Git Basics

- Git is a **distributed version control system**: every developer has a full copy of the codebase and its history.

Core Git Concepts

- **Staging (`git add`)**: Select which changes to include in the next commit. *Analogy: Like packing a suitcase before a trip.*
- **Commit (`git commit`)**: Record a snapshot of staged changes. Each commit includes a message describing what changed.
- **Push (`git push`)**: Send local commits to a remote repository (e.g., GitHub).
- **Pull (`git pull`)**: Fetch and merge changes from the remote repository into your local branch.
- **Merge (`git merge`)**: Combine changes from one branch into another.

Branching in Git

- Branching allows developers to work in parallel without disturbing each other's work.

Branch Types and Their Purpose:

- `main` / `master`: Stable, production-ready code.
- `dev`: Integration branch for ongoing development.
- `feature/*`: Temporary branches for new features.
- `hotfix/*`: Emergency fixes for production issues.
- `release/*`: Prepares code for deployment.

Why Use Git?

- Enables parallel development.
- Tracks changes over time.
- Resolves conflicts during merging.
- Provides rollback safety if something breaks.
- Supports offline work—sync changes later when online.

Common Git Commands

- `git init`: Initialize a new Git repository in the current directory.
- `git add .`: Stage all changes for the next commit.
- `git commit -m "Initial Commit"`: Create a commit with a message.
- `git branch feature/login`: Create a new branch for a feature.

- `git checkout feature/login`: Switch to the feature branch. Changes here won't affect `main` until merged.

Coordination Flow :

1.QA :

  a. Qa receives build once development is done
  b. They perform manual and automated tests to validate functionality
  c. Bugs are logged in jira, and we developers fix them in iterative cycles
  d. Qa ensures builds meets the acceptance criteria before going forward

2. Testing :

  a. This includes unit testing, integration test, regression testing and so on.
  b. Test results are reviewed and documented
  c. Failed tests trigger a rollback or rework before progressing.

3. FOU(Final Output Unit):

  a. FOU team performs a final validation of release.
  b. Focus is on performance, usability and readiness for production
  c. Once approved, the release is marked as "Ready for Deployment" in jira.

4. Deployment :

  a. DevOps teams handle deployment to staging and then production.
  b. Uses scripts pipelines for consistency and rollback safety.
  c. Deployment is monitored for errors and post-deploy checks are run.
  d. Status is updated in jira, and stakeholders are notified.

So, to summarize jira tracks each phase with linked epics, stories and tasks.
Teams are used for real time coordination and alerts. By Documentations : we will know the guidelines and template to develop projects.