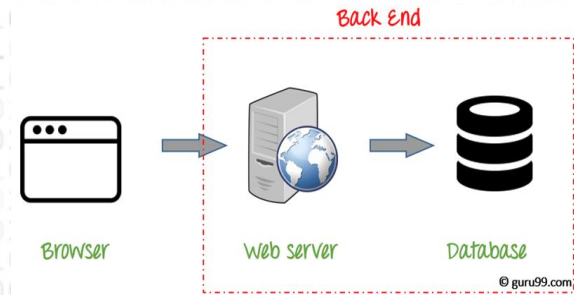
**Prachi Shah**  
**Speaker,**  
**Senior Software Engineer,**  
**Metromile**  
**Director, WWCode SF**



**Harini Rajendran**  
**Co-host,**  
**Software Engineer,**  
**Confluent**  
**Lead, WWCode SF**  
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# Backend Engineering

- Design, build and maintain server-side web applications.
- Common terms: Client-server architecture, networking, API, web frameworks, platform, micro-service, database engineering, web fundamentals, etc.
- Other domains: Front end engineering, full stack engineering, design & user experience, mobile development, devOps engineering, machine learning, etc. \*
- Examples: Amazon Online Shopping, Instagram, Weather website.



\* *Disclaimer: Roles and responsibilities can vary per company and industry.*



# Backend Engineering

## Java programming language:

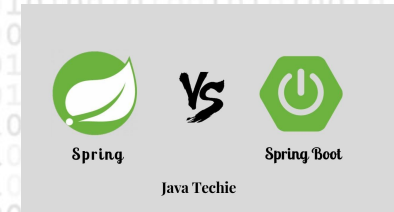
- Class-based
- Object-oriented
- WORA (write-once-run-anywhere)

## Spring framework:

- Java application development framework
- Develop loosely coupled applications
- Dependency Injection & Inversion of Control: objects created by Spring container

## Spring Boot framework:

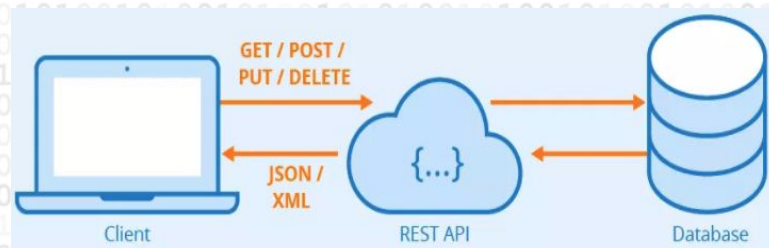
- To develop microservices
- To develop REST APIs
- Build stand-alone, production-ready application
- Reduces boilerplate code because auto-configuration
- Supports in-memory database



# Backend Engineering

## MVC design pattern:

- Model-View-Controller
- Model: Objects carrying data
- View: Visualization and data representation
- Controller: Connects with model and view. Business rules and data manipulation



## REST APIs:

- REST: REpresentational State Transfer. Standard for HTTP communication
- API: Application Programming Interface. Functions for data exchange
- HTTP Verbs: POST, GET, PUT, DELETE

## Microservice:

- Loosely coupled applications. Easy to scale, deploy and monitor
- Independent application that serve one purpose
- Uses REST APIs for communication
- Supports database implementation and management

# Backend Engineering

## H2 Database:

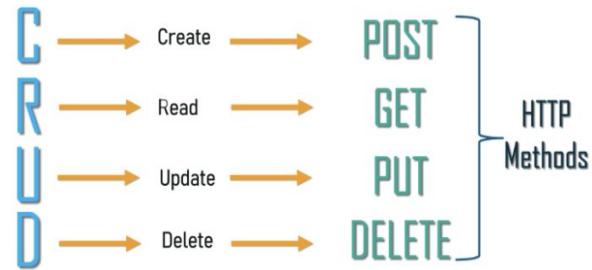
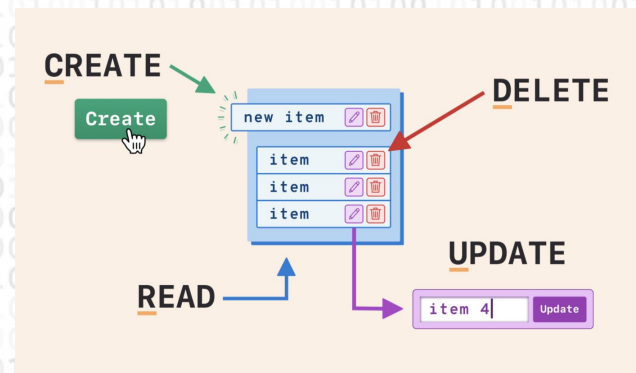
- In-memory or file-based database
- Relational DBMS
- Does not scale much
- CRUD: Create, Read, Update, Delete

## JUnit testing framework:

- TDD: Test-driven development and unit tests
- Mockito library: Mock services and repositories

## Maven build automation:

- POM: Project Object Model
- Dependencies
- Set of commands





# Backend Engineering Demo



# Backend Engineering

## Summary:

- Java is a suitable OOP & backend language to develop microservices.
- Spring and Spring Boot enable easier development for REST APIs.
- Every microservice with data has basic CRUD operations.
- Building a simple microservice with CRUD operations is easier than you think! :)

## Resources:

- [Creating a Simple Microservice](#)
- [What are Microservices?](#)

## Backend Study Group:

- [Presentations](#) and session recordings found here: [WWCode YouTube channel](#)
  - Upcoming session: April 14, 2022 about [Intro to Kafka](#)
  - Upcoming session: April 21, 2022 about [Backend Engineer Interview preparations](#)
  - Upcoming session: May 5, 2022 about Intro to Distributed Systems
- [Technical Tracks](#) and [Digital Events](#)
- Get updates – join the [Digital mailing list!](#)
- Have questions?
- Contact us at: [contact@womenwhocode.com](mailto:contact@womenwhocode.com)
- Join our [Slack](#) channel and join `#backend-study-group`!



*You can unmute and talk or use the chat.*

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