Welcome!

- 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!

Check out:

- Technical Tracks and Digital Events
- Get updates – join the Digital mailing list
- Give us your feedback – take the Survey

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WWCode Digital + **Backend**
Backend Study Group

October 7, 2021

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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
Senior Software Engineer @ Metromile

Elaine
Software Engineer @ New Relic

- What is Backend Engineering?
- Mini-series on Git and version control (Part 2 of 2):
  - What is Version Control?
  - What is Git and GitHub?
  - Different tools for VCS.
  - Code review best practices.
  - .Code review live demo.
  - Q/A.

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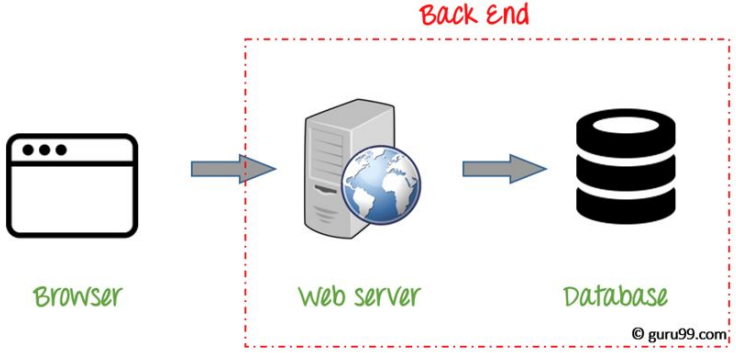
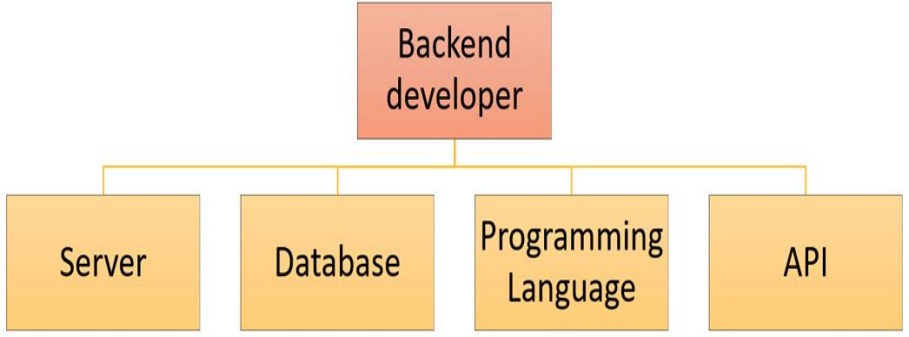
Backend Engineering

- What is Backend Engineering?
- Design, build and maintain server-side web applications.
- Concepts: Client-server architecture, API, micro-service, database engineering, distributed systems, storage, performance, deployment, availability, monitoring, scripting, software design, business rules, etc.





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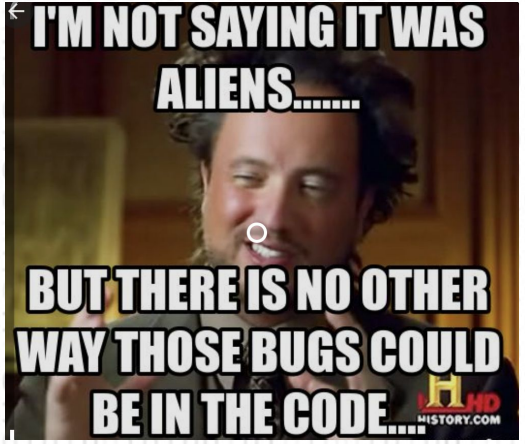

Version Control

- **Source Code**:
- Collection of code/programming statements written by a software engineer.
- Code can be in any high-level programming language. Example: Java, Scala, etc.
- **Source Code Management:**
  - Process of tracking and managing code changes in projects.
  - Log a history of continuous code development.
  - Contributions can be made by many developers simultaneously.
  - Identifies code dependencies and resolves code merge conflicts.
  - Easy to revert to a previous version of the code.
  - Tracking makes it fast and efficient to track breaking changes. Example: Code bugs.
  - Development teams can collaborate, get feedback, and assert quality.
  - Crucial to the development step in the SDLC (software development lifecycle).
  - Examples: GitHub, GitLab, Mercurial, MS TFS, Subversion, Bitbucket, etc.

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What is source code?

What is version control?

Why do we need source code management?

Can you give examples of version control system (VCS)?

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Backend Engineering

What is source code?
Collection of programming statements in high-level language.

What is version control?
Process of managing and tracking code changes across projects.

Why do we need source code management?
Log a history of all code changes, option to revert to previous stable version, track changes and bugs, collaborate and get feedback from development teams.

Can you give examples of version control system (VCS)?

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Git

- Free and open source distributed version control system (VCS).
- Global Information Tracker
- Track changes in a collection of different files (types).
- Distributed system where developers can clone the whole repository and view history of changes.
- Branching model for creating multiple local branches for independent code development.
- Fast development, testing and shipping code to production environment.
- Supported by various software development VCS systems like GitLab, GitHub, Bitbucket, etc.
- Git repository: Initializing a project with Git to enable version control and tracking.

GitHub

- Git server as a service. Online platform with features.
- Cloud-based hosting service to manage Git repositories.
- Access control, continuous integration, code feedback, continuous deployment for testing, etc.
- Branching strategies & best practices for continuous integration/ continuous development (CI/CD).
- Supports frameworks and languages like Java, Python, .NET, JavaScript, Ruby, iOS, Android, etc.
- In connection, Git is a tool and GitHub is a service for projects that leverage Git.

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What is Git?

What is GitHub?

What is the difference between Git vs GitHub?

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Backend Engineering

What is Git?
VCS for fast and efficient development, code tracking, testing and shipping of code to production.

What is GitHub?
CI/CD platform for hosting and managing projects that leverage Git.

What is the difference between Git vs GitHub?
Git is a tool and a practice for CI/CD, and GitHub is a platform to support Git projects' development.

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TFS (Team Foundation Server)
- Licensed and owned by Microsoft.
- Track changes in a collection of different files (types).
- Distributed system where developers can clone the whole repository and view history of changes.
- Standard features for source control and versioning.
- Developed specifically for .NET and C# platforms.

Subversion
- Free, open source and a decade old.
- Standard features for source control and versioning.
- Support Perl, Ruby, Python, Java, etc.
- Supports a good GUI tool for tracking changes and merge conflicts.

GitLab
- Support CI/CD integration and pipeline support.
- Git for version control.

More: Mercurial, Bazaar, Bitbucket, etc.

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Can you give examples of some VSC tools?

What VCS tools do you use and why?

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Can you give examples of some VSC tools?
TFS, GitLab, Bitbucket, etc.

What VCS tools do you use and why?

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Code Review Best Practices

• Code Review: Feedback from peers to maintain quality code.

Best Practices (for coding and reviews)

• Code is clean and easy to read.
• Coding standards are followed.
• Code is well documented. Example: TODO comments with JIRA, domain logic, etc.
• Small methods with not more than 20-30 lines of code.
• Libraries used for code optimizations.
• Design anti-patterns are not present.
• Language specific coding practices are followed.
• Tests coverage.
• PR etiquette.
• Reviewers should run/debug and test code locally.
• Dev or QA environment deployment and dogfooding.

Disclaimer: Code review practices can be different per company and team.

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Best Practices

- Performance:
  - Code is performant and scalable.
- Security:
  - PII and secure data is not logged or added. Example: properties files, string constants, etc.
- Monitoring and logging:
  - Good logging and monitoring added.

Code Review Culture

- “We”.
- Be responsible.
- Positive comments for improvements.
- Offline discussions.
- Request documentation.
- Are not for design discussions!

Disclaimer: Code review practices can be different per company and team.

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What is a code review?

Can you give some examples of code review best practices?

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What is a code review?

Can you give some examples of code review best practices?

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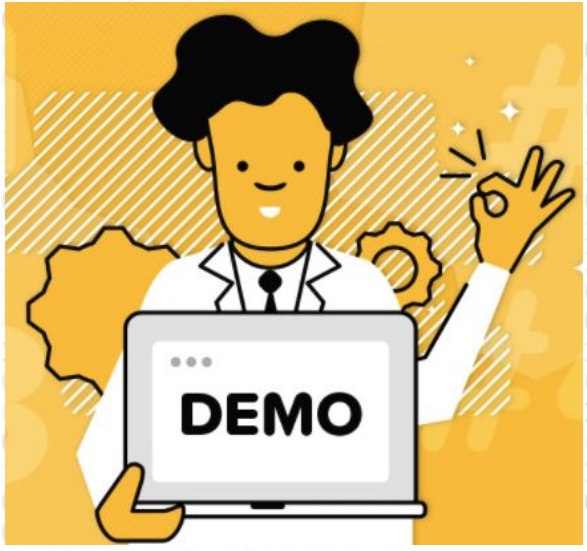

Live code review demo (will be recorded)

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What are some of the VCS tools?

Can you mention some good code review practices?

What are some of the practices you follow when doing code reviews?

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Summary:
- Version Control: Tracking and managing source code.
- Git: Distributed VCS for simultaneous code development.
- GitHub: Platform to host and manage Git repositories.
- Different VCS tools.
- Code review best practices.
- Live code review demo.

Backend Study Group:
- WWCode Presentation and session recordings found here: WWCode YouTube channel

Resources & References:
- Backend development
- Source Code Management
- About Git
- How Git works

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