GIT AND GITHUB

VERSION CONTROL SYSTEM

git

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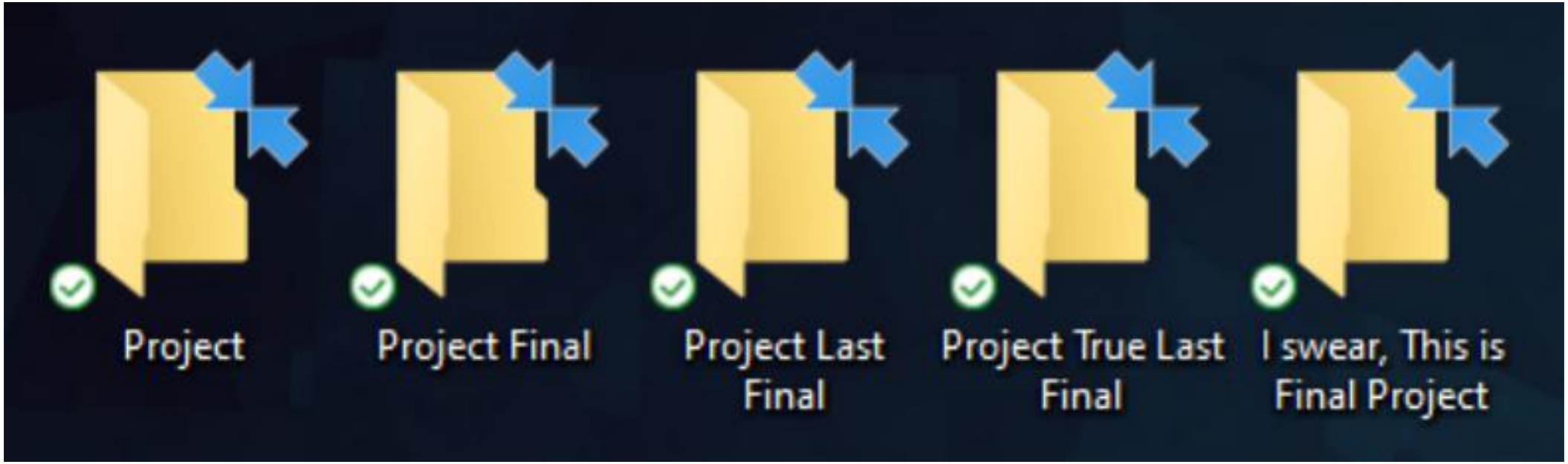
What is VCS?

- Version control is a system that records changes to a file or set of files over time so that you can recall specific versions later.

- 'Version' means the saved status of a set of files in a certain time.


Project
Project Final
Project Last Final
Project True Last Final
I swear, This is Final Project

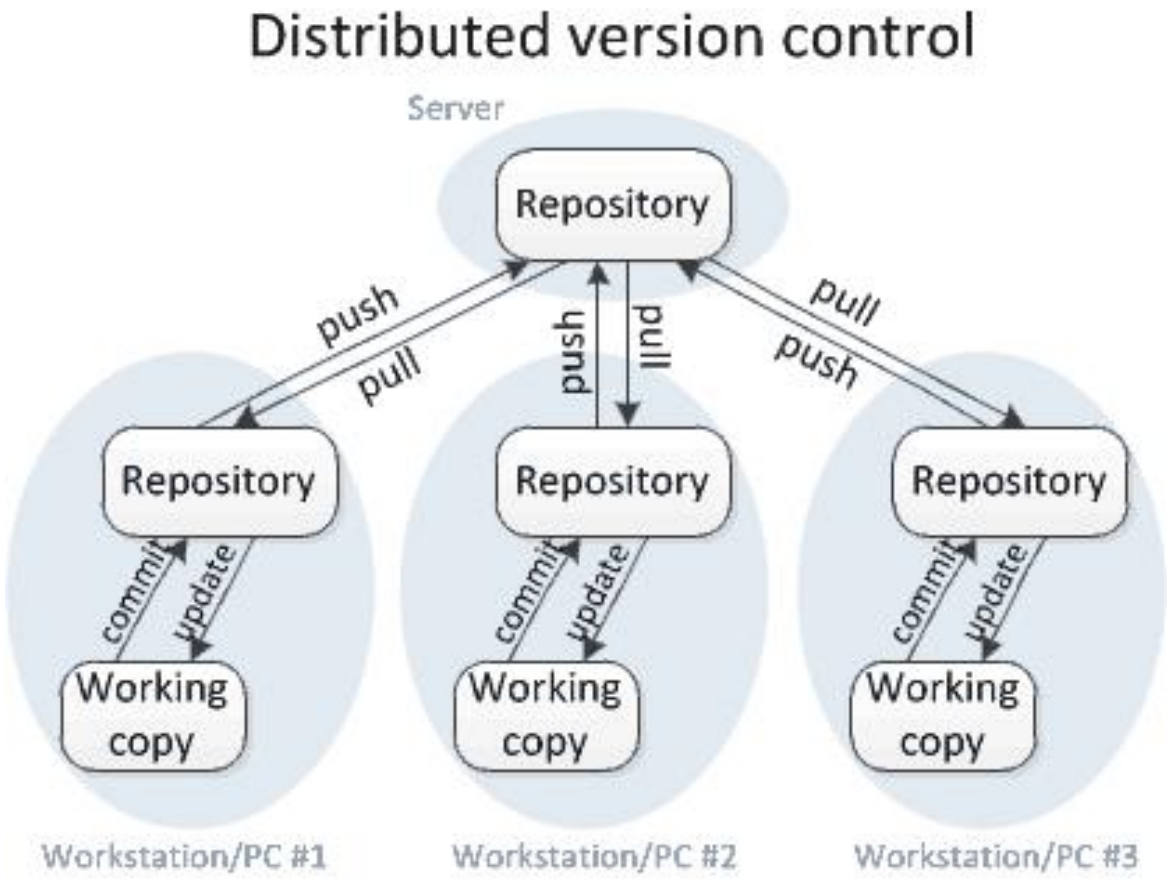
Why VCS?

- Enables to work as a team in a software project.
- Enables to make changes easier and merge them.
- Enables to resolve conflicts in the changed places.
- Enables to return back to previous versions.
- Enables to backup your software project.

Git Concepts

- **Repository:** A Git repository is a folder containing multiple versions of a software project. This repository tracks all changes made to files and builds history over time.

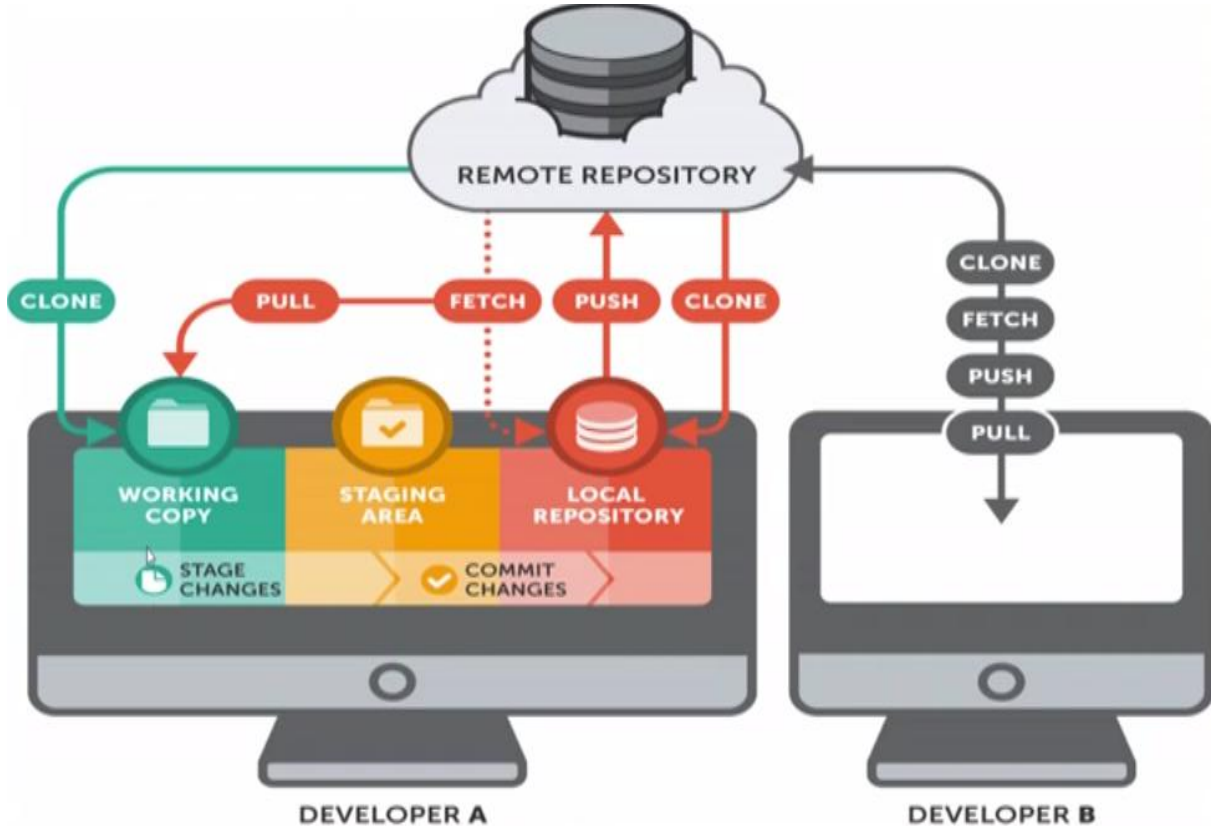
- **Working Copy:** The directory of the project that you are working with. A specific version can be retrieved to working copy.



GIT CONCEPTS

- **Staging Area:** Imagine a box. You can put stuff into the box. You can take stuff out of the box.

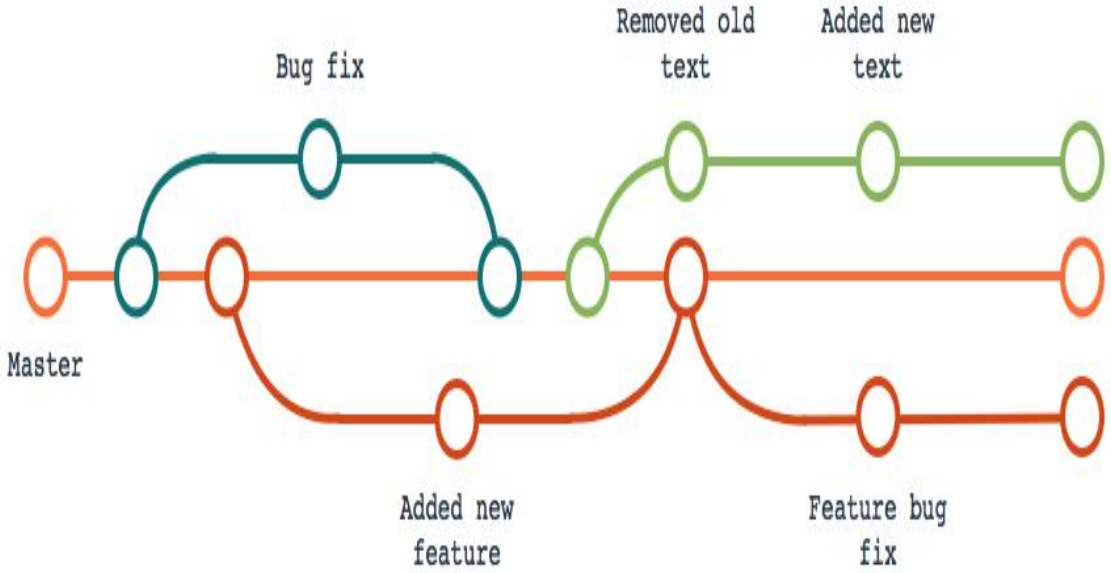
- **Commit:** Adds the latest changes to the repository with a corresponding message.



GIT CONCEPTS

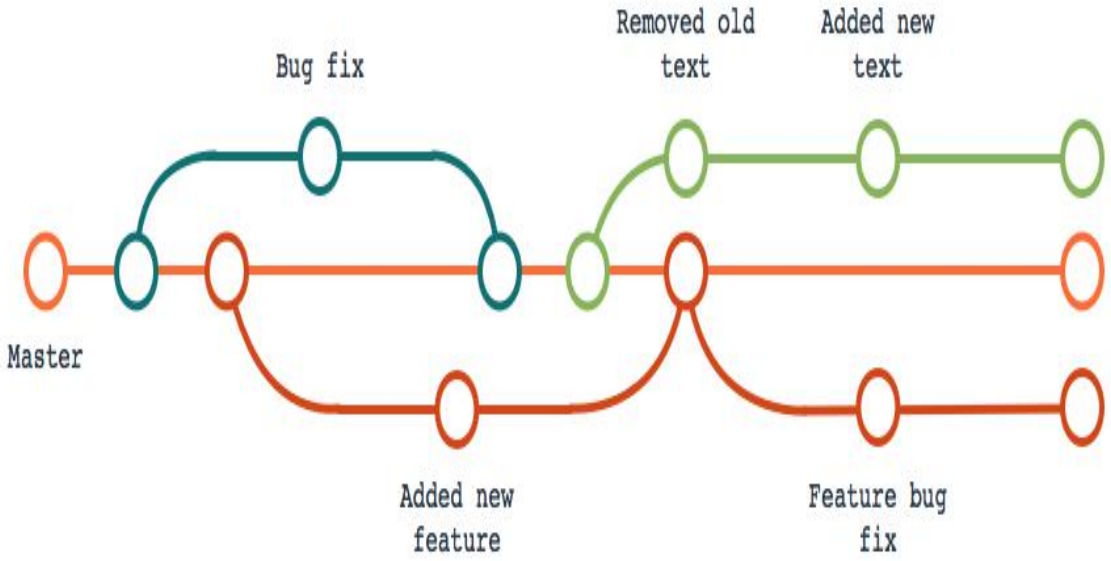
- **Branching**: Branching is the practice of creating version copies of the software project in order to work in parallel versions.

- Branching means that you diverge from the main line of development and continue to do work without messing with the main line.

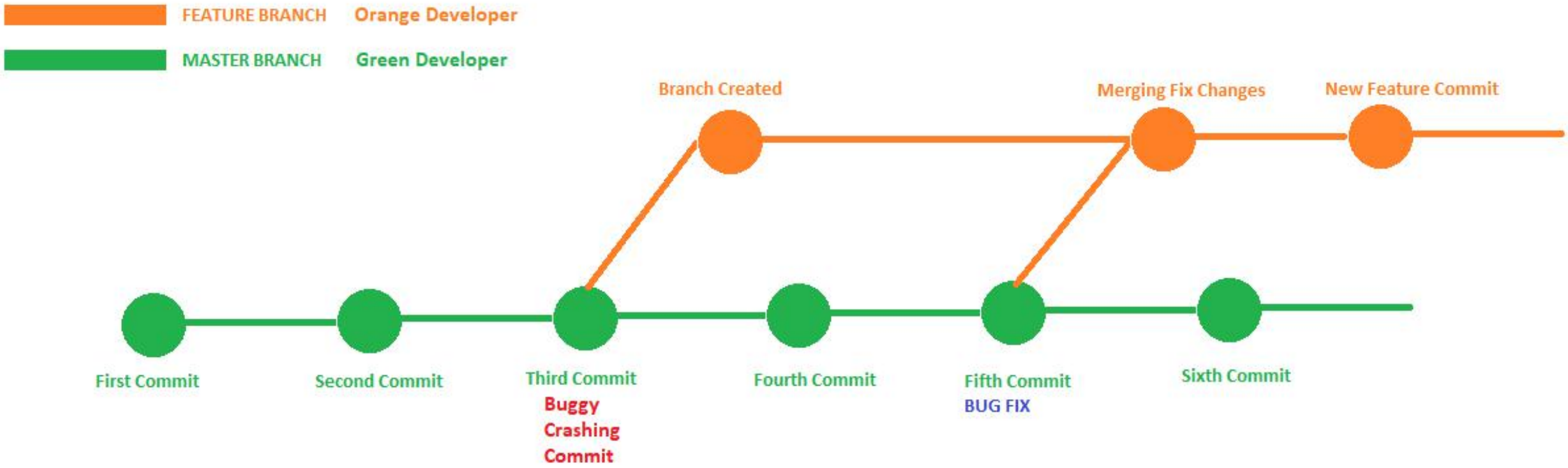


WHY BRANCHING?

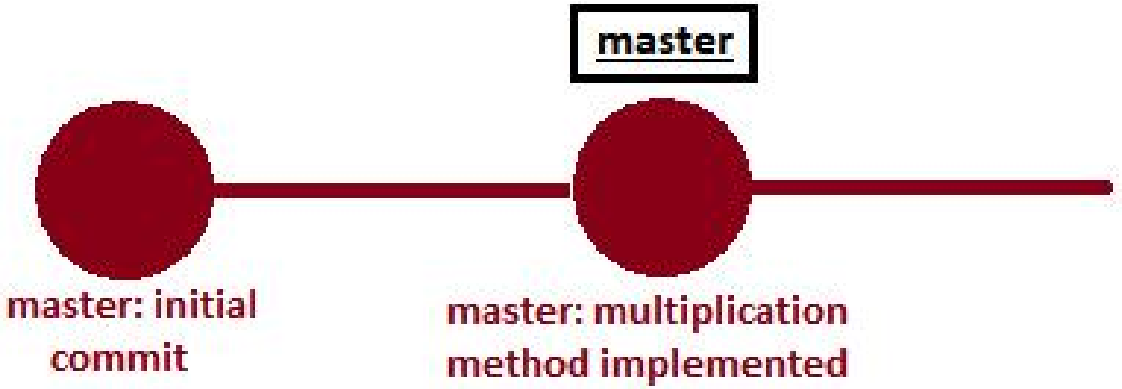
- Having a development effort such as refactoring, evolution or bug-fixes.
- Realizing that changes cannot be made safely make in the current development branch.
- Because of breaking the API, or introducing code that would break everything.
- Then, a new branch is needed.



UNDESIRED SCENARIO

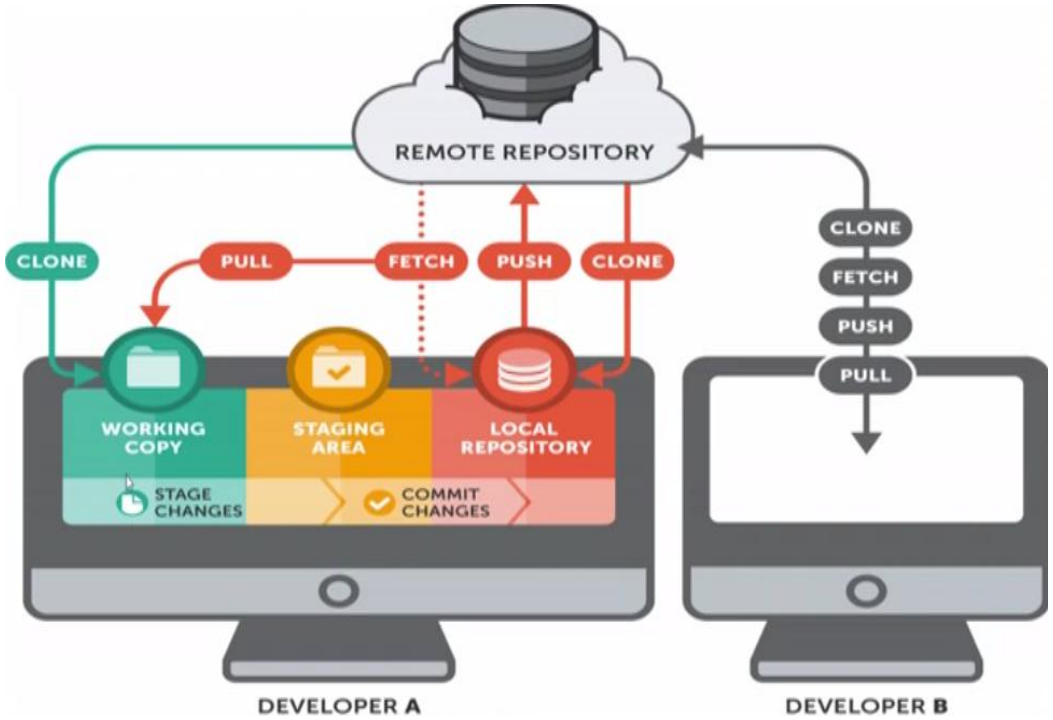


Local Repository Git Commands



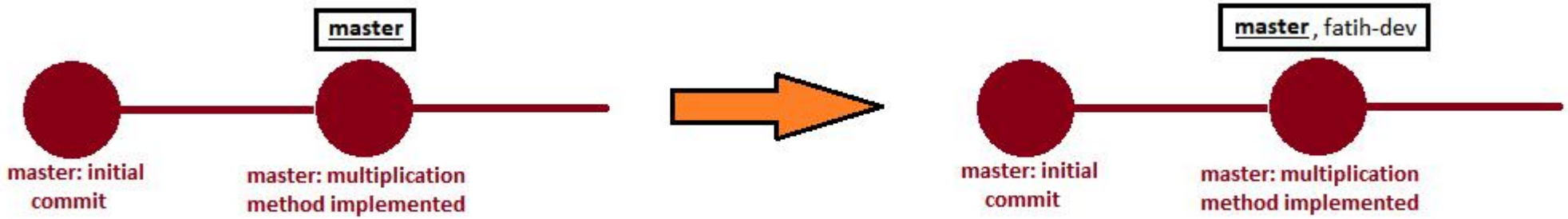
Local Repository Git Commands

- **git init:** initializes the git software in the project.
- **git status:** shows the status of the working copy and staging area.
- **git add <filename>:** adds the specified file or filesets to staging area.
- **git commit -m <message>:** commits the code with a message.
- **git log (--decorate --oneline --graph):** shows the current repository history.

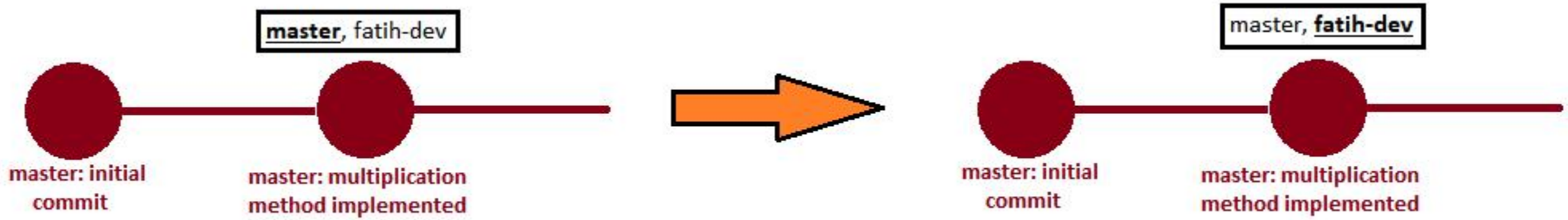


Local Repository Git Commands

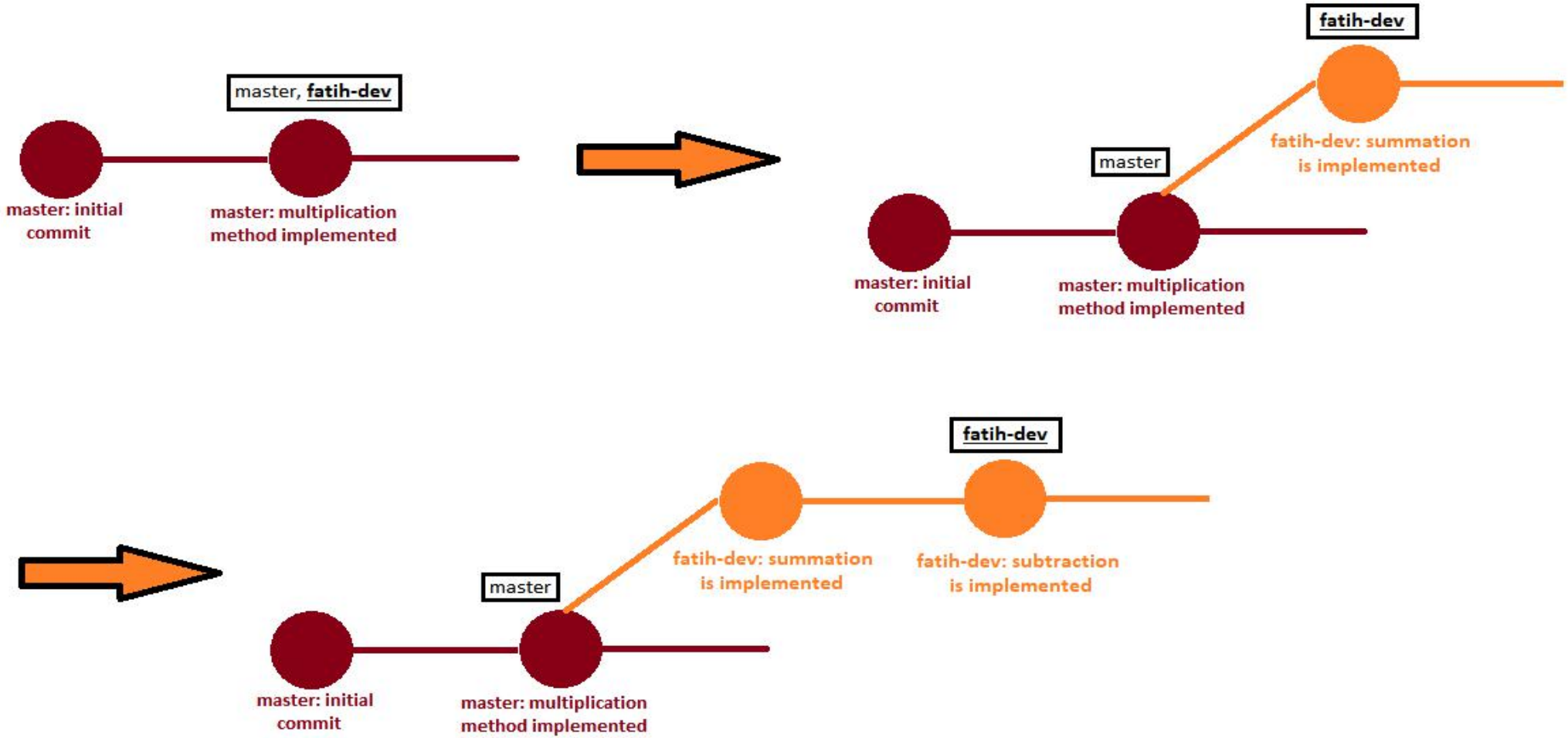
- **git branch:** shows all the branches and the active one.
- **git branch <branchname>:** creates a new branch.



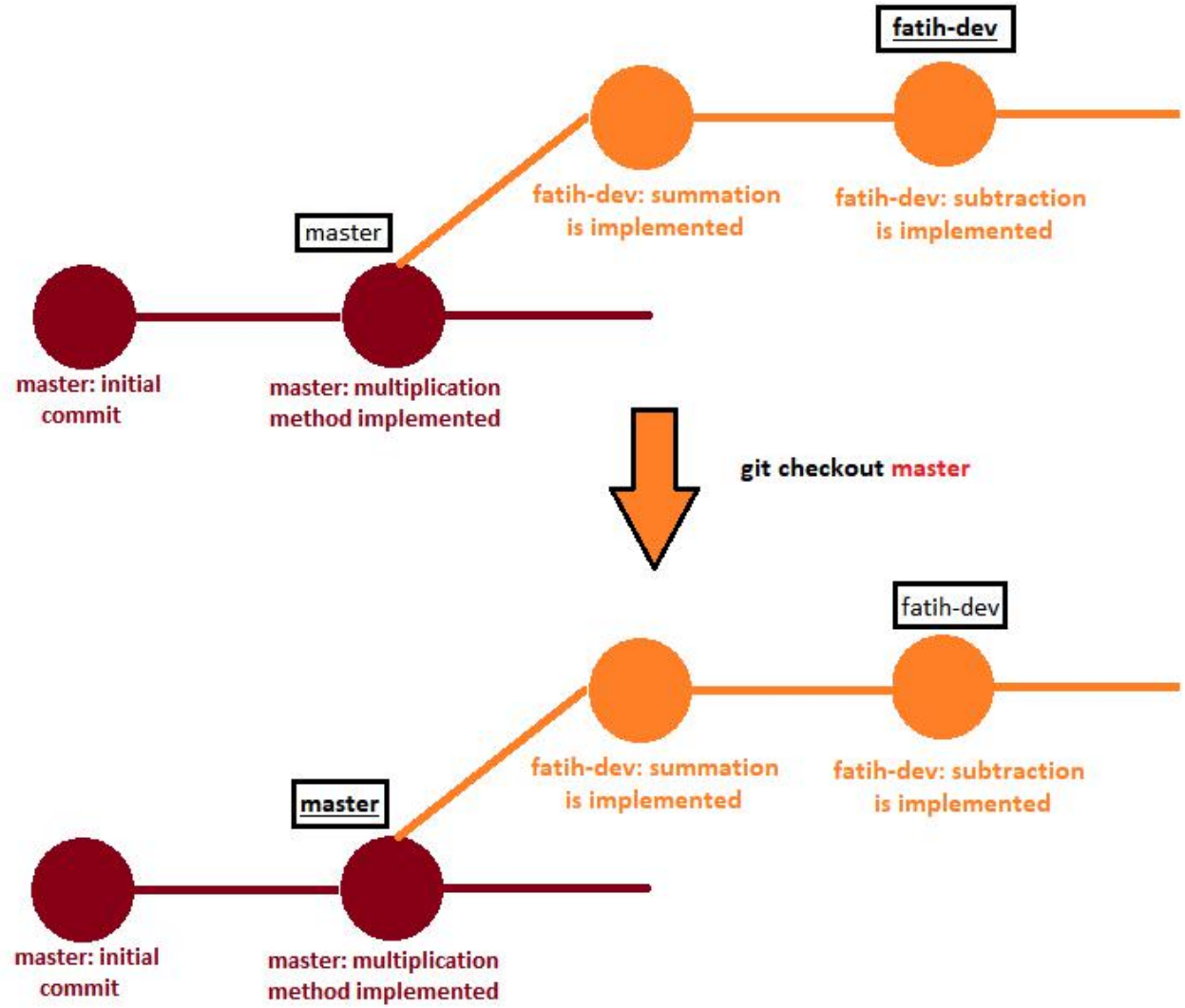
- **git checkout <branch-name>:** checkouts to another branch.



Local Repository Git Commands

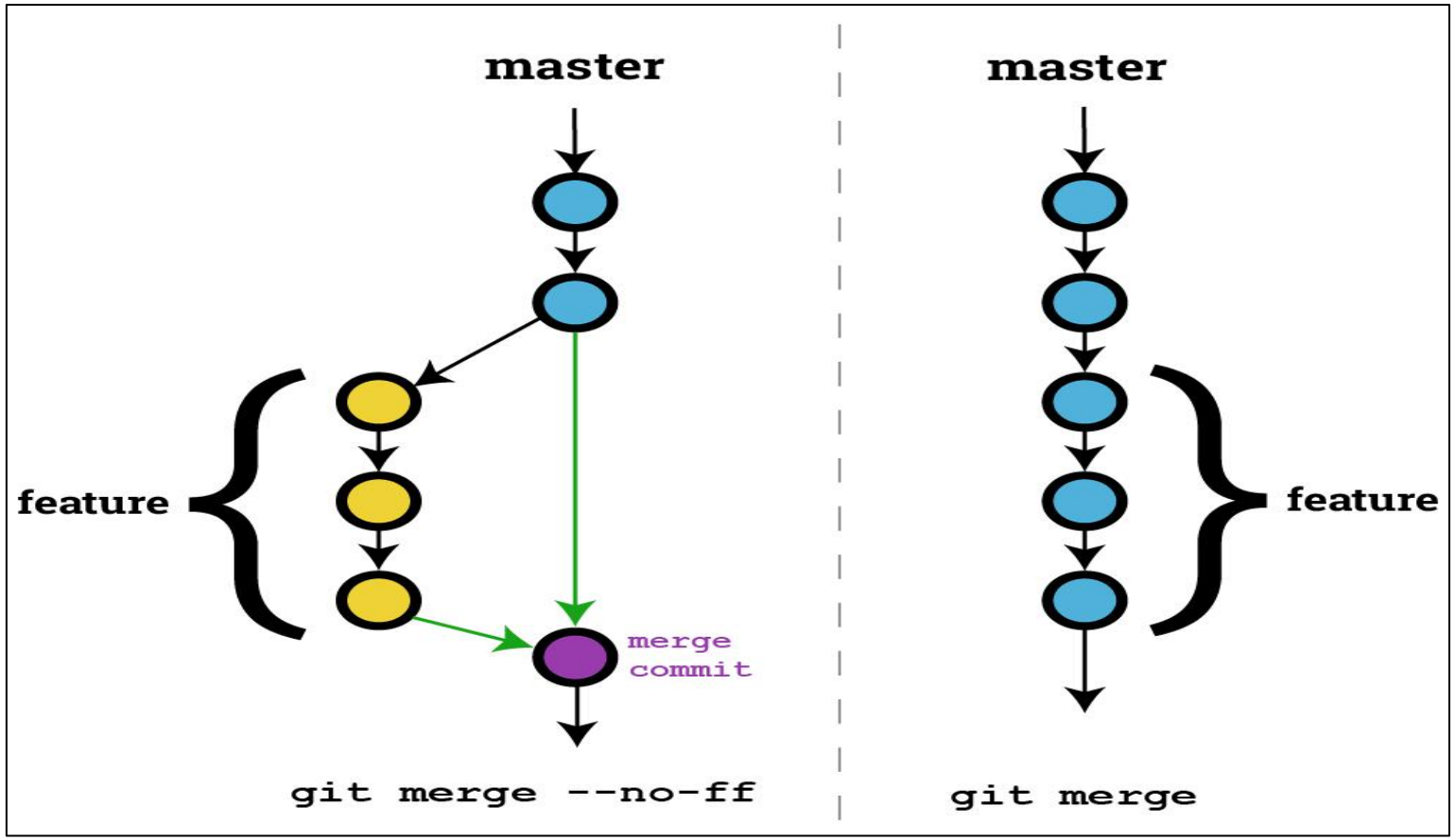


Local Repository Git Commands

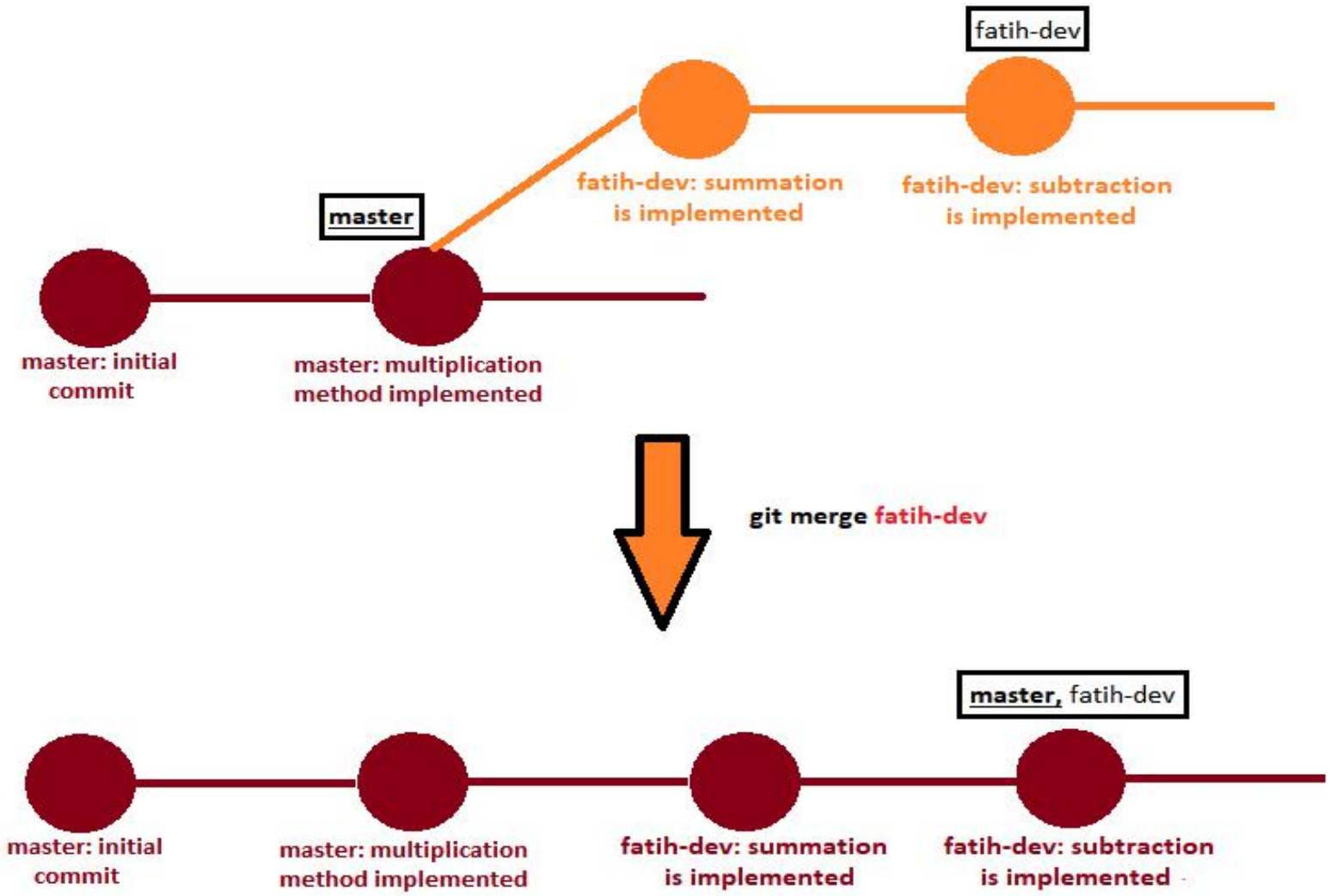


FAST FORWARD MERGE
vs
NO FAST FORWARD MERGE

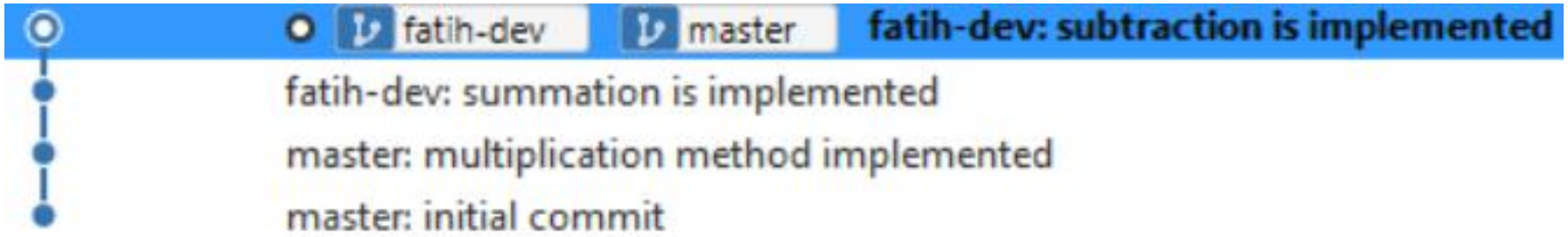
- **git merge --no-ff:** merges the branches with no fast forwarding.
- **git merge:** merges the branches with fast forwarding.



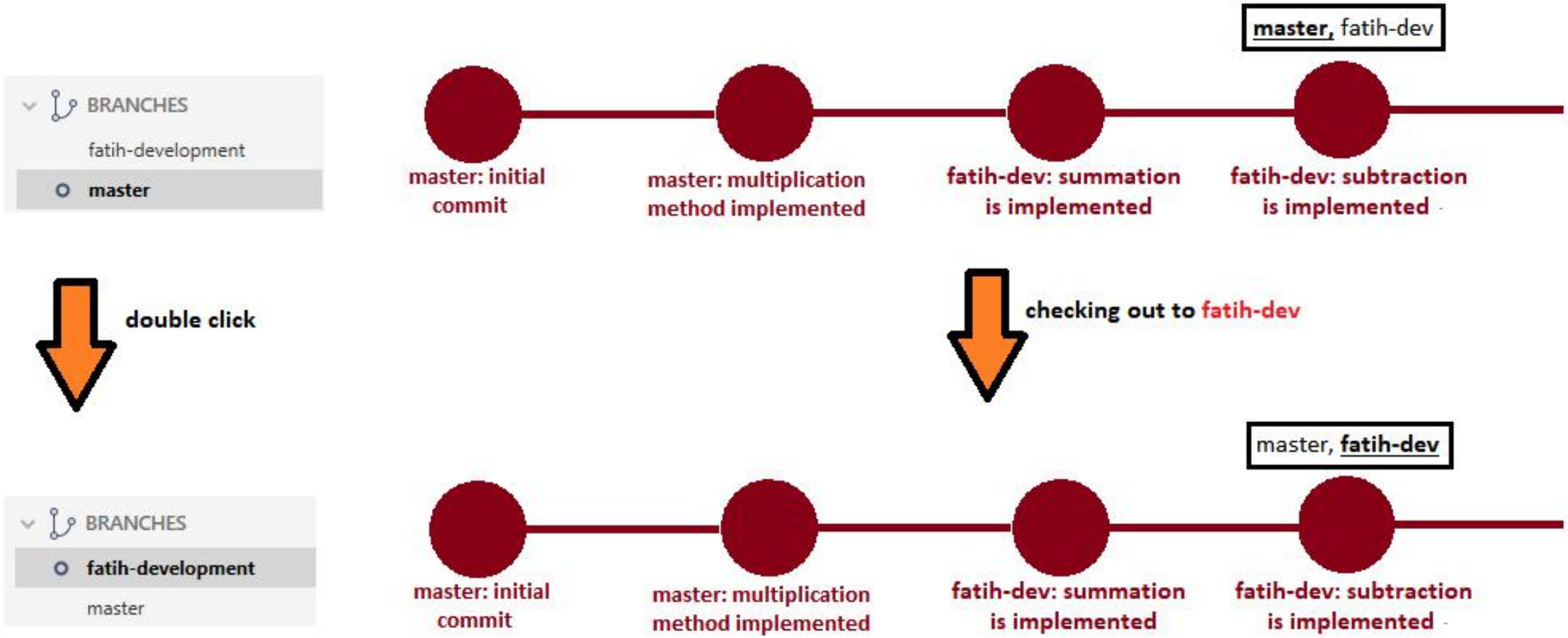
Local Repository Git Commands

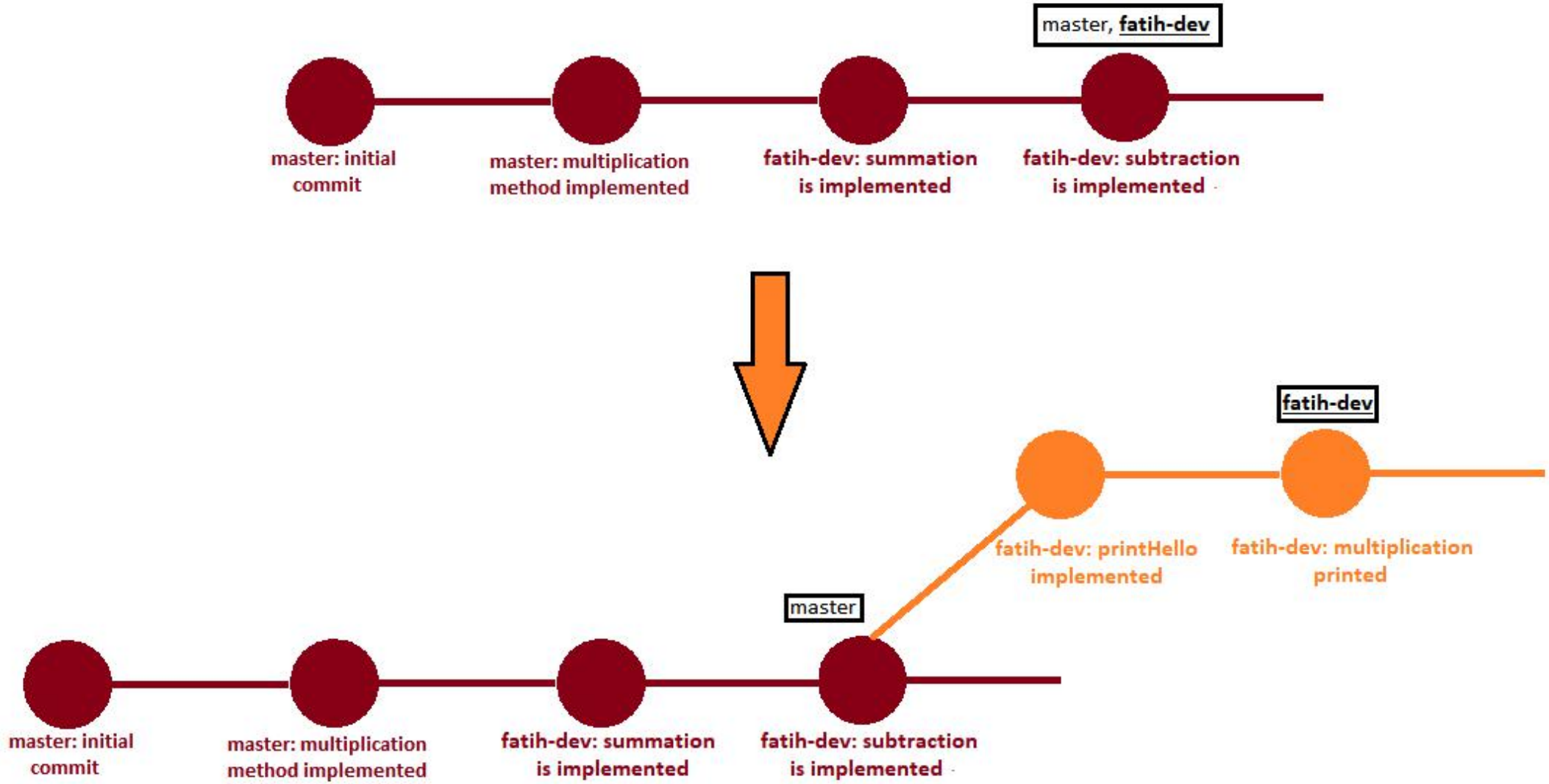


SourceTree: viewing commits

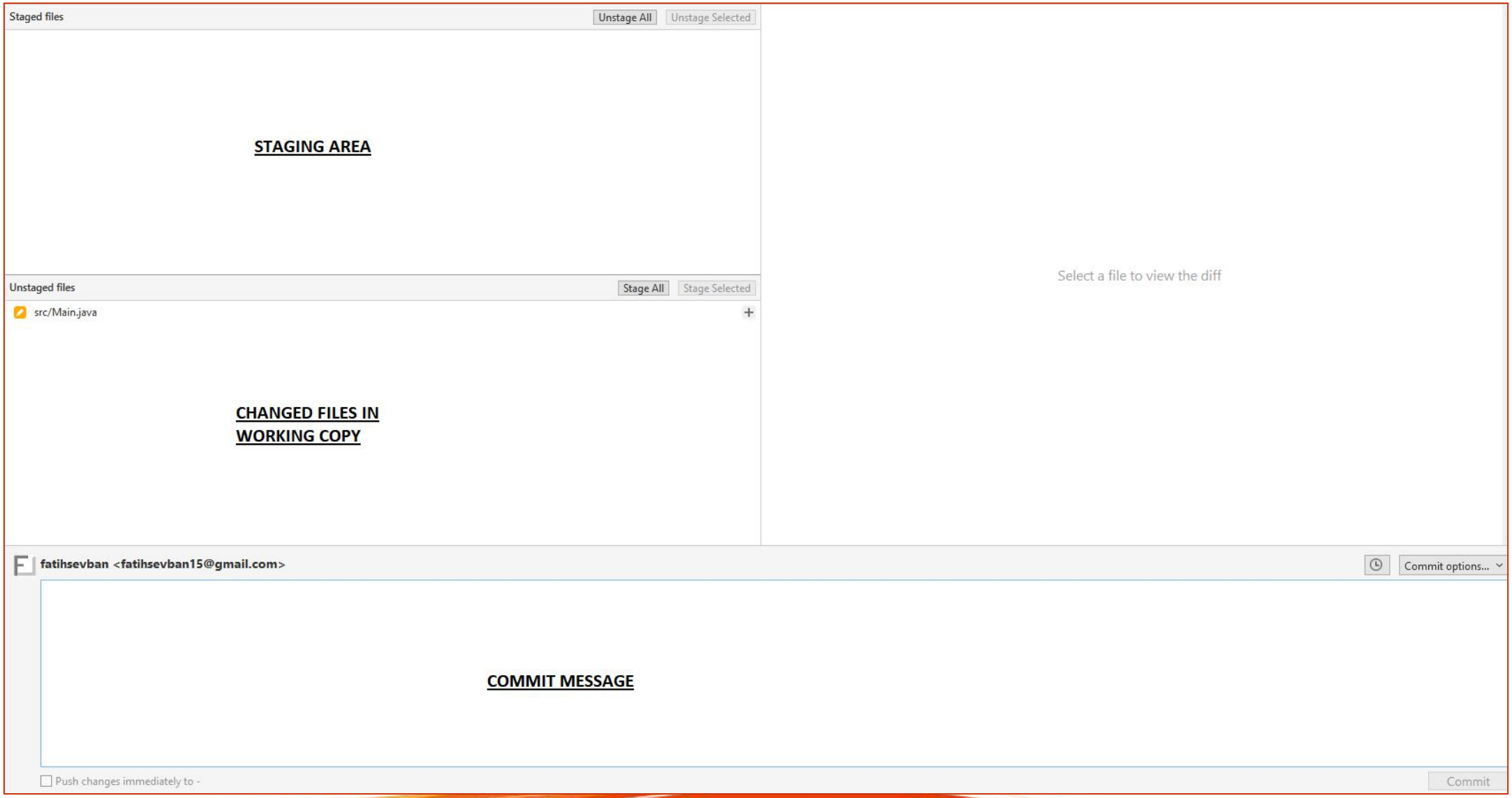


SourceTree: checkout

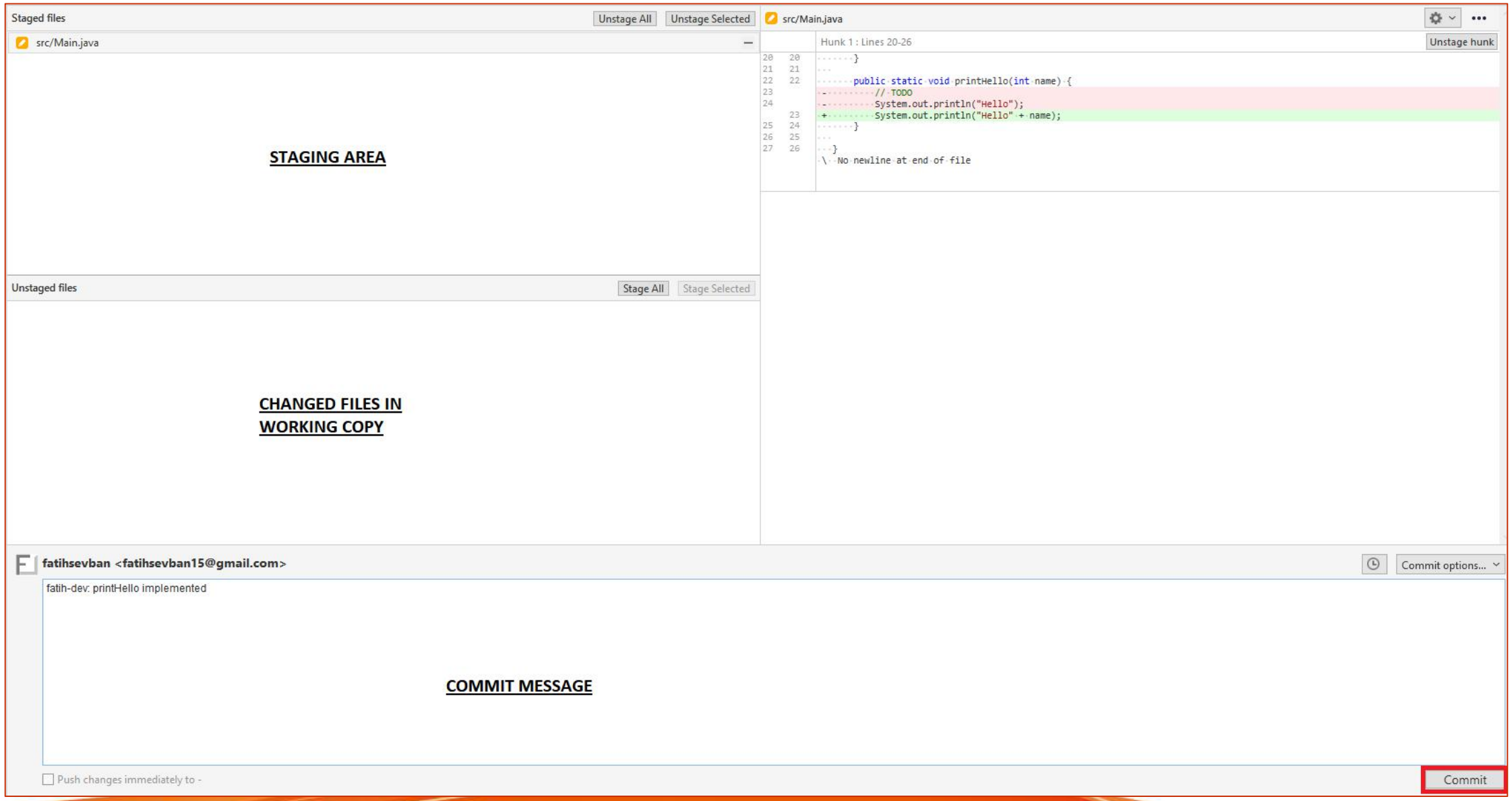



master, fatih-dev
master: initial commit
master: multiplication method implemented
fatih-dev: summation is implemented
fatih-dev: subtraction is implemented
fatih-dev
fatih-dev: printHello implemented
fatih-dev: multiplication printed
master
master: initial commit
master: multiplication method implemented
fatih-dev: summation is implemented
fatih-dev: subtraction is implemented

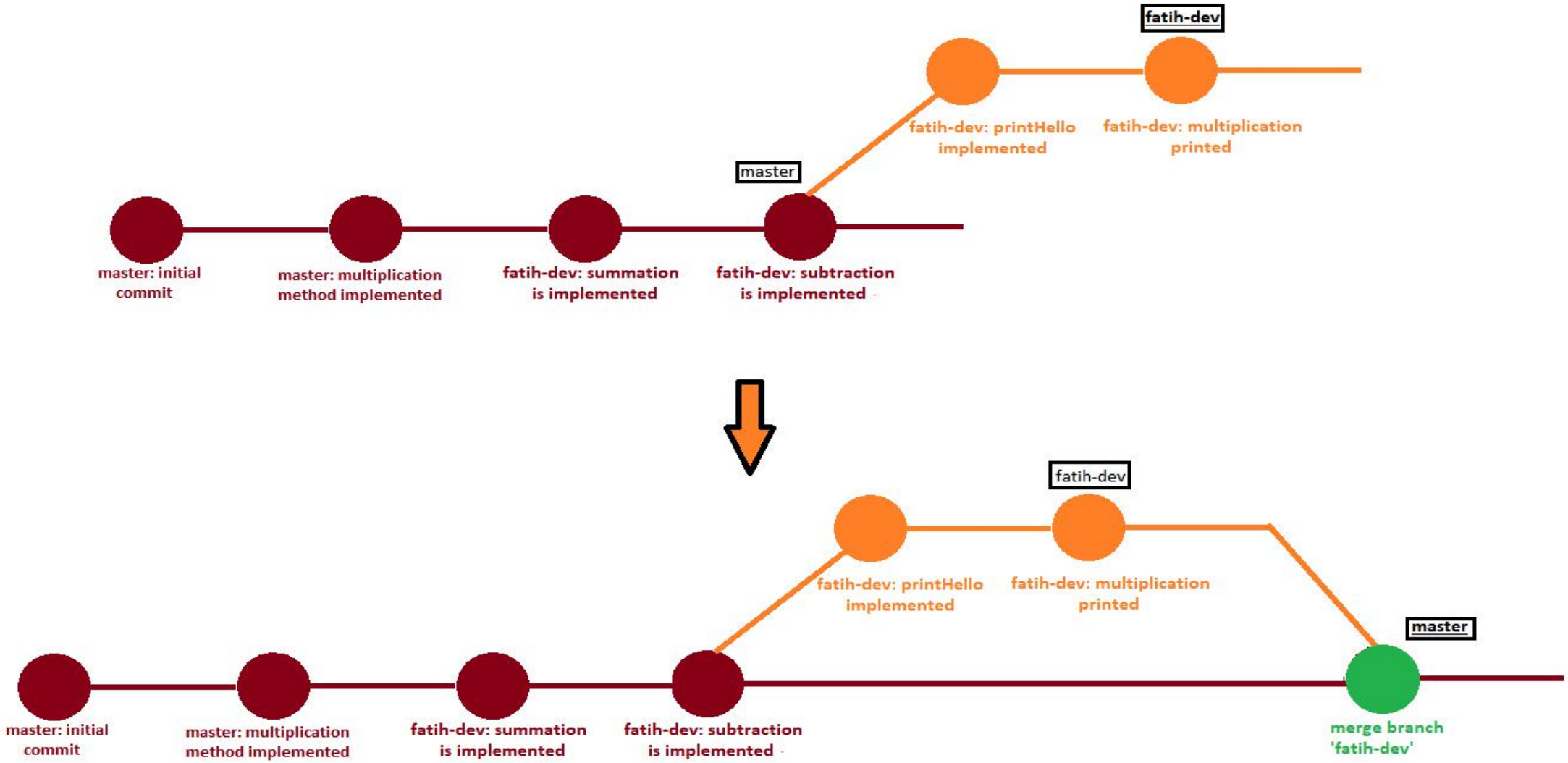
SourceTree: commit



SourceTree: commit



SourceTree: no fast forward merging



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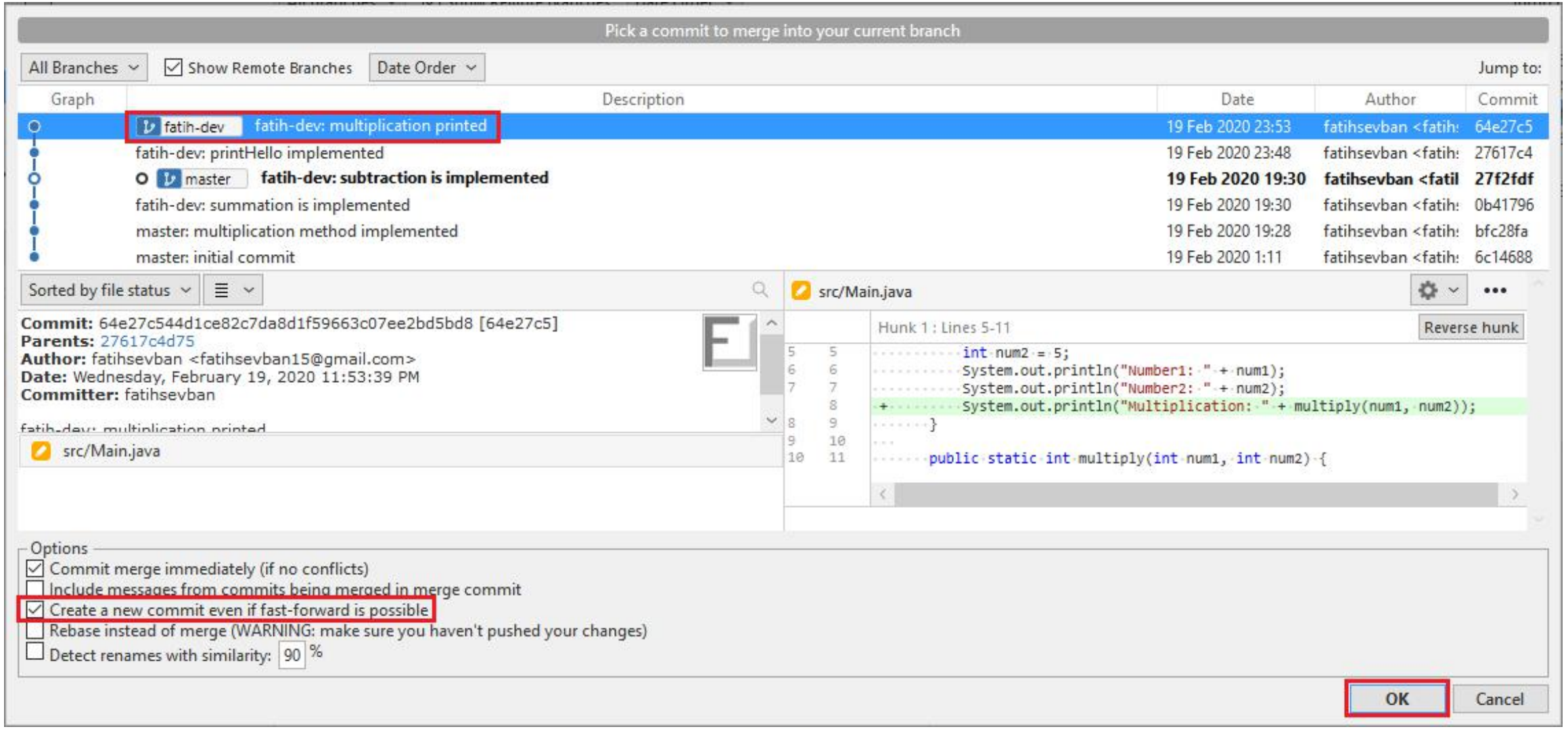

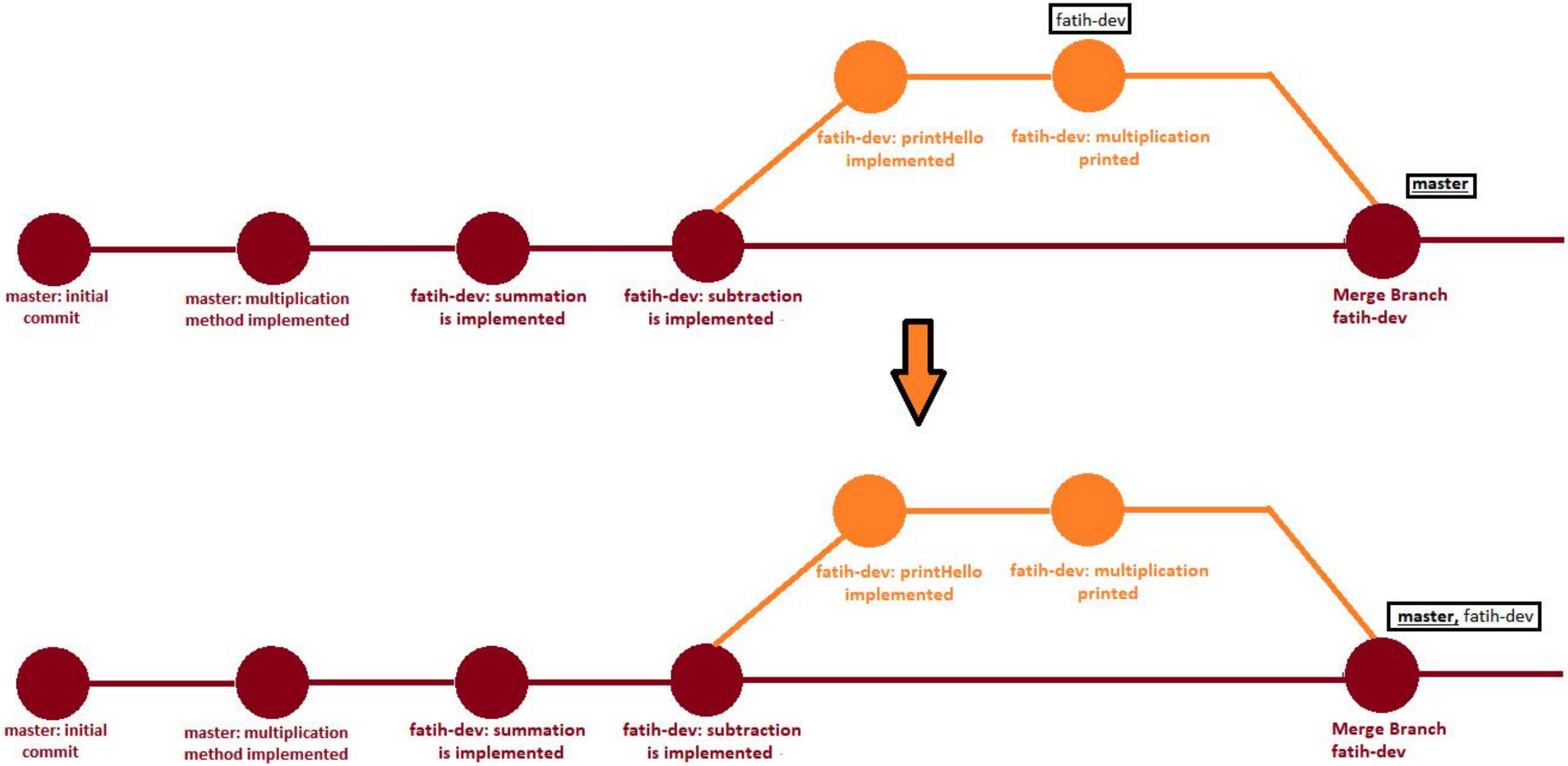
fatih-dev
fatih-dev: printHello implemented
fatih-dev: multiplication printed
master
master: initial commit
master: multiplication method implemented
fatih-dev: summation is implemented
fatih-dev: subtraction is implemented
Merge Branch fatih-dev
fatih-dev: printHello implemented
fatih-dev: multiplication printed
master, fatih-dev
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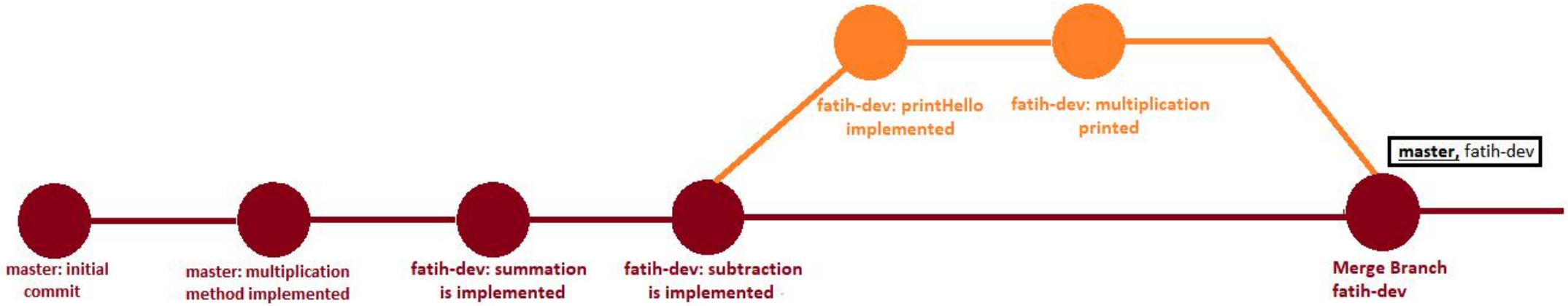
master: multiplication method implemented
fatih-dev: summation is implemented
fatih-dev: subtraction is implemented
Merge Branch fatih-dev


fatih-dev: printHello implemented
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master, fatih-dev
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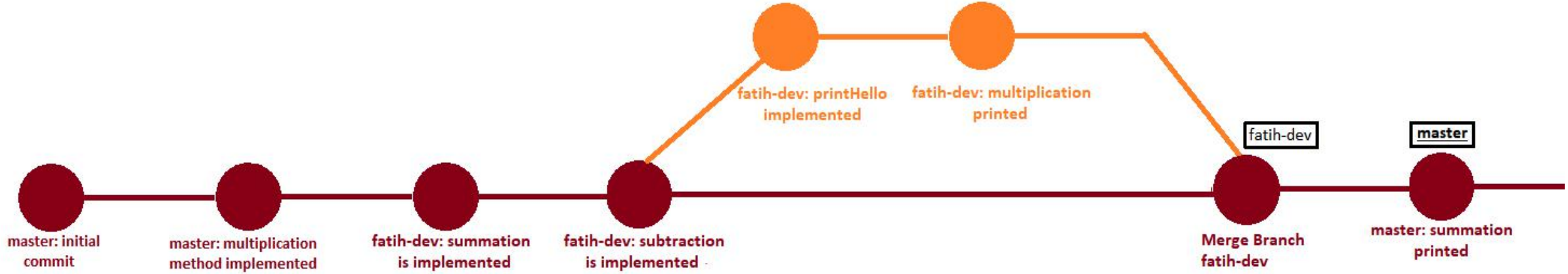
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fatih-dev: multiplication printed
fatih-dev
master
master: initial commit
master: multiplication method implemented
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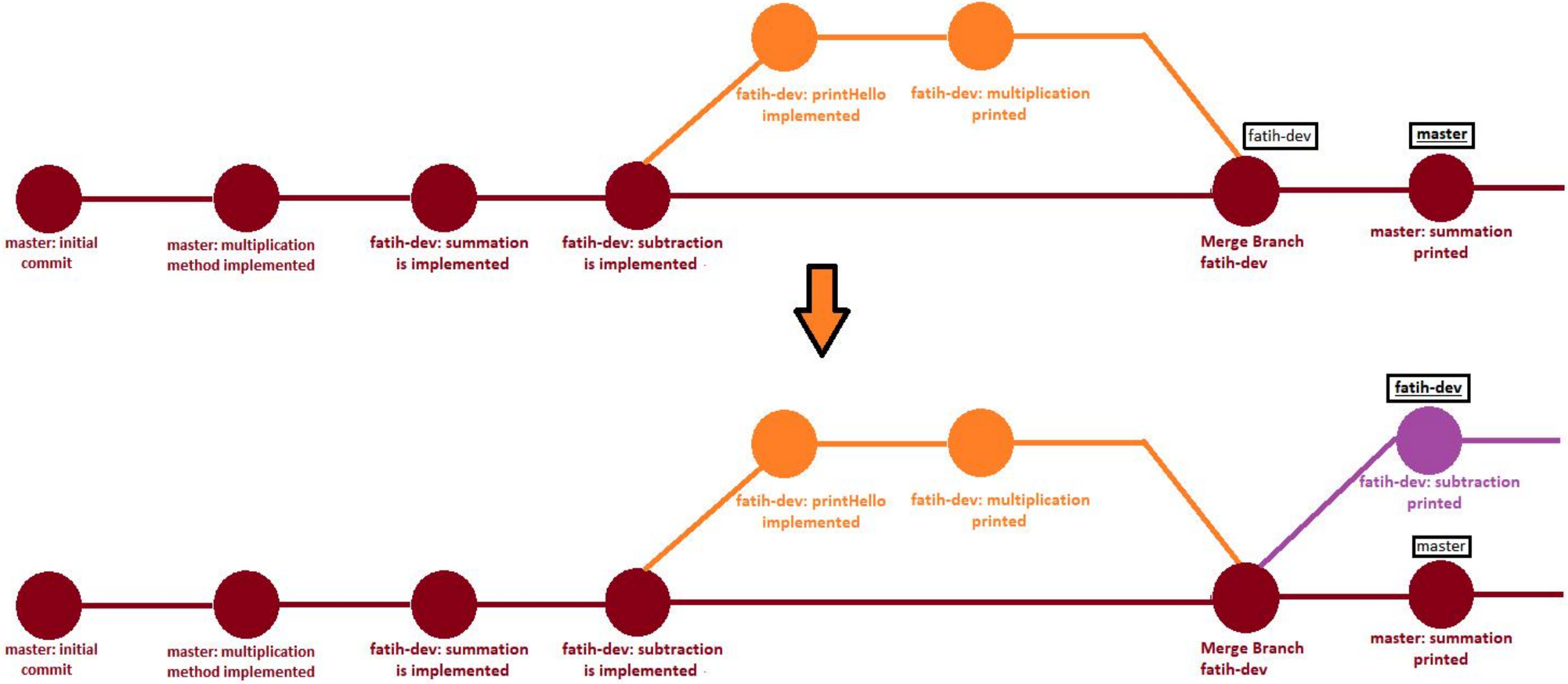
fatih-dev: subtraction is implemented
Merge Branch fatih-dev
master: summation printed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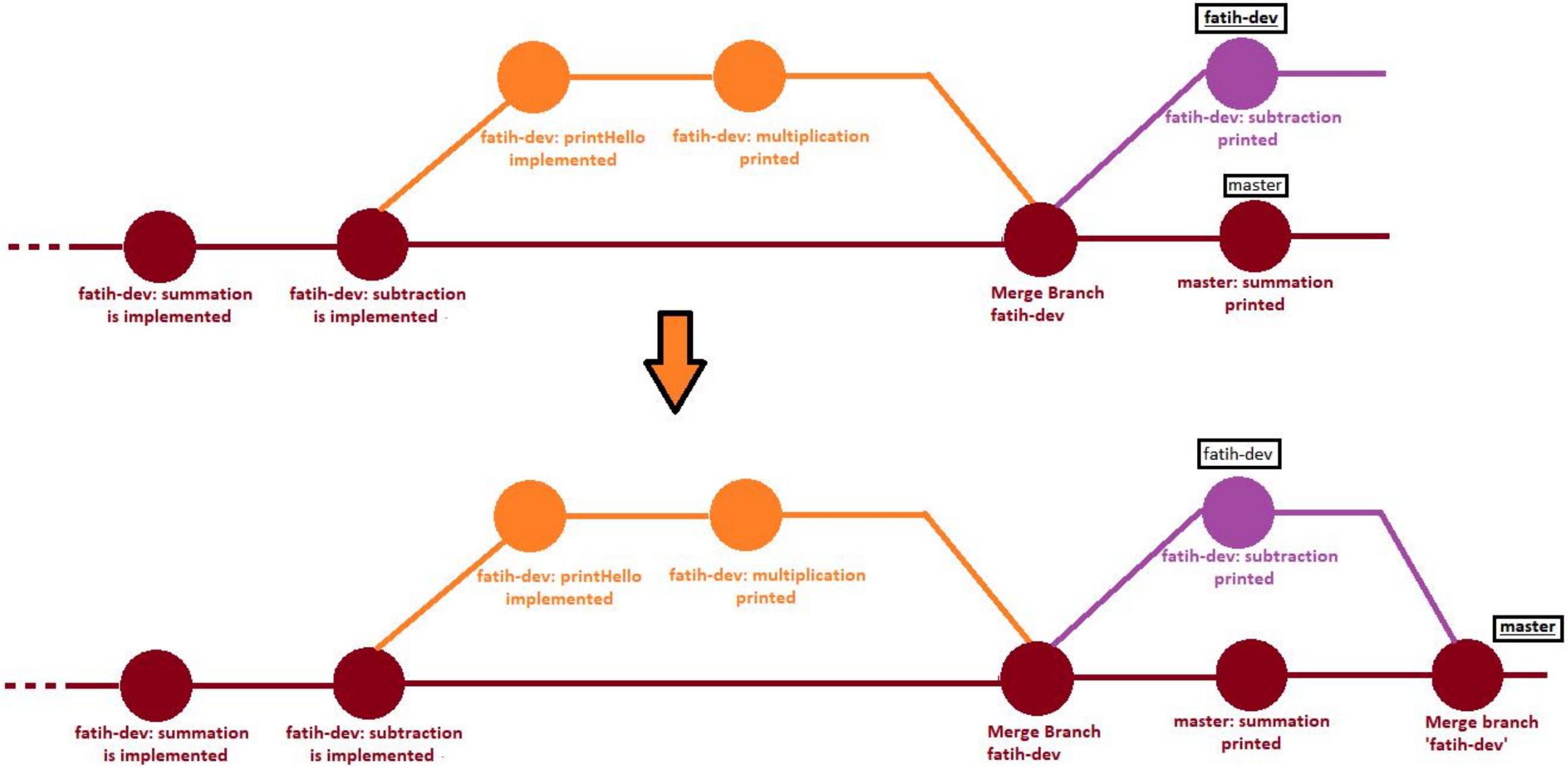
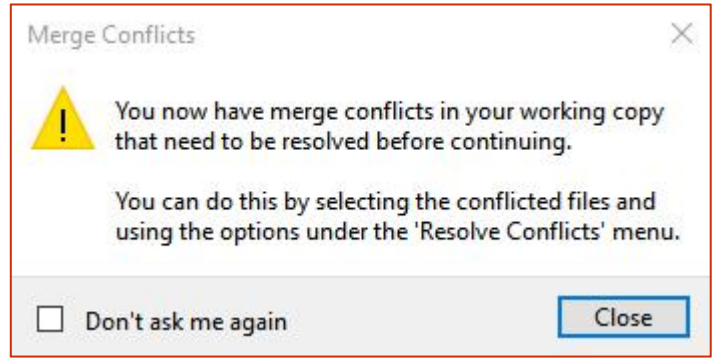
Merge Branch fatih-dev
master: summation printed
fatih-dev
fatih-dev: subtraction printed
master


fatih-dev
fatih-dev: printHello implemented
fatih-dev: multiplication printed
fatih-dev: subtraction printed
master
fatih-dev: summation is implemented
fatih-dev: subtraction is implemented
Merge Branch fatih-dev
master: summation printed
fatih-dev
fatih-dev: printHello implemented
fatih-dev: multiplication printed
fatih-dev: subtraction printed
master
fatih-dev: summation is implemented
fatih-dev: subtraction is implemented
Merge Branch fatih-dev
master: summation printed
Merge branch 'fatih-dev'

SourceTree: Conflict



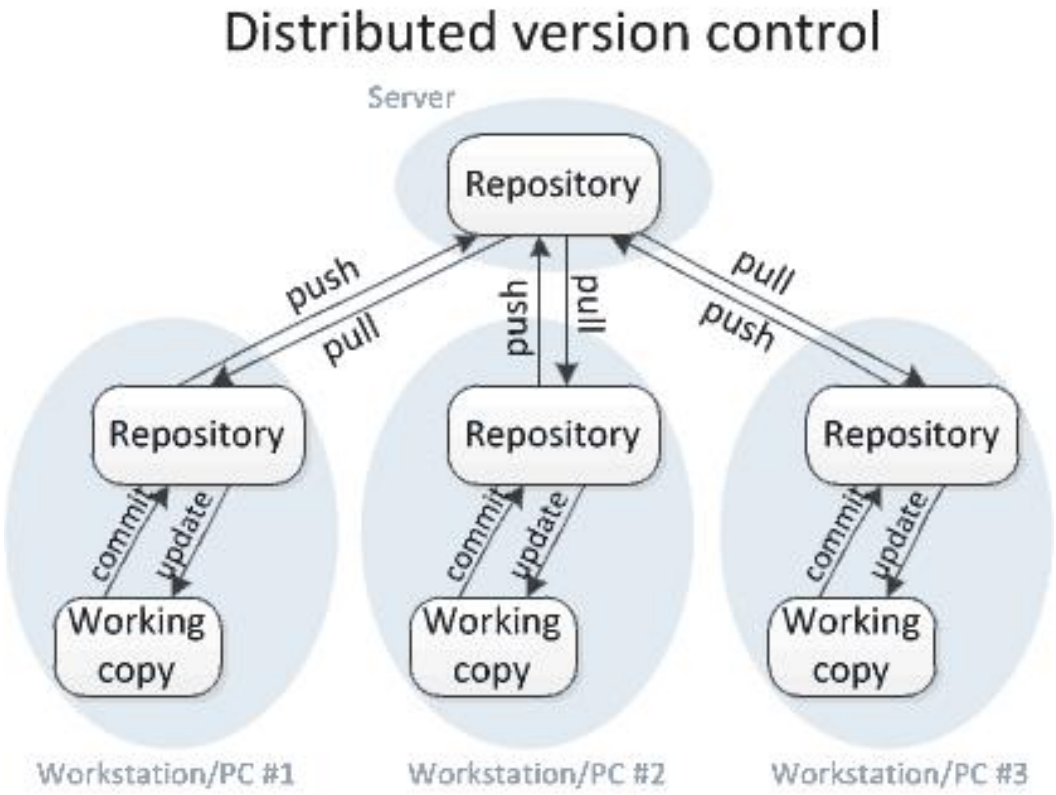
```
<<<<<<< HEAD
        System.out.println("Summation: " + sum(num1, num2));
=======
        System.out.println("Subtraction: " + subtract(num1, num2));
>>>>>>> fatih-dev
```

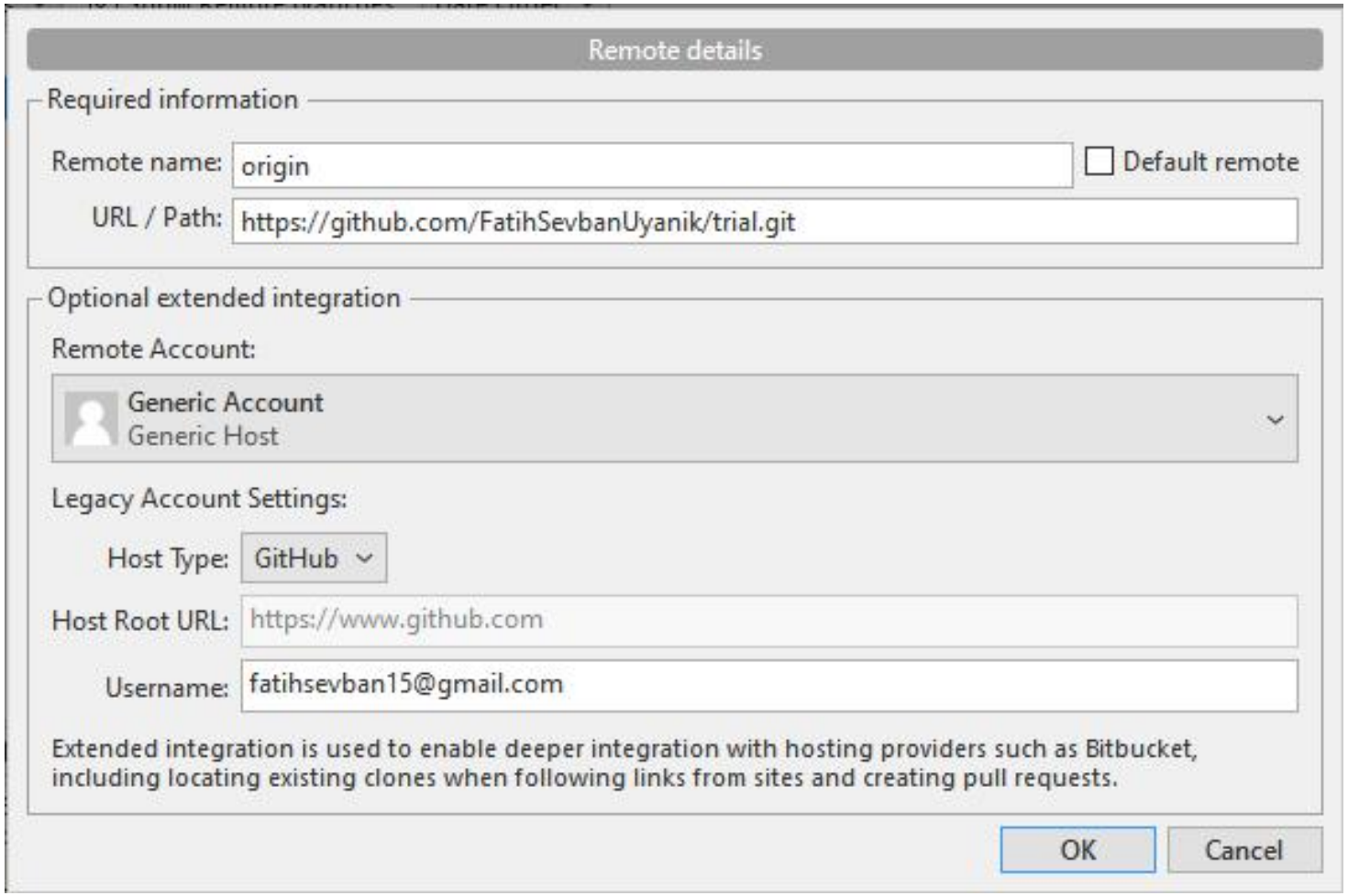
Current Branch Changes

Other Branch Changes

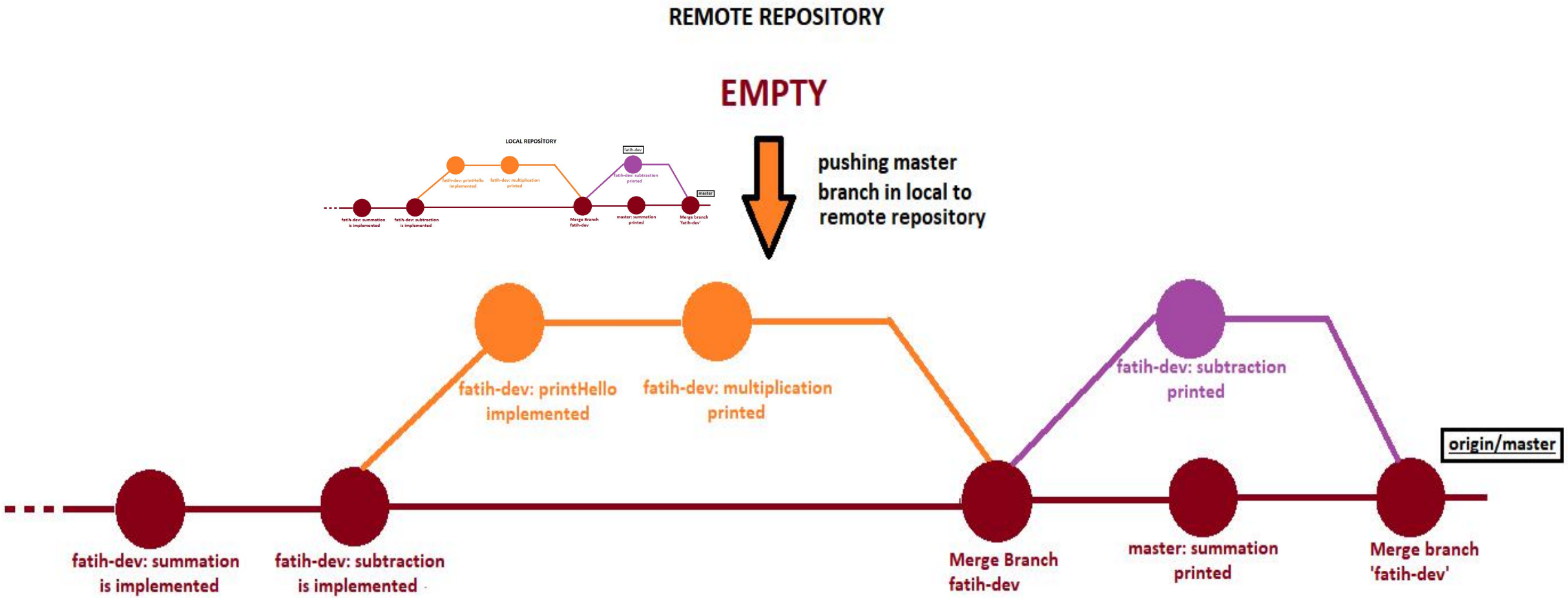
Remote Repository Git Commands

- **git push <branchname>:** command is used to upload local repository content to a remote repository.
- **git fetch:** Fetching imports commits to local branches
- **git pull <branchname>:** A combination of two other commands, git fetch followed by git merge.
- **git clone <repolink>:** clones a repository to your local.

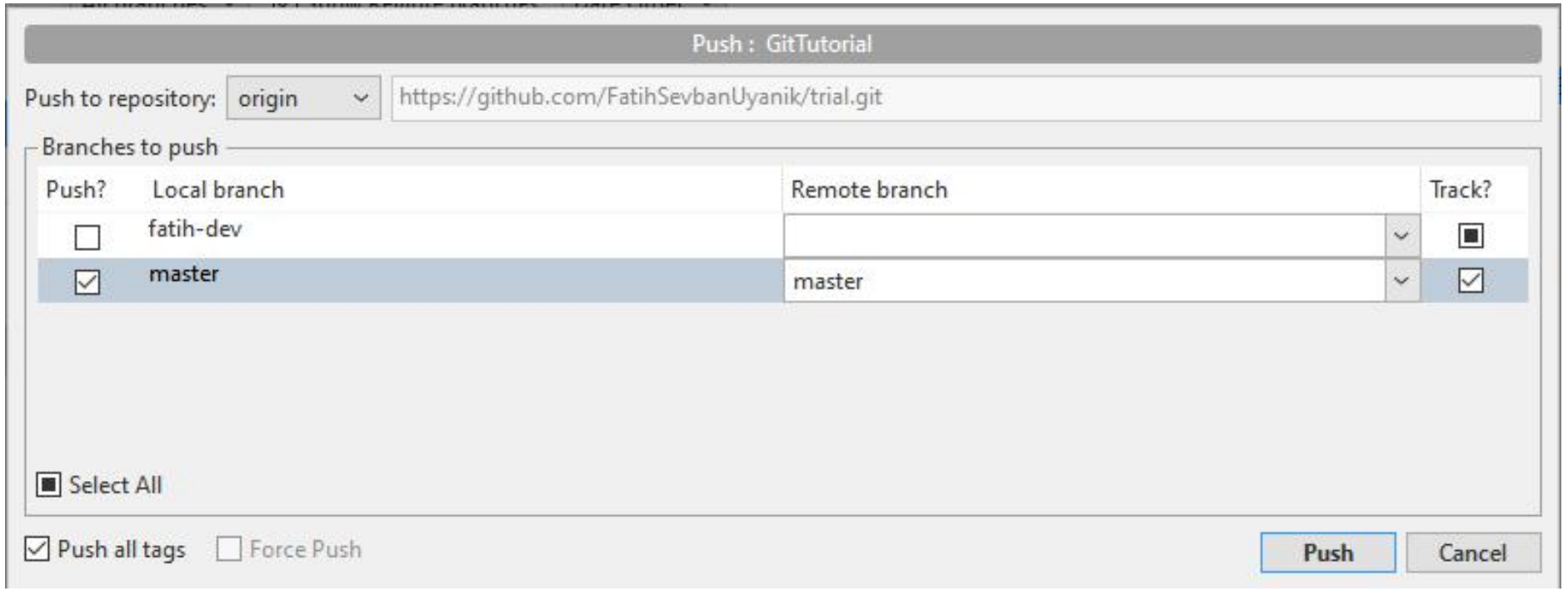



Remote details
Required information
Remote name:
origin
Default remote
URL / Path:
https://github.com/FatihSevbanUyanik/trial.git
Optional extended integration
Remote Account:
Generic Account
Generic Host
Legacy Account Settings:
Host Type:
GitHub
Host Root URL:
https://www.github.com
Username:
fatihsevban15@gmail.com
Extended integration is used to enable deeper integration with hosting providers such as Bitbucket, including locating existing clones when following links from sites and creating pull requests.
OK
Cancel

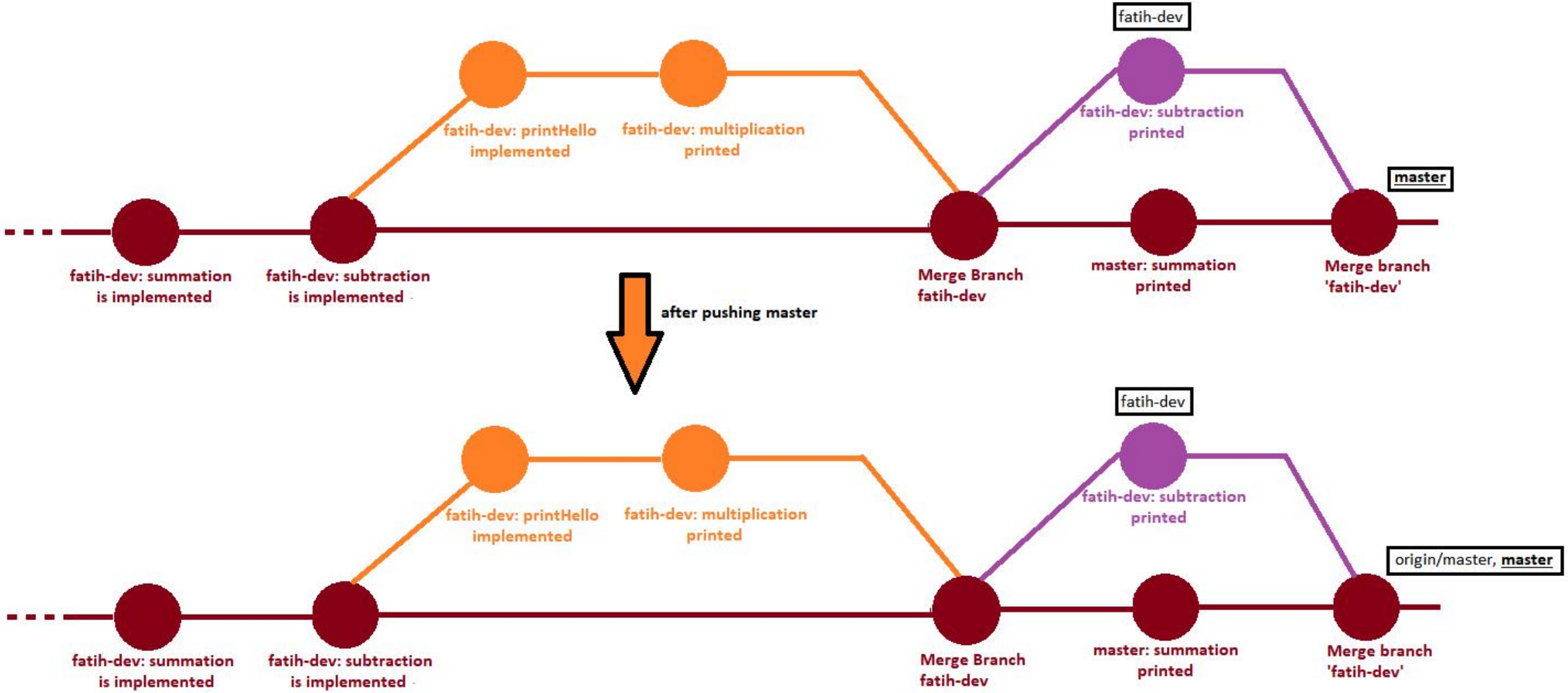
Remote Repository Git Commands



Remote Repository: push



Remote Repository: push



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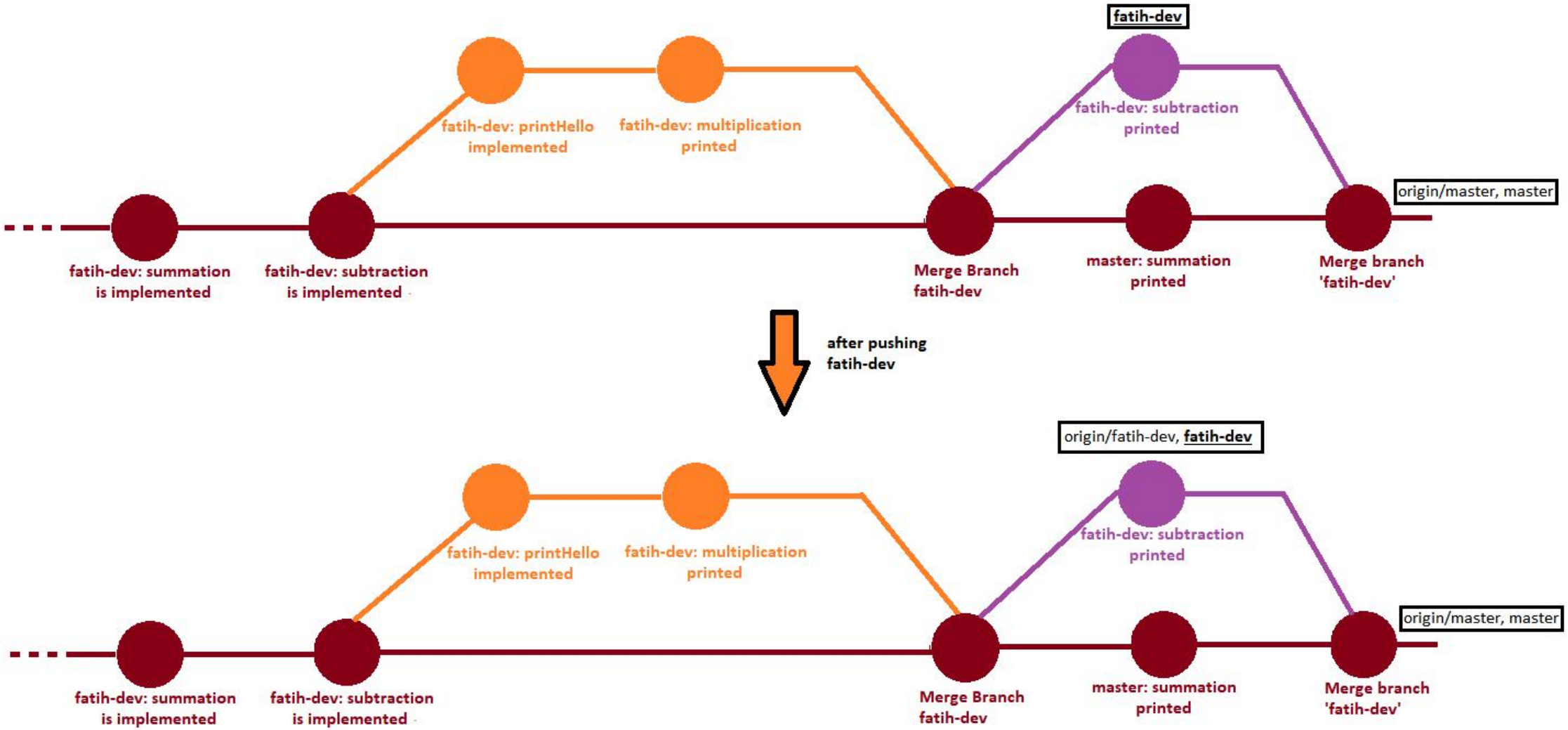
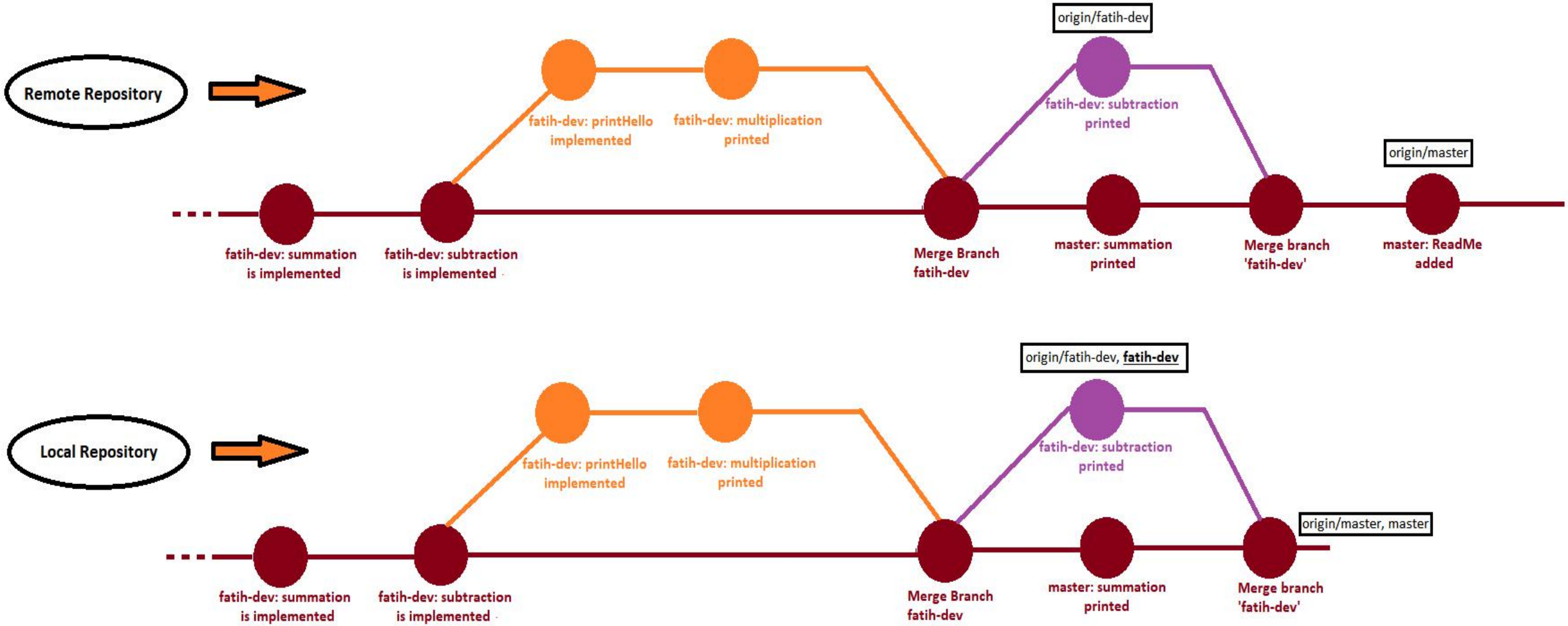
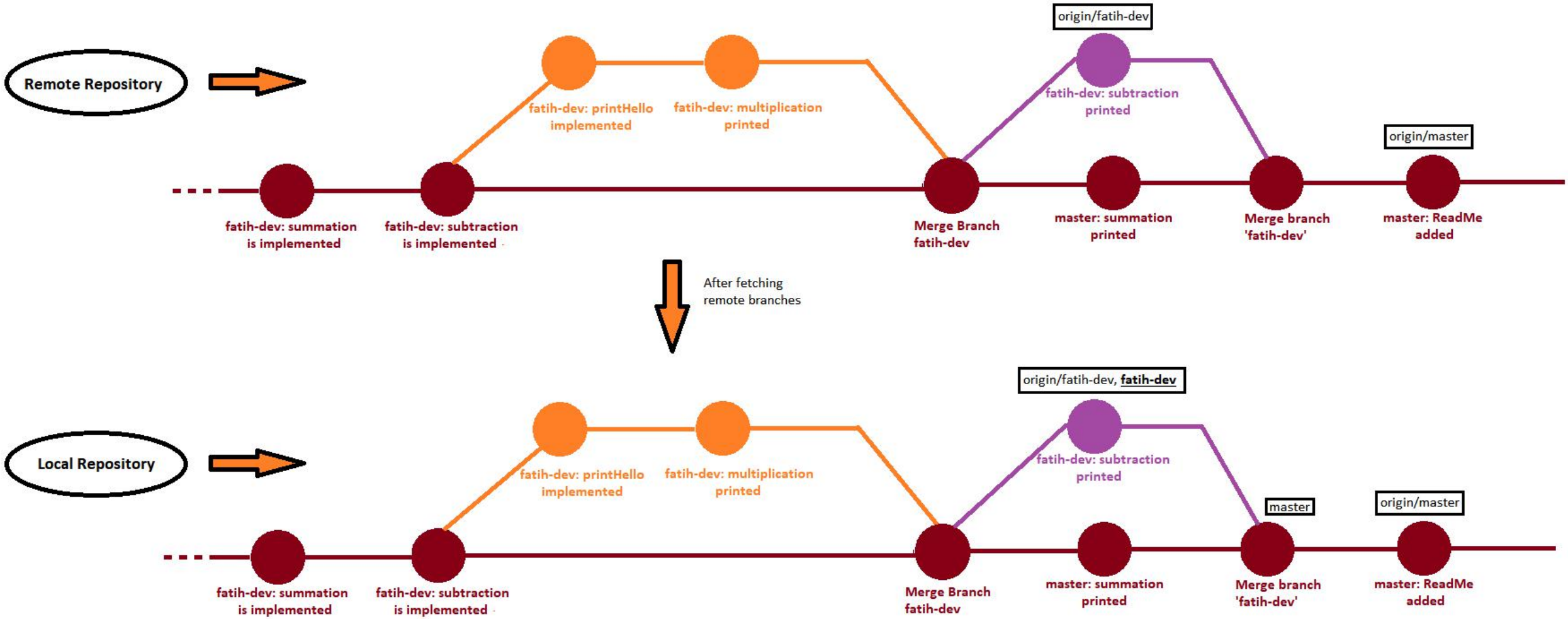


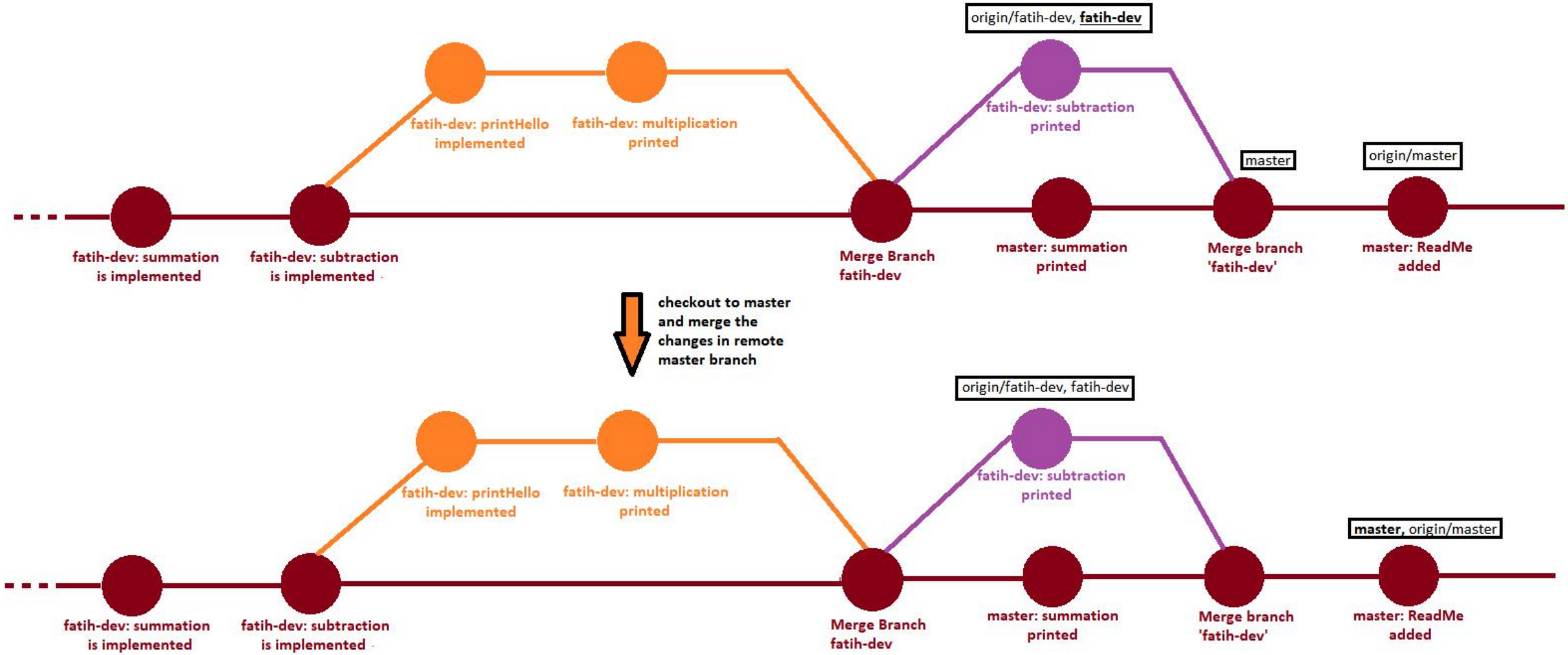
Remote Repository: fetch



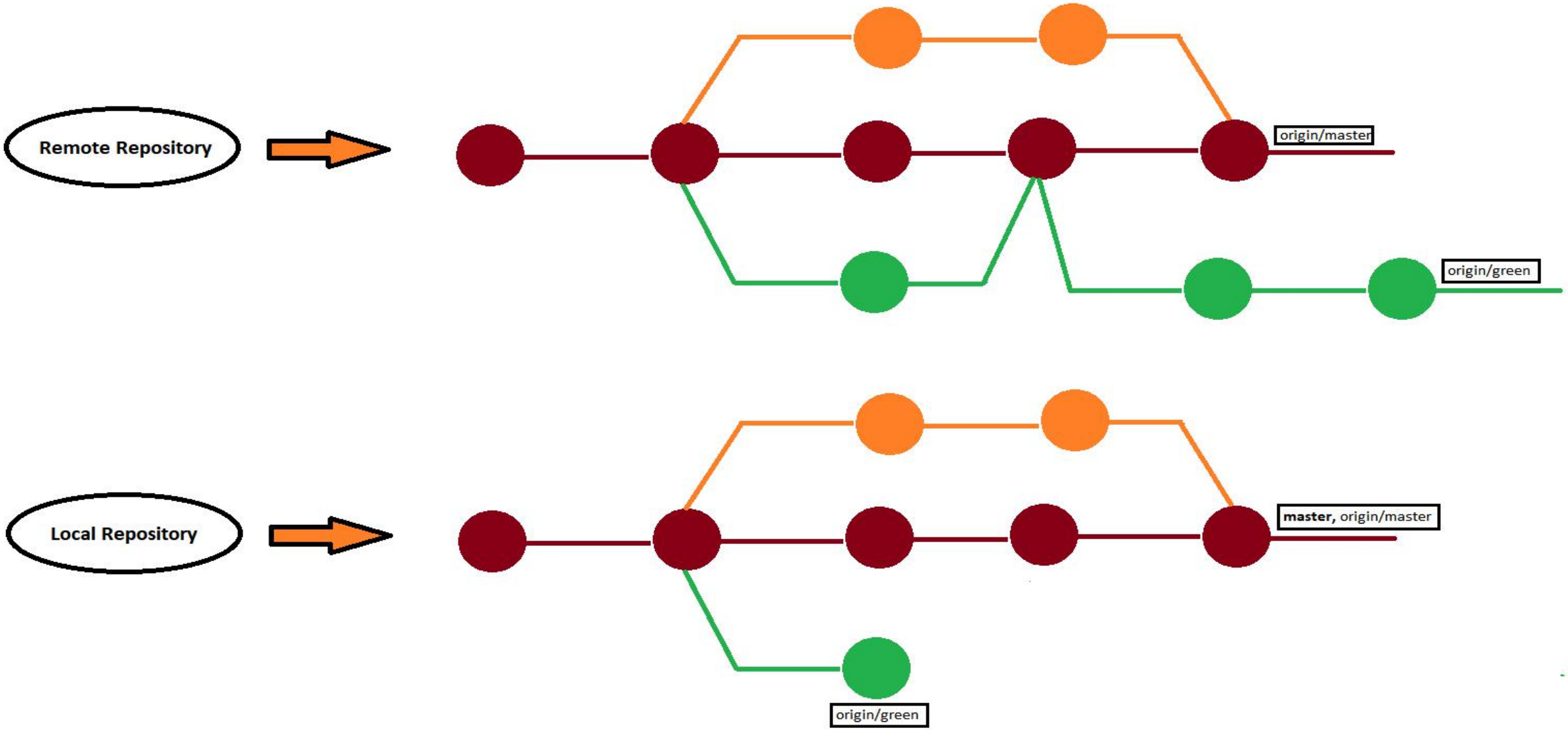
Remote Repository: fetch



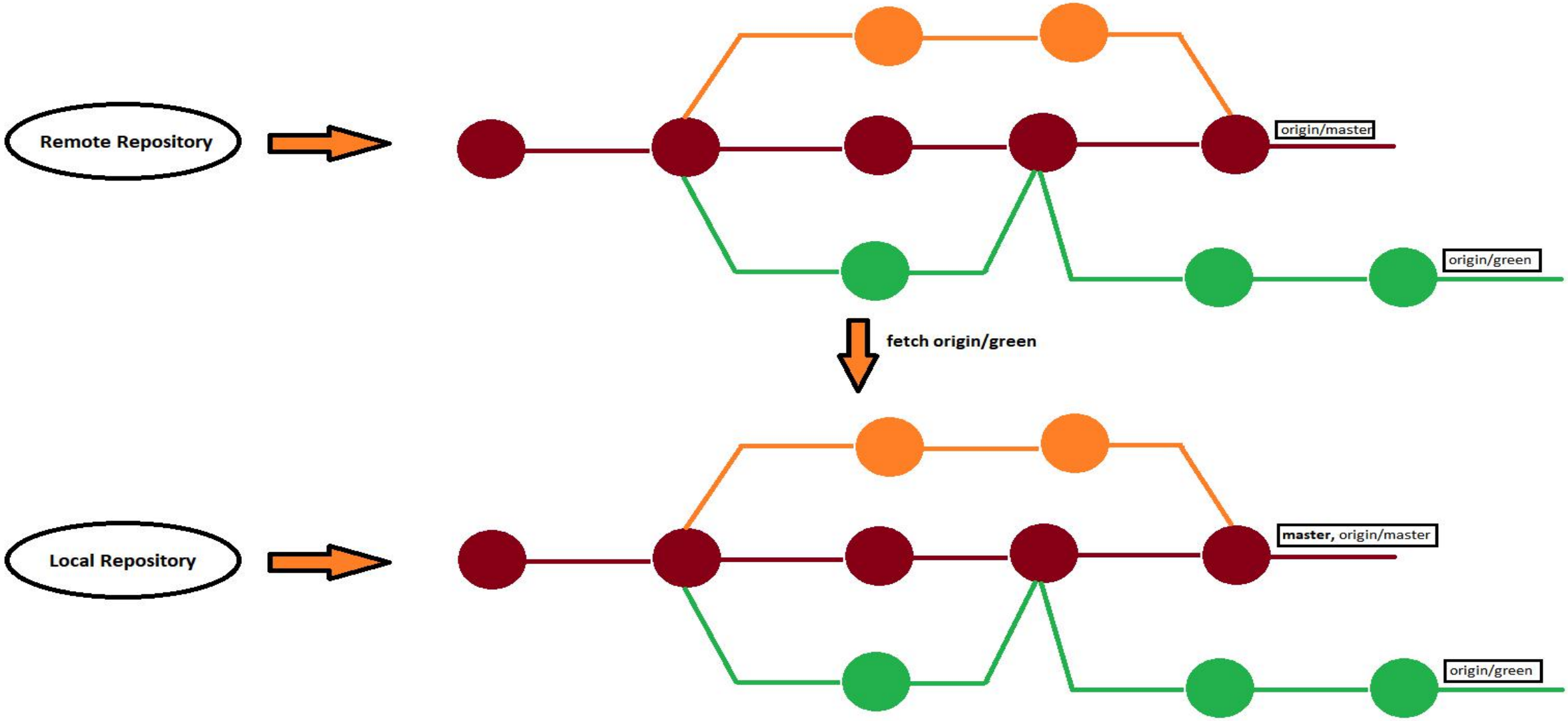
Remote Repository: fetch



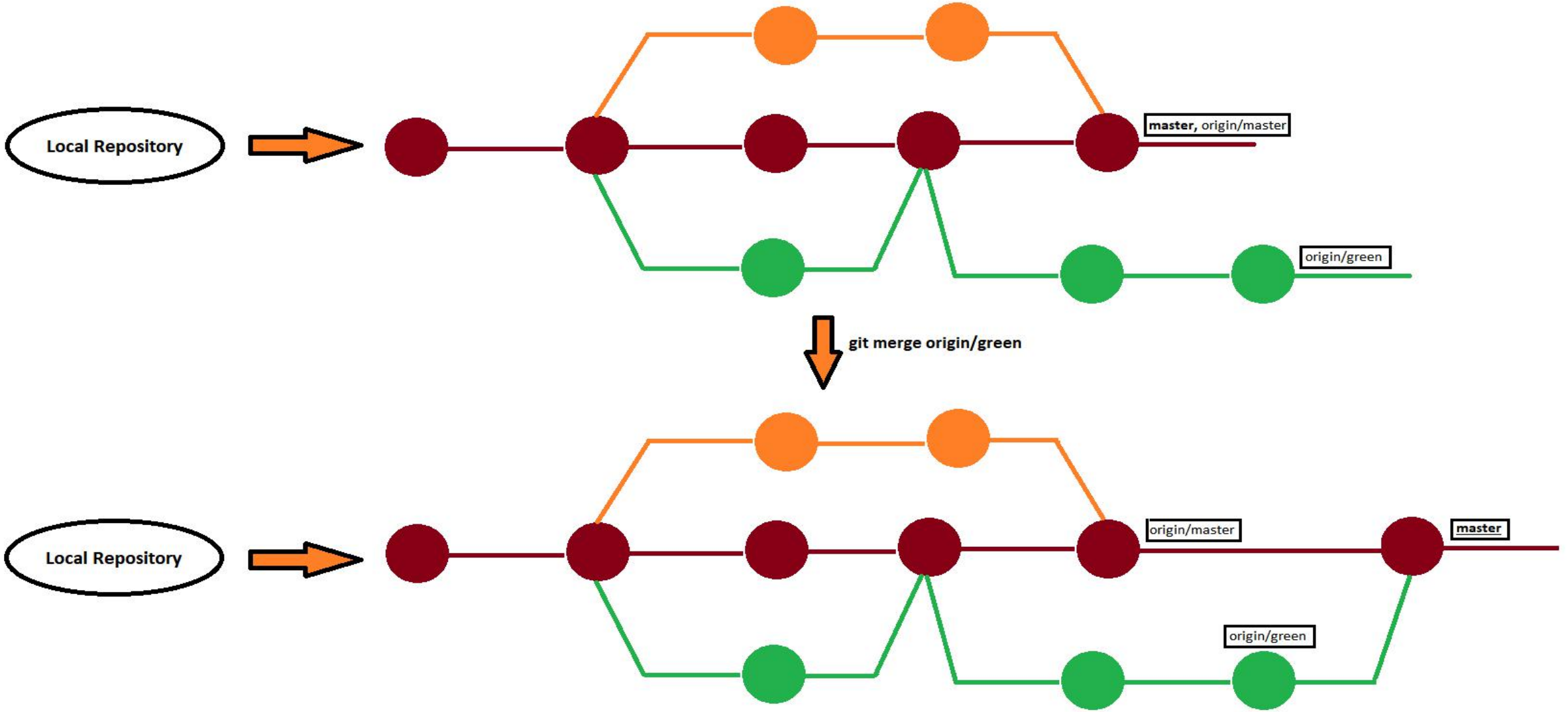
Remote Repository: pull = fetch + merge



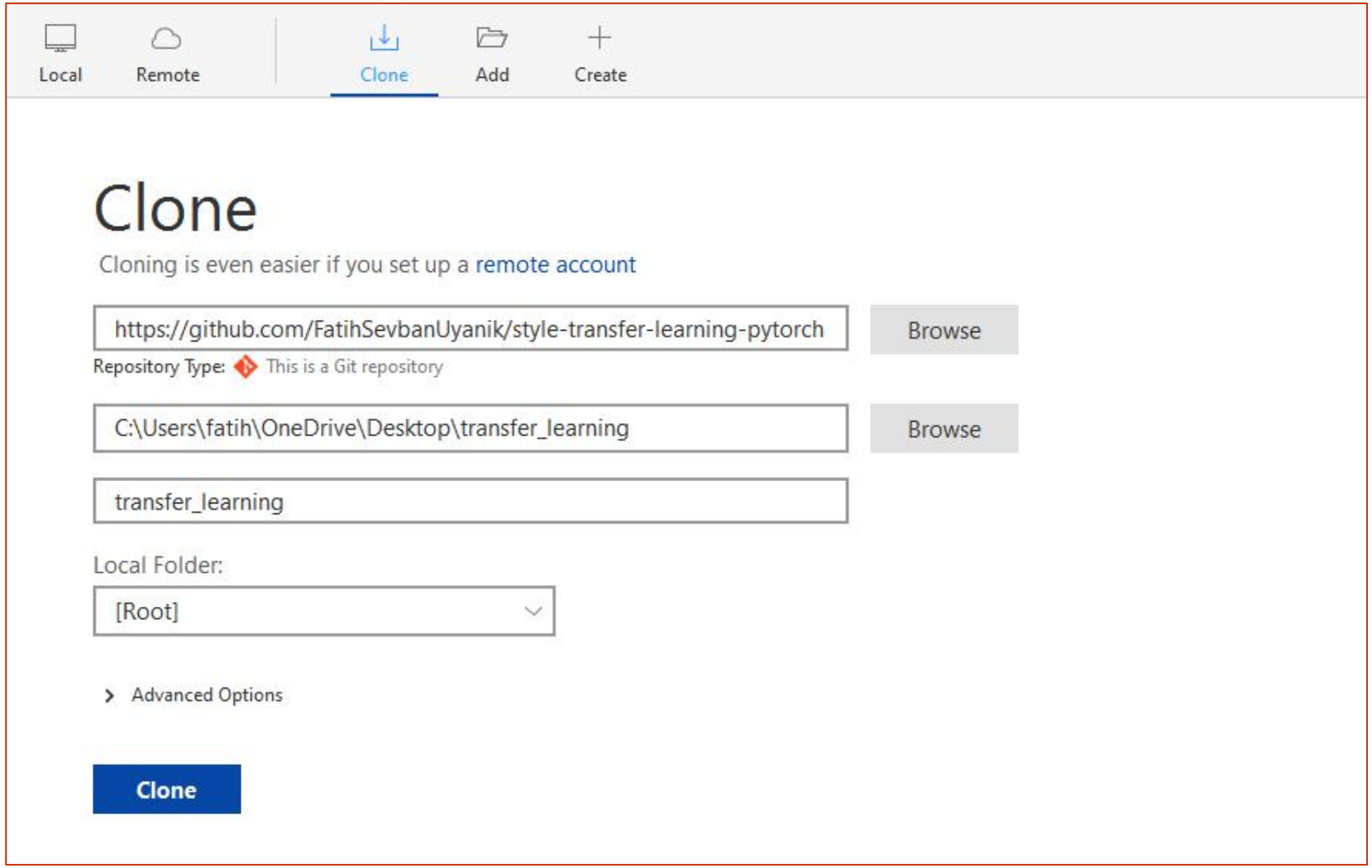
Remote Repository: pull = fetch + merge



Remote Repository: pull = fetch + merge



Remote Repository: clone



References

- **Git Web Page:** https://git-scm.com/
- **Git Documentation:** https://git-scm.com/docs
- **SourceTree Web Page:** https://www.sourcetreeapp.com/
- **SourceTree Documentation:** https://confluence.atlassian.com/sourcetreekb/sourcetree-basics-780870007.html
- **How to install Git:** https://www.youtube.com/watch?v=SQoPHgMDRYc
- **How to install SourceTree:** https://www.youtube.com/watch?v=9Oa_c8_Ewpc
- **IntelliJ IDEA Web Page:** https://www.jetbrains.com/idea/
- **Visual Studio Code:** https://code.visualstudio.com/
- **Smart Code:** https://www.youtube.com/channel/UC5XnpFJ1BEOywGZiby2mOuQ

Youtube Channel: Smart Code