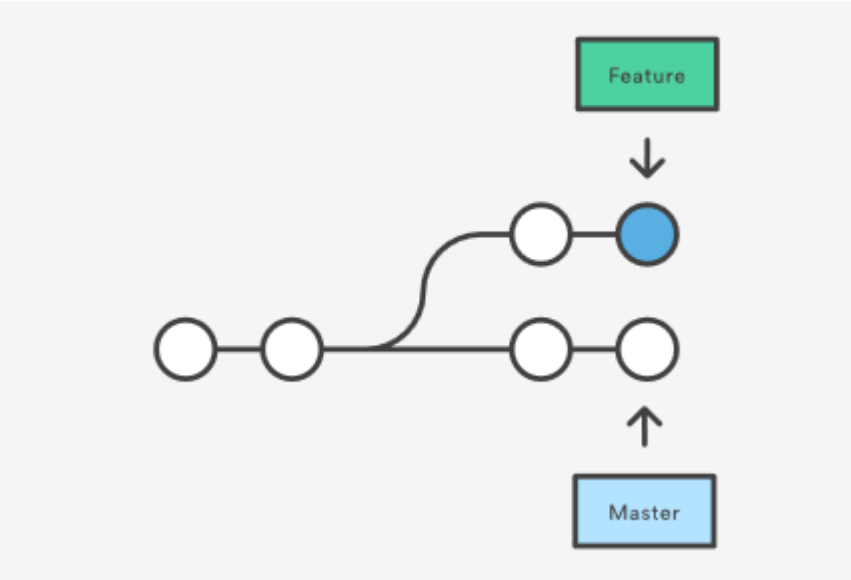
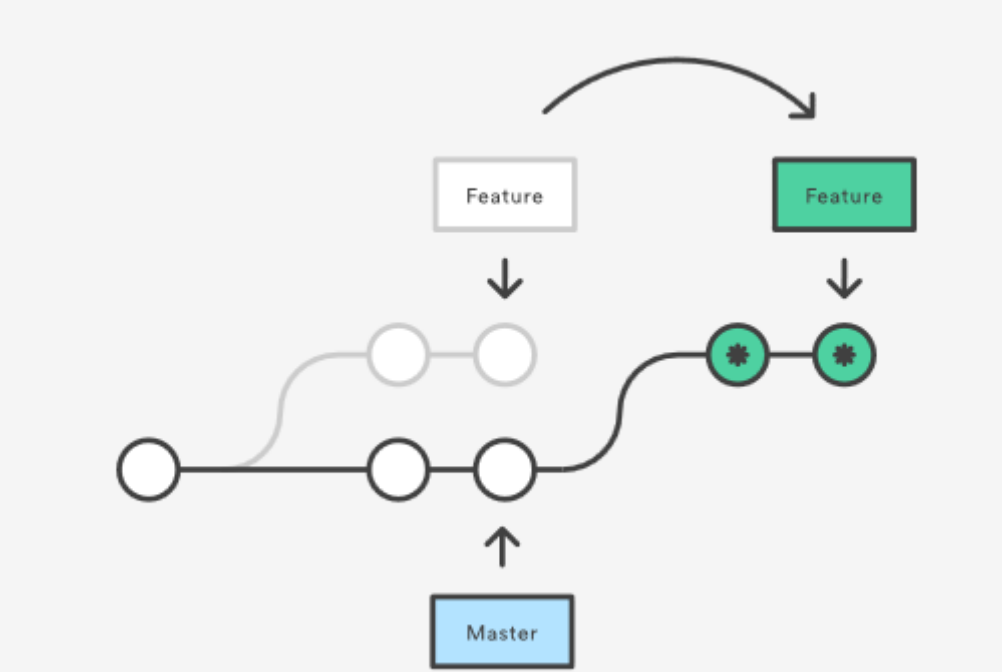




Rebasing: Moving a commit from one branch to another

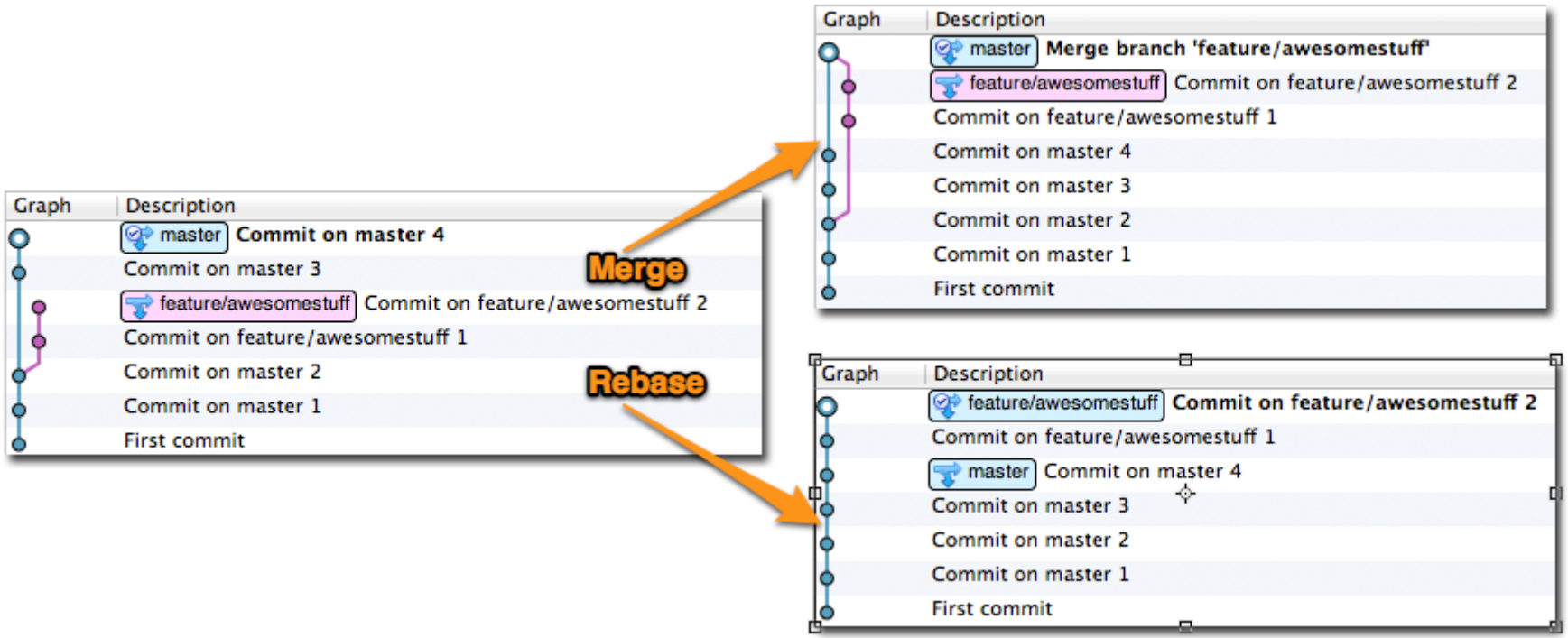
You have two options for integrating your feature into the master branch:

- merging directly or
- rebasing and then merging.

The former option results in a 3-way merge and a merge commit, while the latter results in a fast-forward merge and a perfectly linear history.

See Code flow...
https://github.com/nvie/gitflow

Other links:
https://www.atlassian.com/git/tutorials/rewriting-history/git-rebase


Graph
Description
master
Commit on master 4
Commit on master 3
feature/awesomestuff
Commit on feature/awesomestuff 2
Commit on feature/awesomestuff 1
Commit on master 2
Commit on master 1
First commit
Merge
Rebase
Graph
Description
master
Merge branch 'feature/awesomestuff'
feature/awesomestuff
Commit on feature/awesomestuff 2
Commit on feature/awesomestuff 1
Commit on master 4
Commit on master 3
Commit on master 2
Commit on master 1
First commit
Graph
Description
feature/awesomestuff
Commit on feature/awesomestuff 2
Commit on feature/awesomestuff 1
master
Commit on master 4
Commit on master 3
Commit on master 2
Commit on master 1
First commit

Merging Pros and Cons

- **Merging Pros**
  - Simple to use and understand.
  - Maintains the original context of the source branch.
  - The commits on the source branch remain separate from other branch commits, **provided no fast-forward merge is done**.
    - Can be useful in the case of feature branches
      - merge from feature to another branch later.
  - Existing commits on the source branch are unchanged and remain valid; it doesn’t matter if they’ve been shared with others.

Merging Pros and Cons

- **Merging Cons**
  - If the need to merge arises simply because multiple people are working on the same branch in parallel, **the merges don’t serve any useful historic purpose and create clutter**.
  - Therefore if you are using only a single branch where multiple people are working together, you may want to consider using rebasing instead.

Rebasing Pros and Cons

- **Rebasing Pros**
  - Simplifies your history.
  - **Is the most intuitive and clutter-free way to combine commits from multiple developers in a shared branch**

Rebasing Pros and Cons

- **Rebasing Cons**
  - Slightly more complex, especially under conflict conditions. Each commit is rebased in order, and a conflict will interrupt the process of rebasing multiple commits. With a conflict, you have to resolve the conflict in order to continue the rebase.
  - Rewriting of history has implications if you've previously pushed those commits elsewhere.
    - In Mercurial, you cannot push commits that you later intend to rebase, because anyone pulling from the remote will get them.
    - In Git, you may push commits you may want to rebase later (as a backup) but *only* if it's to a remote branch that *only you use.* If anyone else checks out that branch and you later rebase it, it's going to get very confusing.

When to use what?

- **Shared branches**
  - With shared branches, several people commit to the same branch, and they find that when pushing, they get an error indicating that someone else has pushed first.
    - In this case, ‘Pull with rebase’ approach is recommended.
    - Pulling down other people’s changes and immediately rebasing your commits on top of these latest changes, allowing you to push the combined result back as a linear history.
      - It’s important to note that your commits must not have been shared with others yet.
  - **The only time you shouldn’t rebase and should merge instead is if you’ve shared your outstanding commits already with someone else via another mechanism**, e.g. you’ve pushed them to another public repository, or submitted a patch or pull request somewhere.

Feature branches

- Final Merge
- Keep your feature branch up to date

Feature branches

- Final Merge
  - When building a feature on a separate branch, **you're usually going to want to keep these commits together in order to illustrate that they are part of a cohesive line of development**.
  - Retaining this context allows you to identify the feature development easily, and potentially use it as a unit later, such as merging it again into a different branch, submitting it as a pull request to a different repository, and so on.
  - **Therefore, you're going to want to merge rather than rebase** when you complete your final re-integration, since merging gives you a single defined integration point for that feature branch and allows easy identification of the commits that it comprised.

Feature branches

- Keep your feature branch up to date
  - There are two ways you can bring your feature branch up to date:
    - Periodically merge from the (future) destination branch into your feature branch. This approach used to cause headaches in old systems like Subversion, but actually works fine in Git and Mercurial.
    - Periodically rebase your feature branch onto the current state of the destination branch

Summary

- When multiple developers work on a shared branch, pull & rebase your outgoing commits to keep history cleaner (Git and Mercurial)
- To re-integrate a completed feature branch, use merge (and opt-out of fast-forward commits in Git)
- To bring a feature branch up to date with its base branch:
  - Prefer rebasing your feature branch onto the latest base branch if:
    - You haven’t pushed this branch anywhere yet, or
    - You’re using Git, and you know for sure that other people will not have checked out your feature branch
    - Otherwise, merge the latest base changes into your feature branch

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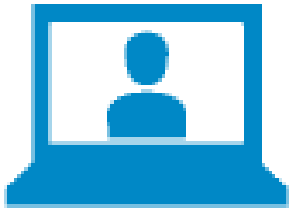

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