Absolutely! Here are some essential **Git commands** that every DevOps engineer should know. Git is a crucial tool for version control, and knowing the key commands helps in managing code efficiently.

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1. Basic Git Commands

These are foundational commands for initializing and working with Git repositories.

- **`git --version`**
  Displays the current version of Git installed on your system.

  ```
  git --version
  ```

- **`git init`**
  Initializes a new Git repository in the current directory.

  ```
  git init
  ```

- **`git clone`**
  Clones a remote repository to your local machine.

  ```
  git clone <repository_url>
  ```

- **`git status`**
  Displays the status of your working directory, showing staged, unstaged, and untracked changes.

  ```
  git status
  ```

- **`git add`**
  Stages changes for commit.

  ```
  git add <file_name>  # Stages a specific file
  git add .            # Stages all changes in the current directory
  ```

- **`git commit`**
  Commits the staged changes to the local repository with a message.

  ```
  git commit -m "Your commit message"
  ```

- **`git diff`**
  Shows the differences between changes in the working directory and the index (staged changes).

  ```
  git diff               # Unstaged changes
  git diff --staged      # Staged changes
  ```

- **`git log`**
  Displays the commit history.

```
git log                # Shows the commit history
git log --oneline      # Shows a condensed version (one line per commit)
```

2. Branching and Merging

Branching and merging are essential for managing parallel development.

- **git branch**
  Lists all local branches or creates a new branch.

  ```
  git branch             # Lists local branches
  git branch <branch_name>  # Creates a new branch
  ```

- **git checkout**
  Switches to a different branch or restores files.

  ```
  git checkout <branch_name>  # Switches to an existing branch
  git checkout -b <branch_name>  # Creates and switches to a new branch
  ```

- **git merge**
  Merges changes from one branch into the current branch.

  ```
  git merge <branch_name>  # Merges the specified branch into the current branch
  ```

- **git rebase**
  Reapplies commits from one branch onto another, often used to maintain a clean commit history.

  ```
  git rebase <branch_name>  # Reapplies the current branch's changes on top of another br
  ```

3. Remote Repositories

Working with remote repositories (like GitHub or GitLab) is a fundamental part of Git.

- **git remote**
  Displays the remote repositories connected to your local repository.

  ```
  git remote -v        # Lists remote repositories (URLs)
  ```

- **git remote add**
  Adds a new remote repository.

  ```
  git remote add origin <remote_repository_url>
  ```

- **git push**
  Pushes changes to a remote repository.

  ```
  git push <remote_name> <branch_name>  # Pushes the current branch to the remote
  git push origin master  # Pushes to the master branch on the origin remote
  ```

- **git pull**
  Fetches and merges changes from a remote repository to your local branch.

```
git pull <remote_name> <branch_name>  # Pulls changes from a specific branch
git pull origin master  # Pulls the latest changes from the remote master branch
```

- **git fetch**
  Downloads changes from a remote repository but does not merge them automatically.

  ```
  git fetch <remote_name>  # Fetches updates from a remote without merging
  ```

- **git push --force**
  Forces the push to a remote repository, overwriting any changes. **Use with caution**.

  ```
  git push --force <remote_name> <branch_name>
  ```

4. Stashing Changes

When you want to temporarily save your changes without committing them, you can use Git's stash feature.

- **git stash**
  Stashes your changes and reverts the working directory to the last commit.

  ```
  git stash                # Stashes changes
  git stash save "message"  # Stashes changes with a description
  ```

- **git stash pop**
  Applies the most recent stashed changes and removes them from the stash.

  ```
  git stash pop
  ```

- **git stash list**
  Lists all the stashed changes.

  ```
  git stash list
  ```

- **git stash apply**
  Applies a specific stash without removing it from the stash list.

  ```
  git stash apply stash@{0}  # Applies the first stash in the list
  ```

- **git stash drop**
  Removes a specific stash from the list.

  ```
  git stash drop stash@{0}  # Removes the first stash in the list
  ```

5. Undoing Changes

Sometimes you'll need to undo changes, whether it's a commit, a staged change, or a file edit.

- **git reset**
  Resets the index (staged changes) or the commit history.

```
git reset                # Unstages changes (keeps the changes in the working directory
git reset --hard         # Resets to the last commit, discarding local changes
```

- **git checkout -- <file_name>**
  Discards changes in a specific file and restores it to the last commit state.

  ```
  git checkout -- <file_name>  # Discards changes in a specific file
  ```

- **git revert**
  Reverts a commit by creating a new commit that undoes the changes.

  ```
  git revert <commit_id>  # Creates a new commit that undoes the changes of a specified c
  ```

- **git rm**
  Removes a file from both the working directory and the staging area.

  ```
  git rm <file_name>  # Removes a file from both the staging area and the working directo
  git rm --cached <file_name>  # Removes a file from the staging area but keeps it locall
  ```

6. Git Tagging

Git tags are used for marking specific points in history, such as releases.

- **git tag**
  Lists all tags in the repository.

  ```
  git tag
  ```

- **git tag <tag_name>**
  Creates a lightweight tag at the current commit.

  ```
  git tag v1.0  # Creates a tag 'v1.0' at the current commit
  ```

- **git tag -a <tag_name> -m "message"**
  Creates an annotated tag with a message.

  ```
  git tag -a v1.0 -m "First release"
  ```

- **git push --tags**
  Pushes all tags to a remote repository.

  ```
  git push --tags
  ```

7. Git Configuration

Git configuration allows you to set global and local preferences.

- **git config**
  Configures Git settings.

  ```
  git config --global user.name "Your Name"  # Sets your global username
  git config --global user.email "your.email@example.com"  # Sets your global email
  git config --list  # Lists all configurations
  ```

8. Advanced Git Operations

These commands are useful for more advanced workflows.

- **`git cherry-pick`**
  Applies a commit from another branch to your current branch.

  ```
  git cherry-pick <commit_id>  # Applies a specific commit to the current branch
  ```

- **`git bisect`**
  Helps in identifying the commit that introduced a bug using binary search.

  ```
  git bisect start  # Starts the bisect session
  git bisect bad   # Marks the current commit as bad
  git bisect good  # Marks the current commit as good
  ```

- **`git reflog`**
  Shows the history of the references (HEAD movements), useful for recovering lost commits.

  ```
  git reflog
  ```

These Git commands cover the majority of use cases you'll encounter as a DevOps engineer. Mastering these commands will help you effectively manage code, collaborate with teams, and maintain a streamlined version control process. Let me know if you'd like further details or more advanced Git operations!