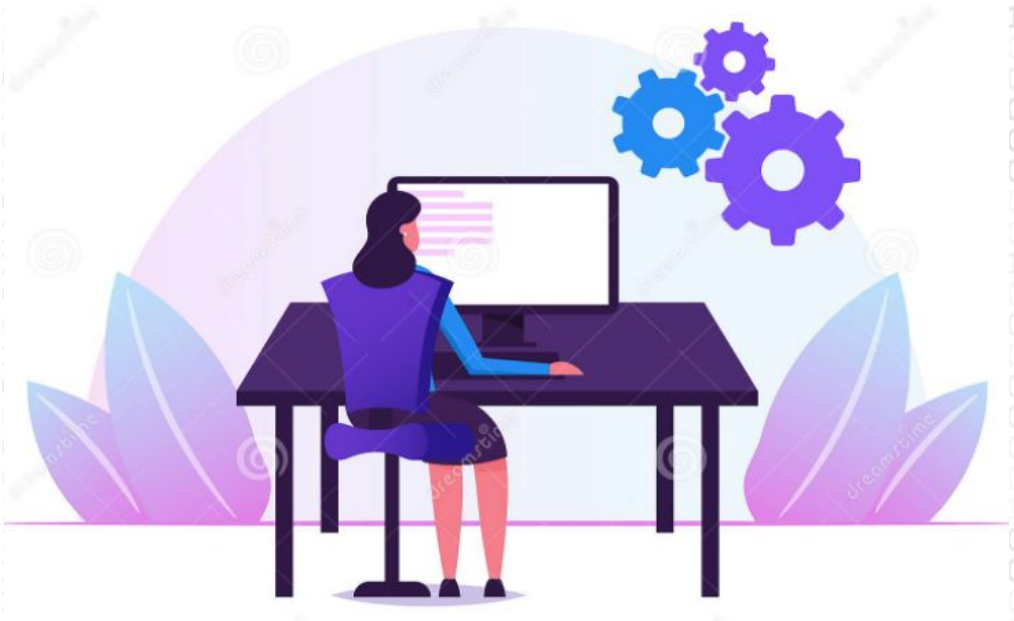
Welcome!



WWCode Digital + **Backend**

Backend Study Group

April 21, 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 knows everything!

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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.

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

Harini Rajendran
Co-host,
Software Engineer, Confluent
Lead, WWCode SF

- How to prepare for Backend Engineering interviews?
- What are Backend Engineering interviews like?
- Common questions asked by interviewers.
- Resources for preparation.
- Do's and Don'ts.
- Q/A.

Disclaimer:
- Can be heavy! Lots of acronyms.
- Speaker doesn't know everything.
- Q/A at the end.

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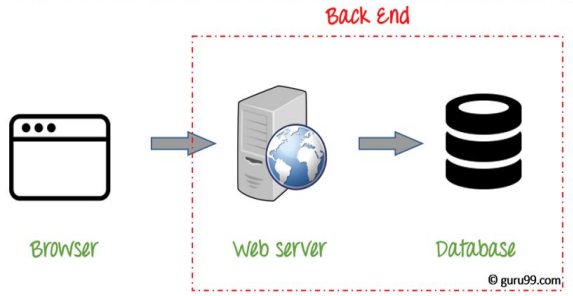
Backend Engineering

- 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.*

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Backend Engineering Interviews

- **Interviews:**
  - Technical Screen/Coding (1x or 2x)
  - Hiring Manager (technical)
  - Pair Programming: Code review, bug fixing
  - System Design (1x or 2x at onsite interviews)

- **Remember**:
  - Process varies per company, team and/or role.
  - Duration of the interview varies.
  - Number of interviewer can be more than 1.
  - Format of the interview can be different.

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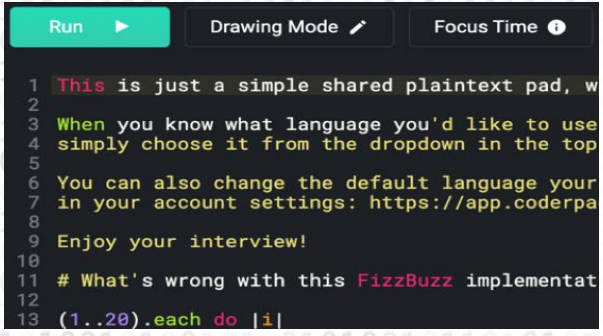
Backend Engineering Interviews

- **Technical Screen/Coding interview:**
  - Active coding session to solve technical problem(s).
  - String Manipulation (occurrence of given char in string; non-repeated chars, etc.)
  - Sorting algorithms (sort LinkedList, merge two sorted lists, etc.)
  - Searching algorithms (binary search in a given array, DFS, BFS, etc.)
  - A company/team specific problem (Order management, traffic control system, etc.)



- **Remember:**
  - Ask relevant questions before you start coding.
  - Language doesn't matter.
  - Be familiar with online coding platforms (coderpad, etc.)
  - Engage with the interviewer.
  - Time check! Some interviewers ask two questions in 45 minutes (as an example)
  - Confidence is everything! :)

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Backend Engineering Interviews

- **Hiring Manager interview:**
  - Current experience: Work projects
  - What was your contribution?
  - What is the product? How does it impact the business?
  - Team structure, day-to-day responsibilities.
  - Are you a team fit?
  - Are you a culture fit?
  - What are your career goals?
  - What work do you want to do in this new team/company?
  - Excellent time to talk about your personal/side projects and interests.
  - Hiring manager will identify the role and team fit.
  - Compensation may/may not be discussed (depends on manager/team/company).

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Backend Engineering Interviews

- **Pair Programming interview *:**
  - Code Review session:
    - Review the code and find faults and optimizations.
    - Understand the domain/product/feature (example: feature class or a script?)
    - Design can be discussed.
    - Security and privacy should be observed (as applicable).
    - The code may NOT be modified and run.
  - Bug fixing session:
    - Review the code and find faults and optimizations.
    - Understand the domain/product/feature (example: feature class or a script?)
    - Security and privacy should be observed (as applicable).
    - Ideally, the code is modified and run. Any errors/issues are fixed.

** Disclaimer: Knowledge of coding language can be a requirement.*

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Backend Engineering Interviews

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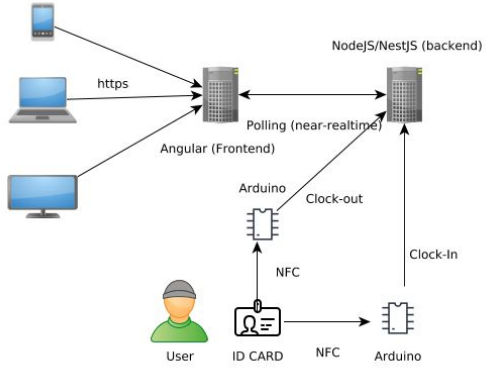
Backend Engineering Interviews

- **System Design interview:**
  - Open-ended questions. Communication and clarity - it's a discussion.
  - Understanding of systems and components and interaction.
  - Pros/cons and unknowns. Short-term vs. long-term thinking.
  - Consider:
    - Scaling: Change in performance as per application demands.
    - Availability: System uptime and downtime.
    - Reliability: System performs the tasks as expected.
    - Robustness: Functional when errors or disturbances.
    - Load Balancing: Network traffic distribution across servers.
    - Caching: Data storage layer.
    - Data Partitioning: Distribute data across systems to improve querying performance.
    - SQL vs. NoSQL: Relational vs. Non-relational data model.
    - Performance: Glitch-free* and fast.
    - Extensibility: Future growth.
    - Error Handling and Security: UX and secure data.



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Backend Engineering Interviews

- **Do's:**
  - Ask questions to understand the requirements. Any domain knowledge?
  - Note all the topics you want to discuss.
  - Visualization helps! Draw a component diagram.
  - It's OK to mention that you do not have familiarity with a technology/ tool/ concept.
  - Make some assumptions and frame a recommendation.
  - Do what the interviewer asks you to focus on.*
  - There is no right or wrong answer. Discuss trade-offs.
- **Don'ts:**
  - Don't start coding. *
  - No need to code the API.*
  - No need to code the data models.*
  - Don't be quiet. This is a collaboration.

** Disclaimer: Depends on the type of interview and the interviewer.*

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Backend Engineering Interviews

- Design Airbnb.
- Components:
  - Requirements:
    - Functional: Consider product requirements.
    - Non-functional: Consider system design principles.
  - Data Models: SQL/NoSQL, caching, data partitioning, load balancing, etc.
  - Backend Services: Microservices, internal vs. external integration.
  - API and Frontend: REST APIs and user experience.
  - Security and beyond: AuthN, AuthZ, extensibility, etc.
- Discuss design and whiteboard building blocks.
- System Design diagram in the next slide!

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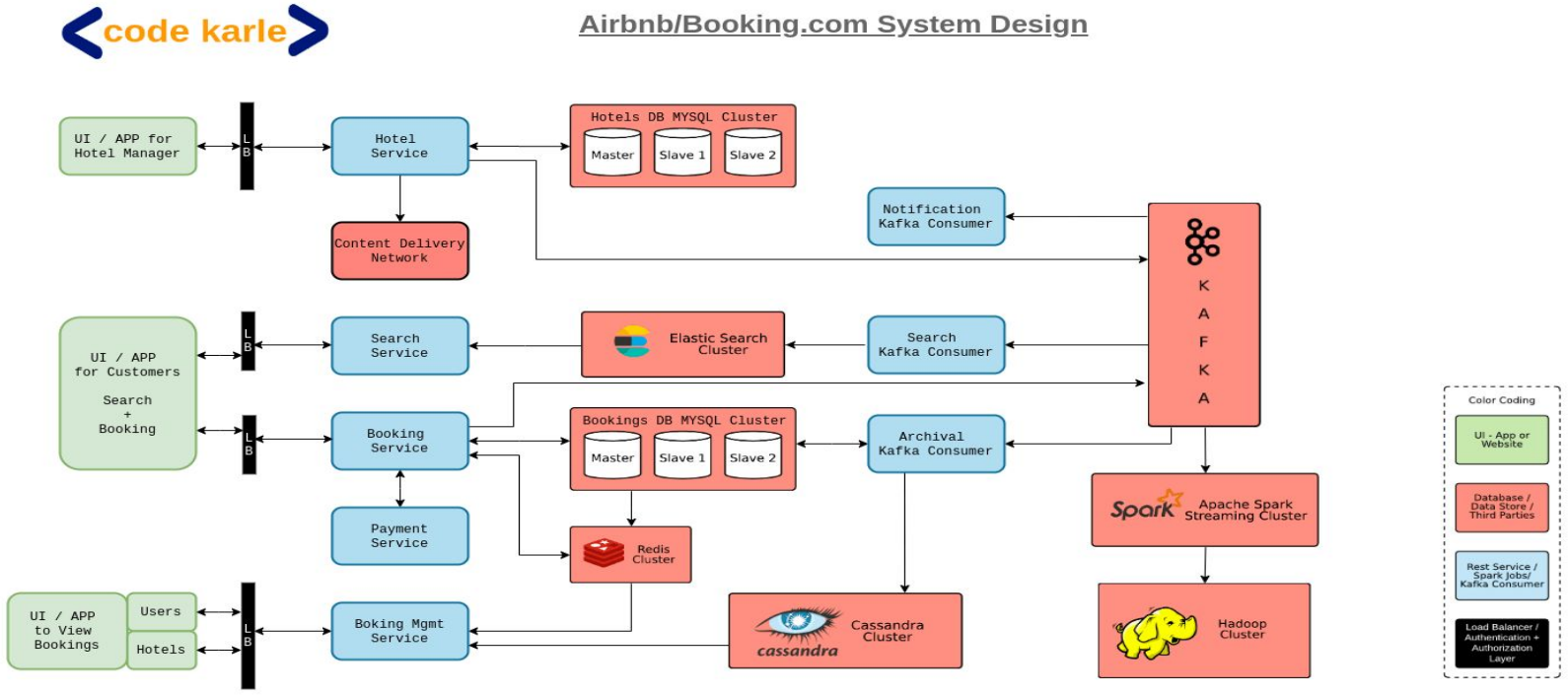
Backend Engineering Interviews



Reference: codekarle.com

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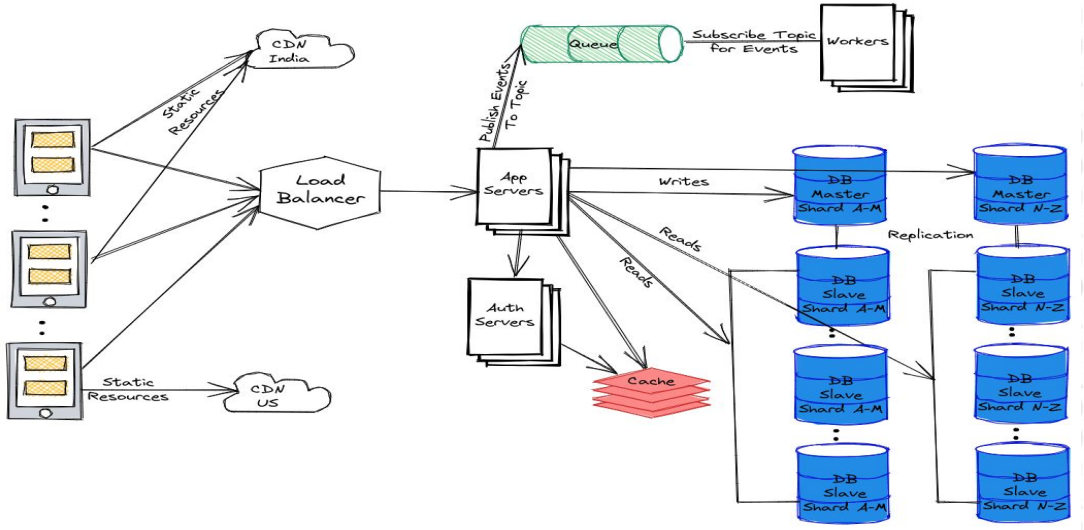
Backend Engineering Interviews

- **Resources:**
  - [GitHub] System Design Primer
  - [Course] Grokking the System Design Interview
  - [Book] System Design Interview, Alex Xu
  - Leetcode.com
  - Hackerrank.com



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Backend Engineering Interviews

Summary:

- What is a backend engineering interview?
- Type of interviews and some common questions.
- Do's and Don't in the interview.
- Example of a System Design interview.
- Resources for interview preparation.

Backend Study Group:

- Presentations and session recordings found here: WWCode YouTube channel
    - Upcoming sessions:
        - May 5th, 2022 about Intro to Distributed Systems.
        - May 21st, 2022 about Improve your Code Debugging Skills.
        - June 9th, 2022 about Transitioning from a Frontend Engineer to a Backend Engineer.
        - July 21st, 2022 about Microservice vs. Monolith Architecture.
- Technical Tracks and Digital Events. Get updates – join the Digital mailing list!
- Have questions? Contacts us at: 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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