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Welcome to this session:
Git and Github

The session will start shortly...

Questions? Drop them in the chat.
We'll have dedicated moderators answering questions.

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What is Safeguarding?

Safeguarding refers to actions and measures aimed at protecting the human rights of adults, particularly vulnerable individuals, from abuse, neglect, and harm.

To report a safeguarding concern reach out to us via email:

safeguarding@hyperiondev.com

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Live Lecture Housekeeping:

- The use of disrespectful language is prohibited in the questions, this is a supportive, learning environment for all - please engage accordingly.
- No question is daft or silly - ask them!
- For all non-academic questions, please submit a query: www.hyperiondev.com/support
- To report a safeguarding concern reach out to us via email: safeguarding@hyperiondev.com
- If you are hearing impaired, please kindly use your computer's function through Google chrome to enable captions.

Learning Outcomes

- **Identify** the basic concepts of version control and Git.
- **Explain** the purpose and benefits of version control systems.
- **Describe** the basic commands and operations in Git.
- **Explain** the difference between Git and Github

Version Control: The "Time Machine" for Code

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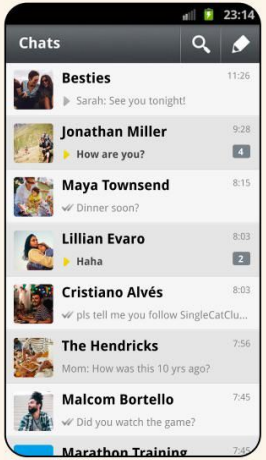
Relevance

- Ever wondered how apps like Instagram and WhatsApp keep getting better without breaking?
- How do developers manage to add new features and fix bugs without chaos?
- The answer lies in a powerful tool called **Version Control**.

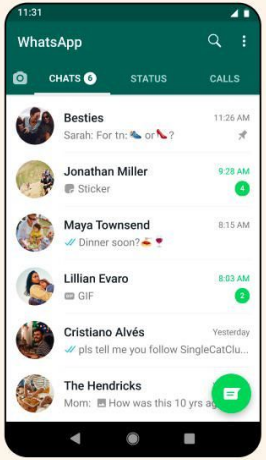
Relevance

Design over the years

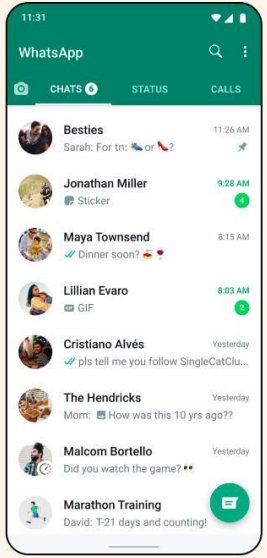
2011



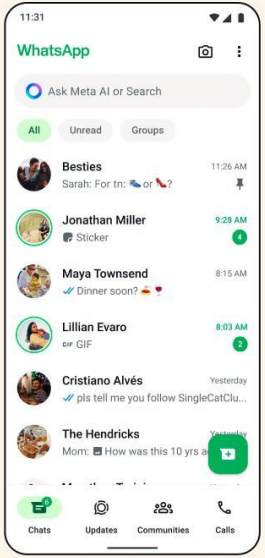
2012



2020



2021



2024

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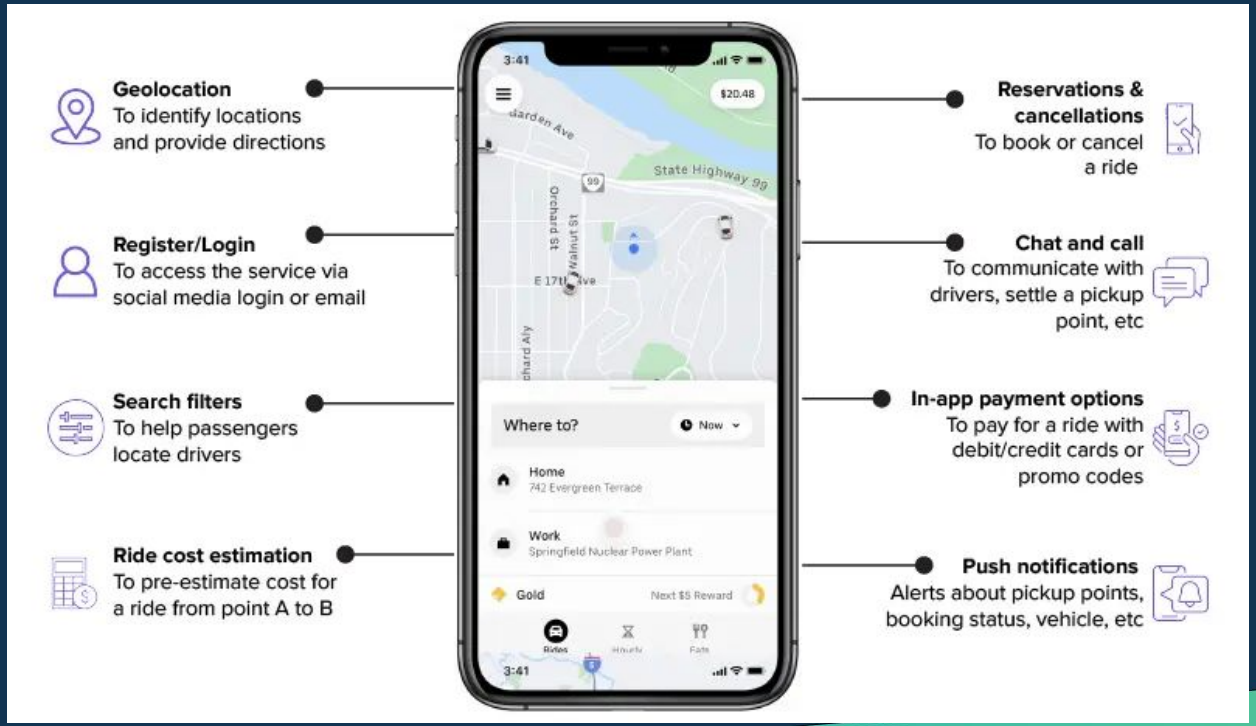
Real-World Example

- Each update you see has a team of developers behind it, each contributing their part. But how do they track who changed what? And if something goes wrong, how do they roll back to a previous version?

Relevance



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Introduction to Version Control

Just as you can track changes in a Google Doc, developers use Version Control to manage and track code changes.

The Essentials: Version Control 101

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Meet the Squad: Git Lingo 101!

- **Repository:** The central storage for your project.
- **Commit:** A snapshot of your project at a specific point in time.
- **Branch:** A parallel version of your project.
- **Merge:** Combining changes from different branches.
- **Clone:** Copying an existing repository to your local machine.
- **Working Directory:** Where you make changes to your files.
- **Staging Area:** A temporary holding area for changes before committing.

The Version Control Journey

- **Modified:** Changes made to files in the working directory.
- **Staged:** Files are added to the staging area, preparing them for the next commit.
- **Committed:** Changes are saved in the repository as a new version snapshot.

BREAK

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Introduction to Git

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What is Git? Disclaimer

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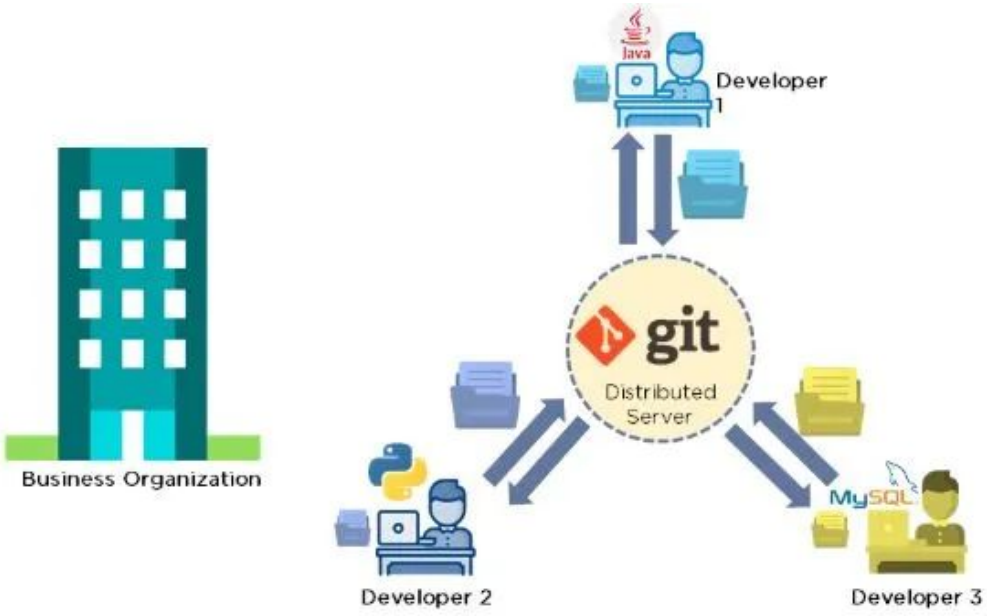
What is Git?

- A powerful version control system
- Tracks changes to your code over time
- Enables collaboration with other developers
- It’s a distributed system, so every developer has a full copy.
- **Why Git?**
  - **Distributed nature:** Work offline and sync later
  - **Branching and merging:** Experiment without risk
  - Strong community and support

What is Git?



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Your Git Toolkit

- **Repository Operations:**
  - **git init:** Initialize a new git repository
  - **git clone:** Clone an existing git repository

Your Git Toolkit

- **Working with Changes:**
  - **git status:** Check the status of your files
  - **git diff:** View changes between commits
  - **git add:** Stage changes for commit
  - **git commit:** Commit changes to the repository
  - **git push:** Push changes to a remote repository
  - **git pull:** Pull changes from a remote repository

Real-world Context and Conclusion

Real-World Git: From Code to Collaboration!

- **Efficient Collaboration:** Teams work together seamlessly on shared codebases.
- **Risk Mitigation:** Backups, version history, and easy rollback.
- **Continuous Integration/Continuous Delivery (CI/CD):** Automated testing and deployment.
- **Open Source Development:** Fostering community and collaboration.

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The Big Three: Where the Magic Happens!

GitHub

GitLab

Bitbucket

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Best Practices: Keep Calm and Commit On!

- **Commit Frequently:** Small, focused commits.
- **Write Clear Commit Messages:** Describe the changes made.
- **Use Branches Effectively:** Isolate features and bug fixes.
- **Review Code Regularly:** Improve code quality and collaboration.
- **Utilize Pull Requests:** A structured review process.
- **Automate Your Workflow:** Use CI/CD pipelines.

Practical: Basic Git and GitHub Setup and Workflow

1. **Objective:** Create a repository, make changes, and understand how to push these changes to GitHub. This exercise will help to have a basic understanding of how to initialise a repository, make commits, and work with GitHub as a remote.
2. **Steps to Implement:**
    - Set Up and Initialize Git
    - Create a Local Repository
    - Create and Add Files to the Repository
    - Commit Changes
    - Push Changes to GitHub
    - Verify and View Changes on GitHub

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Resources

- **Additional Resources**
  - 1.5 Getting Started - Installing Git
  - Pro Git book

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Poll

1. **Which of the following is a benefit of using Git for version control?**
   a. It allows multiple developers to work on the same project simultaneously.
   b. It automatically deploys code to production servers.
   c. It replaces the need for a Terminal.

Poll

2. **What is the correct sequence of steps to push code to a remote Git repository?**

   a. Stage changes → Commit changes → Push to remote repository.

   b. Push to remote repository → Stage changes → Commit changes.

   c. Commit changes → Push to remote repository → Stage changes.

Q & A SECTION

Please use this time to ask any questions relating to the topic, should you have any.


Thank you
for attending
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