

Spring AU 21 Hyderabad-Chennai

Title: Version Control System – GIT – Branching and merging

Date: 06/01/2021

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Do some commits in master branch:

```
MINGW64:/e/git/branch
ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch
$ git init
Initialized empty Git repository in E:/Git/branch/.git/

ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (master)
$ git add .

ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (master)
$ git commit -m "commit1"
[master (root-commit) b63e26b] commit1
2 files changed, 1 insertion(+)
create mode 100644 README.md
create mode 100644 test.txt

ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (master)
$ git add .

ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (master)
$ git commit -m "commit2"
[master cd448f0] commit2
1 file changed, 2 insertions(+), 1 deletion(-)

ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (master)
$ git add .

ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (master)
$ git commit -m "commit3"
[master 767dd70] commit3
1 file changed, 2 insertions(+), 1 deletion(-)

ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (master)
$ git log
commit 767dd70cf5aebd4e981a4d90b2cc6a896c1d986e (HEAD -> master)
Author: Abu Sharp <k.s.abudhahir@gmail.com>
Date: Fri Jan 8 21:23:22 2021 +0530

    commit3

commit cd448f0f5ad18d5d3bb1d195798279304700e283
Author: Abu Sharp <k.s.abudhahir@gmail.com>
Date: Fri Jan 8 21:23:07 2021 +0530

    commit2

commit b63e26b22af9d3d90caece4a7508544bd8e140d6
Author: Abu Sharp <k.s.abudhahir@gmail.com>
Date: Fri Jan 8 21:22:15 2021 +0530

    commit1

ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (master)
$
```

Create new branch:

```
ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (master)
$ git branch demo

ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (master)
$ git log --oneline
767dd70 (HEAD -> master, demo) commit3
cd448f0 commit2
b63e26b commit1

ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (master)
$ git checkout demo
Switched to branch 'demo'

ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (demo)
$ git log -oneline
fatal: unrecognized argument: -oneline

ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (demo)
$ git log --oneline
767dd70 (HEAD -> demo, master) commit3
cd448f0 commit2
b63e26b commit1
```

Here change the head from master branch to demo branch

New commit in demo branch:

```
ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (demo)
$ git add .

ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (demo)
$ git commit -m "commit4"
[demo 7e1730d] commit4
1 file changed, 2 insertions(+), 1 deletion(-)

ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (demo)
$ git log
commit 7e1730ddcc9c9fb37940ecad7ab03062b8992e24 (HEAD -> demo)
Author: Abu Sharp <k.s.abudhahir@gmail.com>
Date:   Fri Jan 8 21:26:27 2021 +0530

    commit4

commit 767dd70cf5aebd4e981a4d90b2cc6a896c1d986e (master)
Author: Abu Sharp <k.s.abudhahir@gmail.com>
Date:   Fri Jan 8 21:23:22 2021 +0530

    commit3

commit cd448f0f5ad18d5d3bb1d195798279304700e283
Author: Abu Sharp <k.s.abudhahir@gmail.com>
Date:   Fri Jan 8 21:23:07 2021 +0530

    commit2

commit b63e26b22af9d3d90caece4a7508544bd8e140d6
Author: Abu Sharp <k.s.abudhahir@gmail.com>
Date:   Fri Jan 8 21:22:15 2021 +0530

    commit1
```

Now to branches are there.

By default head pointer always points the last commit, so it points the demo.

Manually move the head pointer to master branch and do some commit:

```
ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (demo)
$ git checkout master
Switched to branch 'master'

ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (master)
$ git add .

ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (master)
$ git commit -m "commit5"
[master c6c57c7] commit5
1 file changed, 2 insertions(+), 1 deletion(-)
```

Git log in both branches:

```
ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (demo)
$ git checkout master
Switched to branch 'master'

ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (master)
$ git log --oneline
c6c57c7 (HEAD -> master) commit5
767dd70 commit3
cd448f0 commit2
b63e26b commit1

ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (master)
$ git checkout demo
Switched to branch 'demo'

ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (demo)
$ git log --oneline
7e1730d (HEAD -> demo) commit4
767dd70 commit3
cd448f0 commit2
b63e26b commit1
```

In this scenario, if we switch master branch, commit 4 is missing & we switch demo branch commit 5 is missing

Merging:

Fast forward linear merge

```
ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (master)
$ git reset --hard HEAD~1
HEAD is now at 767dd70 commit3

ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (master)
$ git merge demo
Updating 767dd70..bb95c52
Fast-forward
 test.txt | 3 ++-
 1 file changed, 2 insertions(+), 1 deletion(-)

ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (master)
$ git log
commit bb95c52a8d934beba51d1e5efd6d62d644ae50b0 (HEAD -> master, demo)
Author: Abu Sharp <k.s.abudhahir@gmail.com>
Date:   Fri Jan 8 21:45:01 2021 +0530

    commit4

commit 767dd70cf5aebd4e981a4d90b2cc6a896c1d986e
Author: Abu Sharp <k.s.abudhahir@gmail.com>
Date:   Fri Jan 8 21:23:22 2021 +0530

    commit3

commit cd448f0f5ad18d5d3bb1d195798279304700e283
Author: Abu Sharp <k.s.abudhahir@gmail.com>
Date:   Fri Jan 8 21:23:07 2021 +0530

    commit2

commit b63e26b22af9d3d90caece4a7508544bd8e140d6
Author: Abu Sharp <k.s.abudhahir@gmail.com>
Date:   Fri Jan 8 21:22:15 2021 +0530

    commit1
```

Here move the master head pointer to last commit and merge the two branches.

3 way merging:

```
ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (demo)
$ git checkout master
Switched to branch 'master'

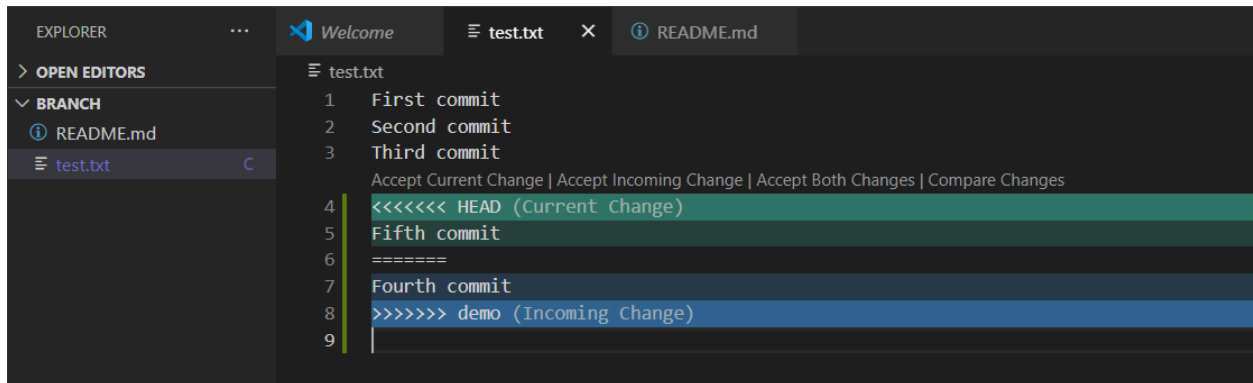
ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (master)
$ git merge demo
Auto-merging test.txt
CONFLICT (content): Merge conflict in test.txt
Automatic merge failed; fix conflicts and then commit the result.

ksabu@DESKTOP-KP9RBTM MINGW64 /e/git/branch (master|MERGING)
$ git status
On branch master
You have unmerged paths.
  (fix conflicts and run "git commit")
  (use "git merge --abort" to abort the merge)

Unmerged paths:
  (use "git add <file>..." to mark resolution)
    both modified:   test.txt

no changes added to commit (use "git add" and/or "git commit -a")
```

Conflict:



Now we have to clear the conflict manually

Merge successfully, here commit 6 is added and merged the commit 4 and commit 5

```
ksabu@DESKTOP-KP9R8BTM MINGW64 /e/git/branch (master|MERGING)
$ git add test.txt

ksabu@DESKTOP-KP9R8BTM MINGW64 /e/git/branch (master|MERGING)
$ git commit -m "commit6"
[master dc8e7b1] commit6

ksabu@DESKTOP-KP9R8BTM MINGW64 /e/git/branch (master)
$ git status
On branch master
nothing to commit, working tree clean

ksabu@DESKTOP-KP9R8BTM MINGW64 /e/git/branch (master)
$ git log
commit dc8e7b1007cd7a352acd1ed4948c942c321f2810 (HEAD -> master)
Merge: f6a362b bb95c52
Author: Abu Sharp <k.s.abudhahir@gmail.com>
Date: Fri Jan 8 21:56:35 2021 +0530

    commit6

commit f6a362b9ff871df948e929da0b973c8be1481123
Author: Abu Sharp <k.s.abudhahir@gmail.com>
Date: Fri Jan 8 21:50:29 2021 +0530

    commit5

commit bb95c52a8d934beba51d1e5efd6d62d644ae50b0 (demo)
Author: Abu Sharp <k.s.abudhahir@gmail.com>
Date: Fri Jan 8 21:45:01 2021 +0530

    commit4

commit 767dd70cf5aebd4e981a4d90b2cc6a896c1d986e
Author: Abu Sharp <k.s.abudhahir@gmail.com>
Date: Fri Jan 8 21:23:22 2021 +0530

    commit3

commit cd448f0f5ad18d5d3bb1d195798279304700e283
Author: Abu Sharp <k.s.abudhahir@gmail.com>
Date: Fri Jan 8 21:23:07 2021 +0530

    commit2

commit b63e26b22af9d3d90caece4a7508544bd8e140d6
Author: Abu Sharp <k.s.abudhahir@gmail.com>
Date: Fri Jan 8 21:22:15 2021 +0530

    commit1
```