5-Days Workshop on Git and GitHub

Day 2 - Introduction to Branching

21th February 2022

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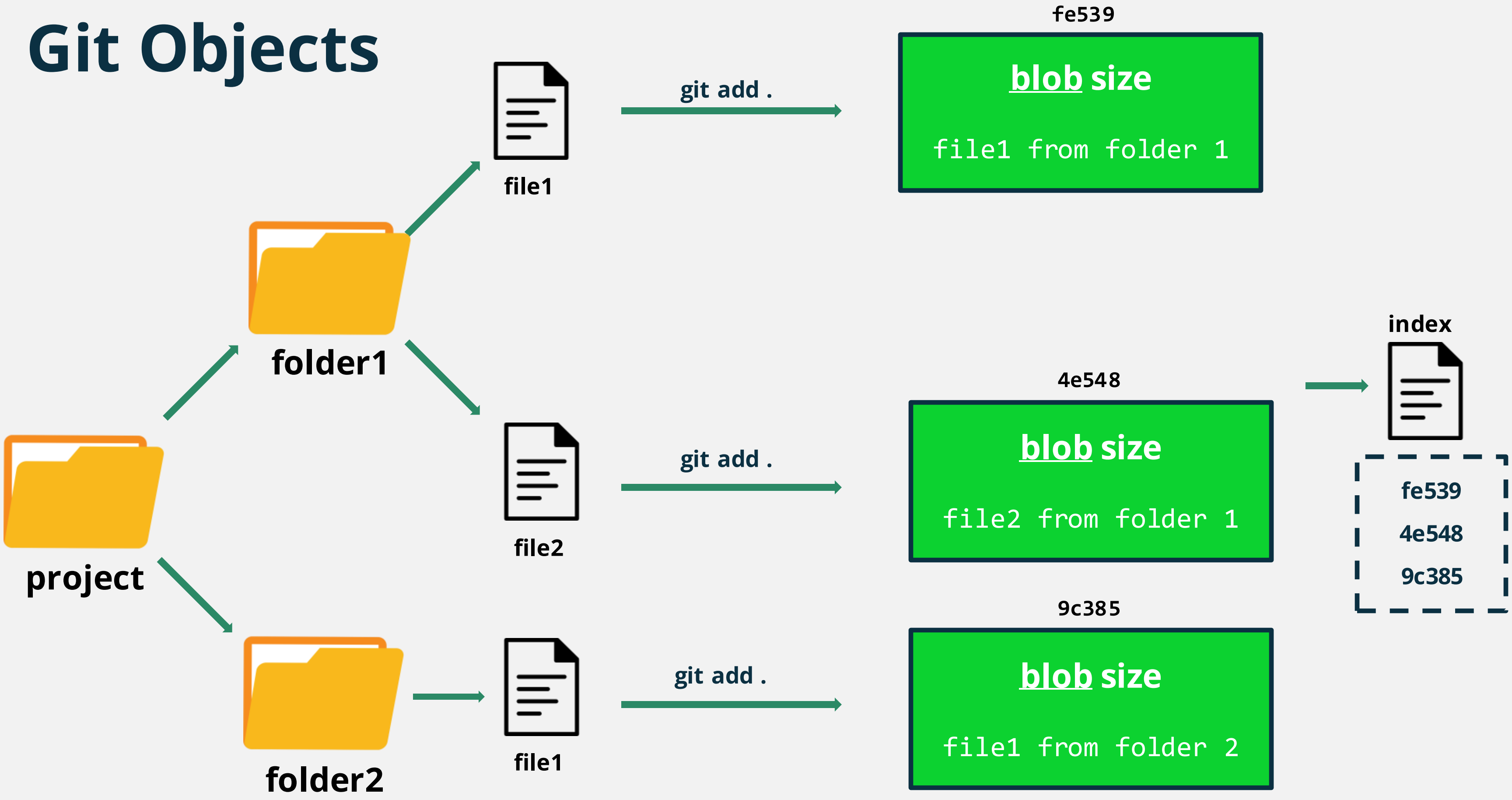
Microsoft Learn Student Ambassador Community

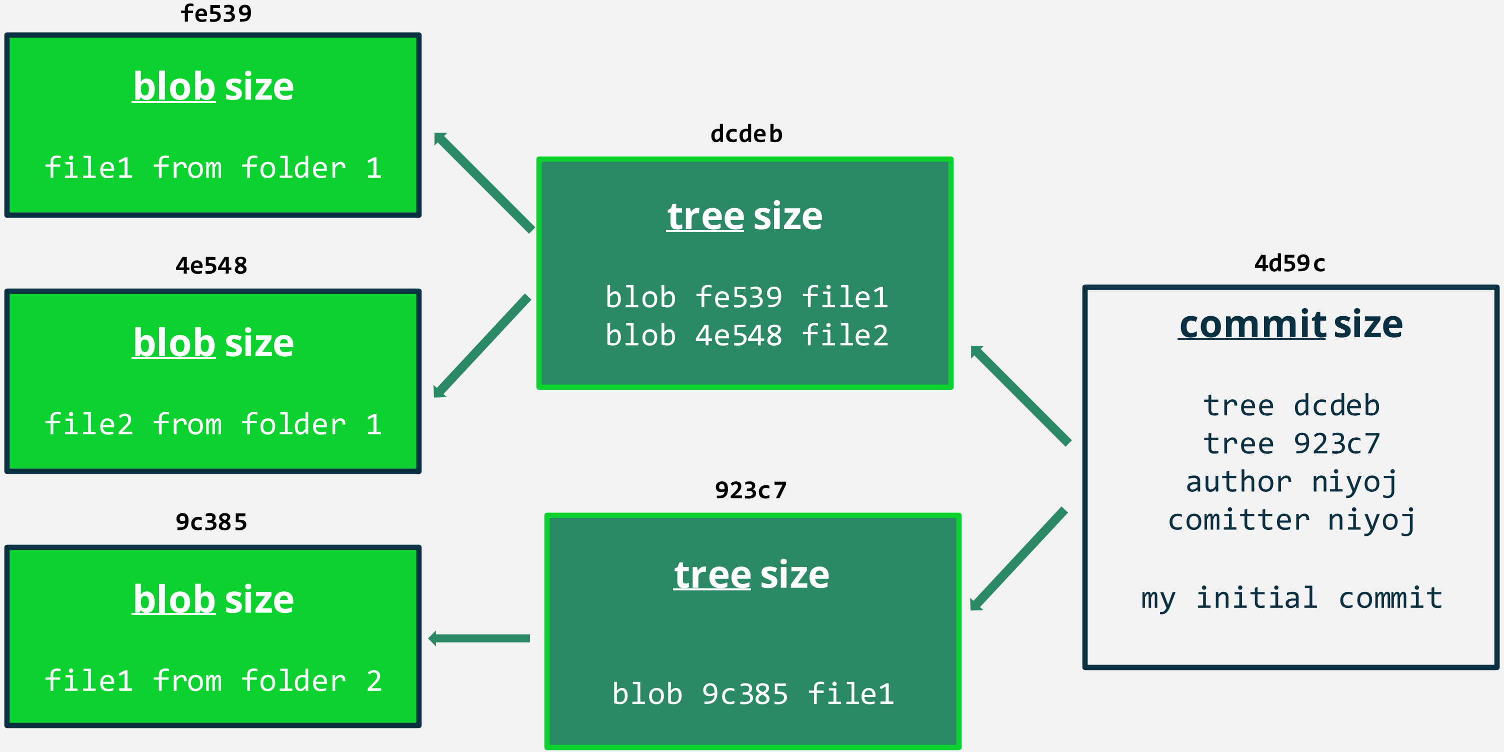
Chat Issue Solved

- Go to this link (https://stin.to/67o1o) and we can chat online without any hurdles.
- You will also receive a Discord server invite for chatting and asking queries in your mail tonight.

Git Objects


file1
folder1
project
file2
folder2
file1
git add .
git add .
git add .
fe539
blob size
file1 from folder 1
4e548
blob size
file2 from folder 1
9c385
blob size
file1 from folder 2
index
fe539
4e548
9c385

Git Objects (Commit)



fe539

blob size

```
file1 from folder 1
```

4e548

blob size

```
file2 from folder 1
```

9c385

blob size

```
file1 from folder 2
```

dcdeb

tree size

```
blob fe539 file1
blob 4e548 file2
```

923c7

tree size

```
blob 9c385 file1
```

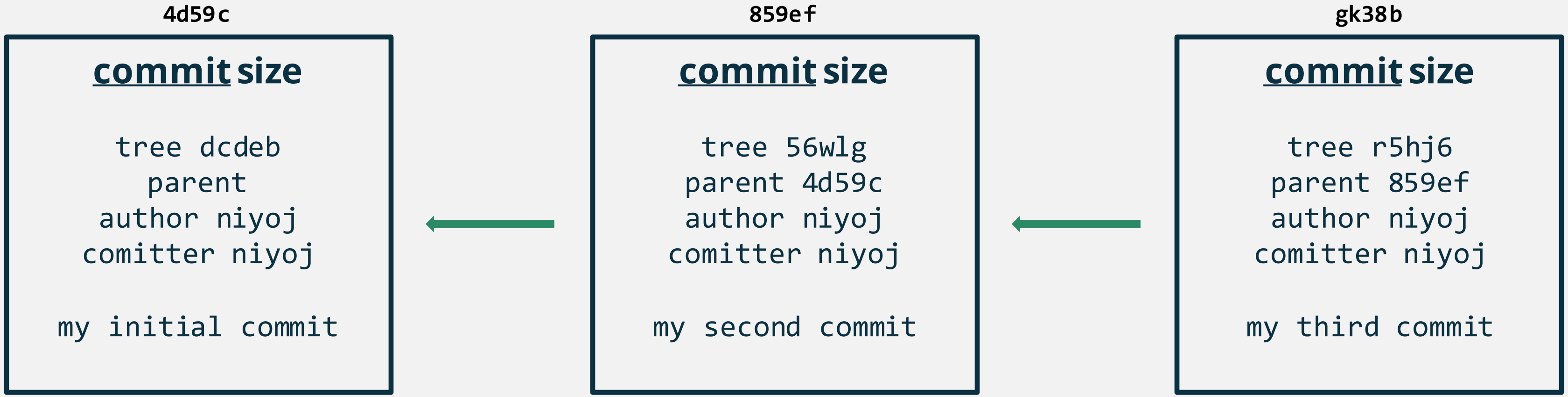
4d59c

commit size

```
tree dcdeb
tree 923c7
author niyoj
comitter niyoj

my initial commit
```

Git Objects (Commit history)



4d59c

<u>commit</u> size

tree dcdeb
parent
author niyoj
comitter niyoj

my initial commit

859ef

<u>commit</u> size

tree 56wlg
parent 4d59c
author niyoj
comitter niyoj

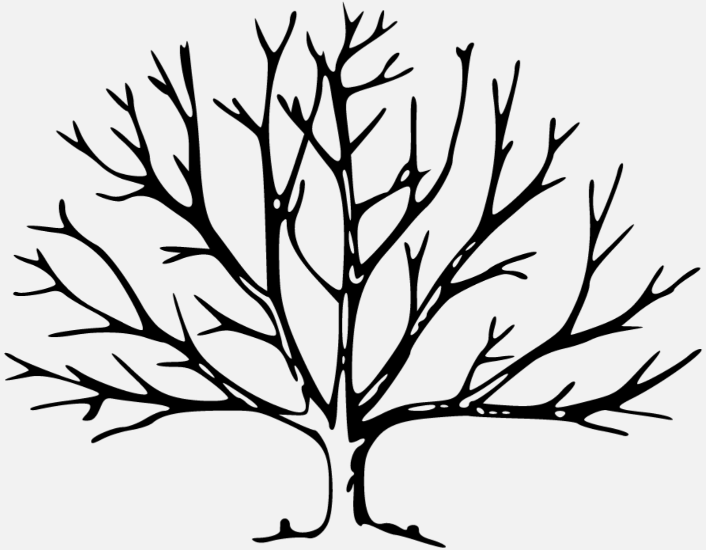
my second commit

gk38b

<u>commit</u> size

tree r5hj6
parent 859ef
author niyoj
comitter niyoj

my third commit



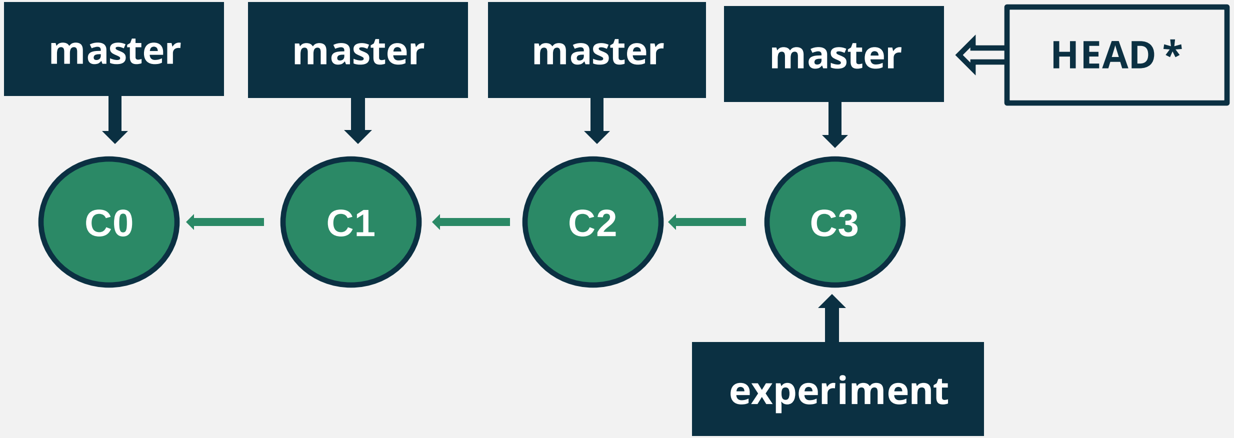
Introduction to Branching

What is branch?

- Branch is a movable pointer that points to a commit.
- The branch moves forward with the new commit.
- By default the first branch given to you is named as **master**.

Creating a Branch

- To create a branch we can use the command, `git branch <branch name>`. E.g; `git branch experiment` will create a new branch named *experiment*.

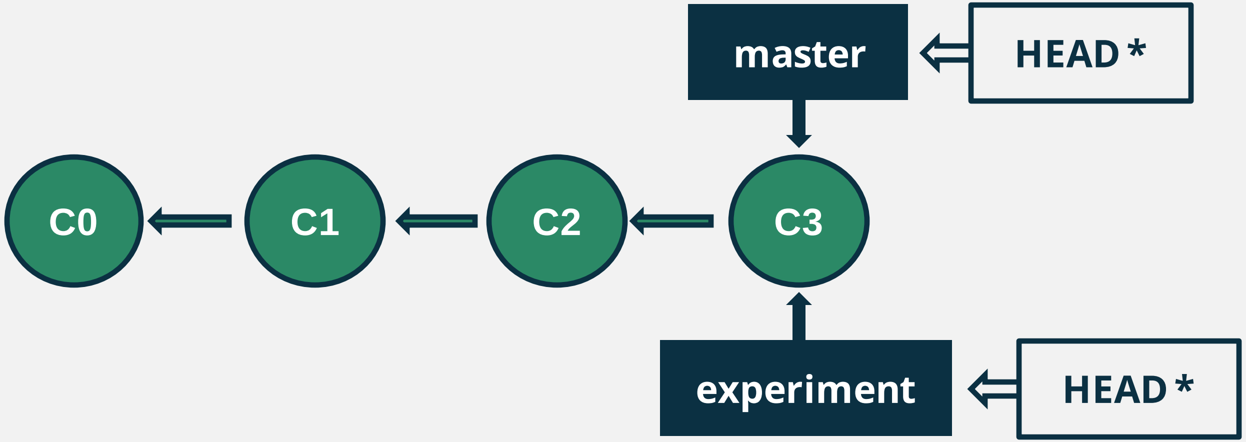


Creating a Branch

- To know which commit is the branch pointing you can use the command `git log --decorate --oneline`.
- To see all the branches you have created you can use the command `git branch`.

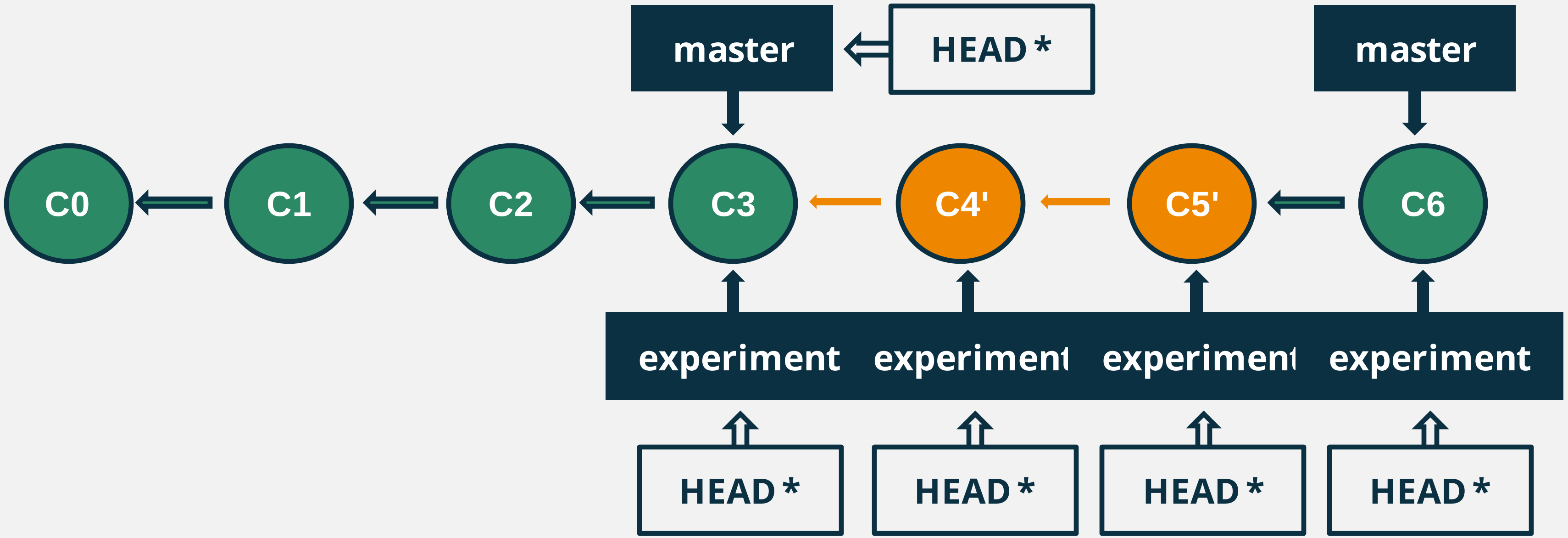
Switching a Branch

- To switch the branch you can use the command `git checkout <branch name>`. E.g. we can use the command `git checkout experiment` to visit the branch `experiment`.



Significance of Branching

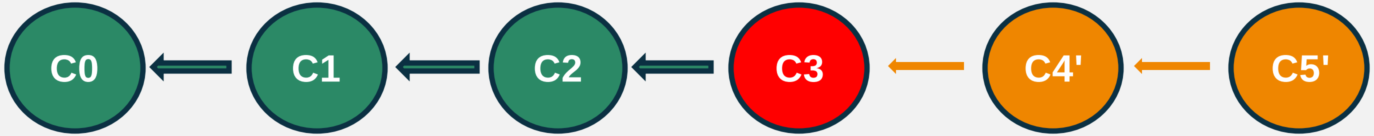
- It creates a parallel environment.



Significance of Branching

- Working with bugs become easier.

Without any VCS,



Here,

Green color represents initial commits,

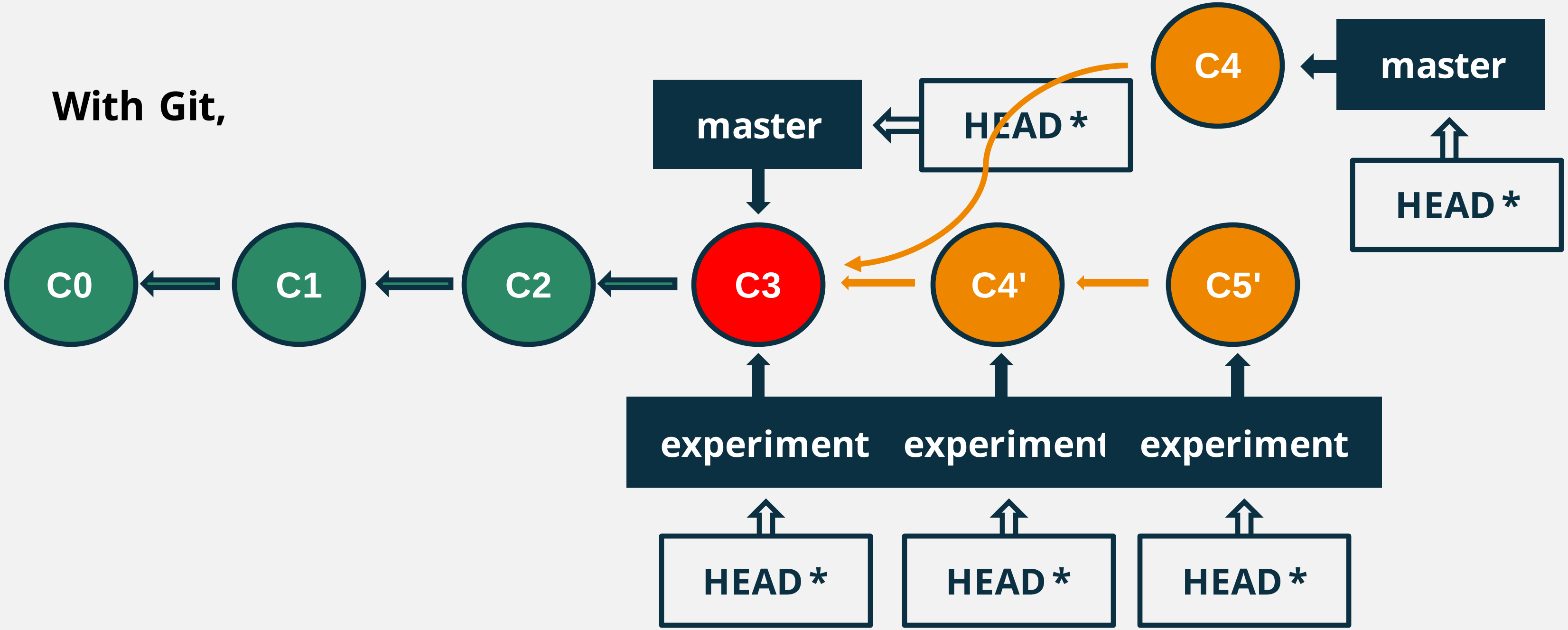
Red color represents commit with bugs,

Orange color represents new commits.

Significance of Branching

- Working with bugs become easier.

With Git,



Significance of Branching

- It is very fast.
- Branching in Git is just creating a new pointer that points to a Commit which takes less than a milliseconds.
- So, creating, deleting and working with branches is instantaneous.
- While in many VCS like CVS, a second copy of the project is made which takes more time and space.

Basic Branch Merging

- To merge means to add the commit history of both branches together.
- To merge the two different branches (for example to merge develop branch to master branch) we can use command;

```
git checkout master
git merge develop
```

Basic Branch Merging (Fast-forward)

- If the new commit on one branch is directly ahead of another branch, Git simply moves the pointer forward. This type of merging is called Fast-forward merging.

Basic Branch Merging (Three Way Merge)

- If the commit history is divergent type as below and if we merge, a new commit is to be created to merge both the commits.
- Divergent type means the new commit would have more than two parents.

Branch Management

- To see the last commit on every branch we can use command, `git branch --v`.
- To see the branches that are already merged to the branch you are on use the command `git branch --merged`.
- To see all the branches whose content has not been merged yet use the command `git branch --no-merged`.
- To delete a branch you can use command `git branch –d`.
- If you try to remove a branch whose changes has been unmerged it produces error. So, to force delete the branch use command `git branch -D`.
- To rename a branch use command `git branch --move oldName NewName`.

Thank you!

Please refer to the chat section on our Microsoft Teams for resources and feel free to ask any queries about this session in our discord channel **#git-workshop-query**.

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