Introduction to Git Commands

Version Control with Git

Presented By A1 Training Institute

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Introduction

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What is Git ?

Git is a distributed version control system used to track changes in source code during software development.

Importance of Version Control:

- Helps in collaboration
- Maintains history of changes
- Facilitates experimentation

Objectives of the Presentation

- Understand basic Git commands
- Learn how to use Git for version control
- Explore best practices in Git usage

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Basic Concepts

Basic Concepts

Repository

- A directory where Git tracks changes in files.

Working Directory

- The files you see in your editor or IDE.

Basic Concepts

Staging Area

- Files added to this area are marked for the next commit.

Local Repository

- Your personal copy of the project's history

Key Commands

- commit
- push
- pull
- fetch
- merge

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Setting Up Git

Installing Git

- Windows: Download from git-scm.com
- macOS: Install via Homebrew: **brew install git**
- Linux: Install via package manager: sudo apt-get install git (Debian/Ubuntu), sudo yum install git (Fedora)

Configuring Git

```
git config --global user.name "Your Name"

git config --global user.email "you@example.com"
```

Initializing a Repository

```
git init
```

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Basic Commands

Basic Commands

Cloning a Repository

```
git clone https://github.com/user/repository.git
```

Checking Status

```
git status
```

Basic Commands

Adding Changes

```
git add filename
git add .
```

Committing Changes

```
git commit -m "Commit message"
```

Viewing Commit History

```
git log
```

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Branching & Merging

Branching & Merging

Creating Branches

```
git branch branch-name
```

Switching Branches

```
git checkout branch-name
```

Branching & Merging

Merging Branches

```
git merge branch-name
```

Deleting Branches

```
git branch -d branch-name
```

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Collaboration Commands

Collaboration Commands

Pushing Changes

```
git push origin branch-name
```

Pulling Changes

```
git push origin branch-name
```

Fetching Changes

```
git fetch origin
```

Resolving Conflicts:

- Occurs when changes in the local repository and the remote repository conflict.
- Manually edit the conflicting files to resolve issues.

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Advanced Commands

Collaboration Commands

Stashing Changes

```
git stash
git stash pop
```

Rebasing

```
git rebase branch-name
```

Collaboration Commands

Tagging

```
git tag v1.0.0
git push origin v1.0.0
```

Resetting

```
git reset --hard commit-hash
```