

Data Engineering 101 **Git Essentials**



Shwetank Singh
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git init

INITIALIZE A NEW GIT
REPOSITORY

GIT INIT

CREATES A NEW EMPTY GIT
REPOSITORY IN THE CURRENT
DIRECTORY.



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git clone

CLONE AN EXISTING
REPOSITORY

GIT CLONE
`HTTPS://GITHUB.COM/USER/REPO.GIT`

CREATES A COPY OF THE
REMOTE REPOSITORY IN A
LOCAL DIRECTORY.



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git status

CHECK THE STATUS OF YOUR WORKING DIRECTORY

GIT STATUS

SHOWS THE STATUS OF FILES IN THE WORKING DIRECTORY AND STAGING AREA (MODIFIED, UNTRACKED, ETC.).



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git add

ADD FILES TO STAGING AREA

GIT ADD FILE.TXT

STAGES FILE CHANGES FOR THE NEXT COMMIT. CAN BE USED WITH INDIVIDUAL FILES OR . TO ADD ALL FILES.



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git commit

COMMIT STAGED CHANGES

GIT COMMIT -M "INITIAL COMMIT"

RECORDS CHANGES TO THE
REPOSITORY WITH A
DESCRIPTIVE MESSAGE.



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git branch

LIST, CREATE, OR DELETE
BRANCHES

GIT BRANCH NEW-BRANCH

LISTS EXISTING BRANCHES OR
CREATES A NEW BRANCH
NAMED NEW-BRANCH.



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git checkout

SWITCH BRANCHES OR
RESTORE FILES

GIT CHECKOUT NEW-BRANCH

SWITCHES TO THE BRANCH
NEW-BRANCH. CAN ALSO BE
USED TO CHECK OUT SPECIFIC
FILES.



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git merge

MERGE BRANCHES TOGETHER

GIT MERGE FEATURE-BRANCH

COMBINES THE CHANGES
FROM FEATURE-BRANCH INTO
THE CURRENT BRANCH.



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git pull

FETCH AND INTEGRATE
CHANGES FROM A REMOTE
REPOSITORY

GIT PULL ORIGIN MAIN

FETCHES UPDATES FROM THE
REMOTE MAIN BRANCH AND
MERGES THEM INTO THE
CURRENT BRANCH.



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git push

PUSH LOCAL CHANGES TO A
REMOTE REPOSITORY

GIT PUSH ORIGIN MAIN

UPLOADS COMMITS FROM THE
LOCAL MAIN BRANCH TO THE
REMOTE REPOSITORY.



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git log

VIEW COMMIT HISTORY

GIT LOG

SHOWS THE COMMIT HISTORY,
INCLUDING COMMIT
MESSAGES, AUTHOR, AND
TIMESTAMPS.



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git diff

SHOW CHANGES BETWEEN
COMMITS, BRANCHES, OR
WORKING DIRECTORY

GIT DIFF HEAD

DISPLAYS DIFFERENCES
BETWEEN THE WORKING
DIRECTORY AND THE LATEST
COMMIT.



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git reset

RESET THE STAGING AREA OR
WORKING DIRECTORY

GIT RESET FILE.TXT

REMOTES THE SPECIFIED FILE
FROM THE STAGING AREA BUT
LEAVES THE WORKING
DIRECTORY UNCHANGED.



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git revert

REVERT A COMMIT BY
CREATING A NEW COMMIT

GIT REVERT HEAD

REVERTS THE LATEST COMMIT
BY CREATING A NEW COMMIT
THAT UNDOES THE CHANGES.



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git stash

SAVE CHANGES TEMPORARILY
WITHOUT COMMITTING

GIT STASH

SAVES UNCOMMITTED
CHANGES AND RESTORES A
CLEAN WORKING DIRECTORY.



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git stash apply

APPLY STASHED CHANGES

GIT STASH APPLY

RESTORES THE MOST RECENT
STASHED CHANGES.



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git fetch

DOWNLOAD OBJECTS AND
REFS FROM A REMOTE
REPOSITORY

GIT FETCH ORIGIN

RETRIEVES CHANGES FROM
THE REMOTE REPOSITORY
WITHOUT INTEGRATING THEM
INTO THE CURRENT BRANCH.



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git rm

REMOVE FILES FROM THE WORKING DIRECTORY AND STAGING AREA

GIT RM FILE.TXT

DELETES THE SPECIFIED FILE FROM BOTH THE WORKING DIRECTORY AND STAGING AREA.



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git mv

MOVE OR RENAME FILES

GIT MV OLDFILE.TXT NEWFILE.TXT

MOVES OR RENAMES
OLDFILE.TXT TO NEWFILE.TXT
AND STAGES THE CHANGES.



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git remote

MANAGE REMOTE
REPOSITORIES

GIT REMOTE ADD ORIGIN
`HTTPS://GITHUB.COM/USER/REPO.GIT`

ADDS A NEW REMOTE
REPOSITORY NAMED ORIGIN.



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git tag

CREATE, LIST, OR DELETE TAGS

GIT TAG V1.0.0

CREATES A NEW TAG NAMED V1.0.0 AT THE CURRENT COMMIT.



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git rebase

REAPPLY COMMITS ON TOP OF
ANOTHER BASE COMMIT

GIT REBASE MAIN

REAPPLIES COMMITS FROM
THE CURRENT BRANCH ONTO
THE MAIN BRANCH.



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git cherry-pick

APPLY SPECIFIC COMMITS
FROM ONE BRANCH TO
ANOTHER

GIT CHERRY-PICK <COMMIT-HASH>

APPLIES THE CHANGES
INTRODUCED BY THE
SPECIFIED COMMIT TO THE
CURRENT BRANCH.



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git show

SHOW DETAILS OF A SPECIFIC COMMIT

GIT SHOW <COMMIT-HASH>

DISPLAYS DETAILED INFORMATION ABOUT THE SPECIFIED COMMIT, INCLUDING DIFFS.



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git archive

CREATE AN ARCHIVE OF FILES
FROM THE REPOSITORY

**GIT ARCHIVE --
OUTPUT=ARCHIVE.ZIP HEAD**

CREATES A ZIP FILE OF THE
REPOSITORY CONTENT AS OF
THE LATEST COMMIT.



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git blame

SHOW WHO LAST MODIFIED EACH LINE OF A FILE

GIT BLAME FILE.TXT

SHOWS THE LAST PERSON TO MODIFY EACH LINE IN THE SPECIFIED FILE.



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git clean

REMOVE UNTRACKED FILES
FROM THE WORKING
DIRECTORY

GIT CLEAN -F

REMOTES UNTRACKED FILES
FROM THE WORKING
DIRECTORY.



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git bisect

FIND THE COMMIT THAT
INTRODUCED A BUG

GIT BISECT START

USES BINARY SEARCH TO
IDENTIFY THE COMMIT THAT
INTRODUCED A BUG.



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git submodule

MANAGE SUBMODULES IN A
REPOSITORY

GIT SUBMODULE ADD
`HTTPS://GITHUB.COM/USER/REPO.GIT`

ADDS A SUBMODULE TO THE
CURRENT REPOSITORY.



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git config

SET CONFIGURATION OPTIONS
FOR GIT

**GIT CONFIG --GLOBAL USER.NAME
"JOHN DOE"**

CONFIGURES A GIT SETTING,
SUCH AS THE USERNAME,
GLOBALLY OR LOCALLY.



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git reflog

SHOW A HISTORY OF ALL REFERENCES TO THE HEAD

GIT REFLOG

DISPLAYS THE HISTORY OF CHANGES TO THE HEAD, INCLUDING COMMITS, CHECKOUTS, AND RESETS.



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git diff --cached

SHOW DIFFERENCES BETWEEN
THE STAGED CHANGES AND
THE LAST COMMIT

GIT DIFF --CACHED

SHOWS THE CHANGES THAT
ARE CURRENTLY STAGED
COMPARED TO THE LAST
COMMIT.



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git log --oneline

SHOW COMMIT HISTORY IN A
BRIEF FORMAT

GIT LOG --ONELINE

DISPLAYS THE COMMIT
HISTORY IN A CONDENSED
ONE-LINE FORMAT.



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git shortlog

SUMMARIZE COMMIT HISTORY
BY AUTHOR

GIT SHORTLOG

PROVIDES A SUMMARY OF
COMMITS GROUPED BY
AUTHOR.



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git describe

GIVE A HUMAN-READABLE NAME TO A COMMIT

GIT DESCRIBE

DESCRIBES A COMMIT USING TAGS AND THE NUMBER OF COMMITS SINCE THE LAST TAG.



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git cherry

SHOW COMMITS THAT ARE IN
ONE BRANCH BUT NOT
ANOTHER

GIT CHERRY MAIN FEATURE-
BRANCH

LISTS COMMITS IN FEATURE-
BRANCH THAT ARE NOT IN
MAIN.



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git apply

APPLY A PATCH TO THE WORKING DIRECTORY

GIT APPLY PATCH.DIFF

APPLIES A PATCH (IN DIFF FORMAT) TO THE WORKING DIRECTORY.



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git rev-parse

PARSE VARIOUS GIT OBJECTS

GIT REV-PARSE HEAD

RETURNS THE SHA-1 HASH OF
THE CURRENT COMMIT.



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git ls-files

SHOW FILES IN THE INDEX
(STAGING AREA)

GIT LS-FILES

LISTS FILES THAT ARE
TRACKED BY GIT IN THE INDEX.



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git log --graph

VISUALIZE THE COMMIT HISTORY AS A GRAPH

GIT LOG --GRAPH

DISPLAYS THE COMMIT HISTORY AS A GRAPH OF BRANCHES AND MERGES.



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git grep

SEARCH FOR TEXT PATTERNS
IN THE REPOSITORY

GIT GREP "FUNCTION_NAME"

SEARCHES THE REPOSITORY
FOR OCCURRENCES OF THE
SPECIFIED PATTERN.



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git revert --no-commit

REVERT CHANGES WITHOUT
COMMITTING IMMEDIATELY

**GIT REVERT --NO-COMMIT
<COMMIT-HASH>**

REVERTS THE CHANGES MADE
BY THE SPECIFIED COMMIT
BUT DOES NOT CREATE A NEW
COMMIT.



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git branch -d

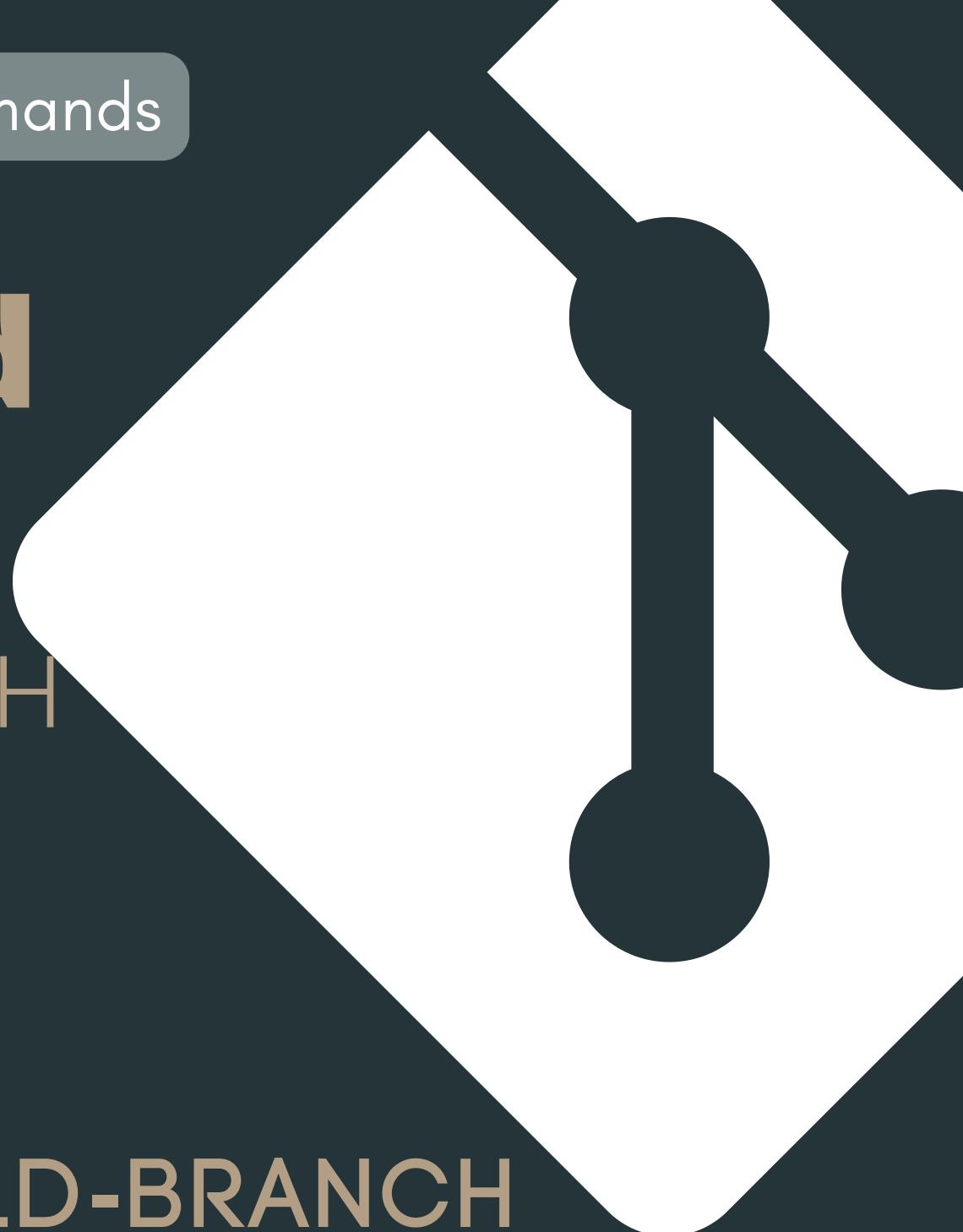
DELETE A BRANCH

GIT BRANCH -D OLD-BRANCH

DELETES THE SPECIFIED
BRANCH.



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git pull --rebase

REBASE LOCAL CHANGES
BEFORE PULLING

GIT PULL --REBASE ORIGIN MAIN

FETCHES CHANGES FROM THE
REMOTE BRANCH AND
REBases LOCAL CHANGES ON
TOP OF THEM.



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git commit --amend

MODIFY THE MOST RECENT COMMIT

**GIT COMMIT --AMEND -M
"UPDATED COMMIT MESSAGE"**

CHANGES THE MESSAGE OR CONTENT OF THE LAST COMMIT WITHOUT CREATING A NEW ONE.



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git remote -v

SHOW REMOTE URLs

GIT REMOTE -V

DISPLAYS THE URLs OF
REMOTE REPOSITORIES.



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git reset --soft

RESET HEAD TO A SPECIFIC COMMIT, BUT KEEP CHANGES STAGED

GIT RESET --SOFT HEAD~1

RESETS THE LAST COMMIT BUT KEEPS THE CHANGES IN THE STAGING AREA.



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git reset --hard

RESET THE WORKING DIRECTORY TO A SPECIFIC COMMIT, DISCARDING ALL CHANGES

GIT RESET --HARD HEAD~1

RESETS BOTH THE WORKING DIRECTORY AND THE STAGING AREA TO THE SPECIFIED COMMIT.



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*Thank
you!*