PROGRAM-01

1) Initialize a new Git repository in a directory. Create a new file and add it to the staging area and commit the changes with an appropriate commit message.

Creating a New Directory and Navigating to It.

STEP 1: mkdir folder_name:
* Creates a new directory with the specified name.
* For example, mkdir my_project creates a directory named "my_project".

STEP 2: cd folder_name:
* Changes the current directory to the specified directory.
* For example, cd my_project changes the current directory to "my_project". Listing Directory Contents and Checking Current Directory
PROGRAM 1

STEP 3: ls:
* Lists the contents of the current directory.
* This shows files and subdirectories within the current directory.

STEP 4: pwd:
* Prints the current working directory path.
* This tells you where you are in the file system. Initializing a Git Repository

STEP 5: git init:
* Initializes a new Git repository in the current directory. *
This creates a .git hidden directory to store Git's metadata. Configuring Git User Information

STEP 6: git config --global user.name "your_name":
* Sets your name globally for all Git commits*
Replace "your_name" with your actual name.
STEP 7: git config --global user.email "your_email@example.com":
* Sets your email address globally for all Git commits.
* Replace "your_email@example.com" with your actual email address.
Creating and Tracking Files
STEP 8: touch file1.txt:
* Creates a new file named "file1.txt" in the current directory.

STEP 9: ls:
* Lists the contents of the current directory.

* This shows files and subdirectories within the current directory

STEP 10: git status:
* Shows the current state of the working directory.
* It indicates which files are tracked, untracked, modified, or staged.

STEP 11: git add file1.txt:
* Stages the changes in "file1.txt" for the next commit.
* Staged changes are included in the next commit.

STEP 12: git status:
* Shows the current state of the working directory.
* It indicates which files are tracked, untracked, modified, or staged.

STEP 13: git commit -m "file created":
* Creates a new commit with the specified message.
* The staged changes are committed to the repository. Editing and Committing a File

STEP 14: git status:
* Shows the current state of the working directory.
* It indicates which files are tracked, untracked, modified, or staged.

STEP 15: vi file2.txt:
* Opens the file "file2.txt" in the vi text editor.
* You can edit the file's content.

STEP 16: git add :
* Stages all changes in the current directory for the next commit.

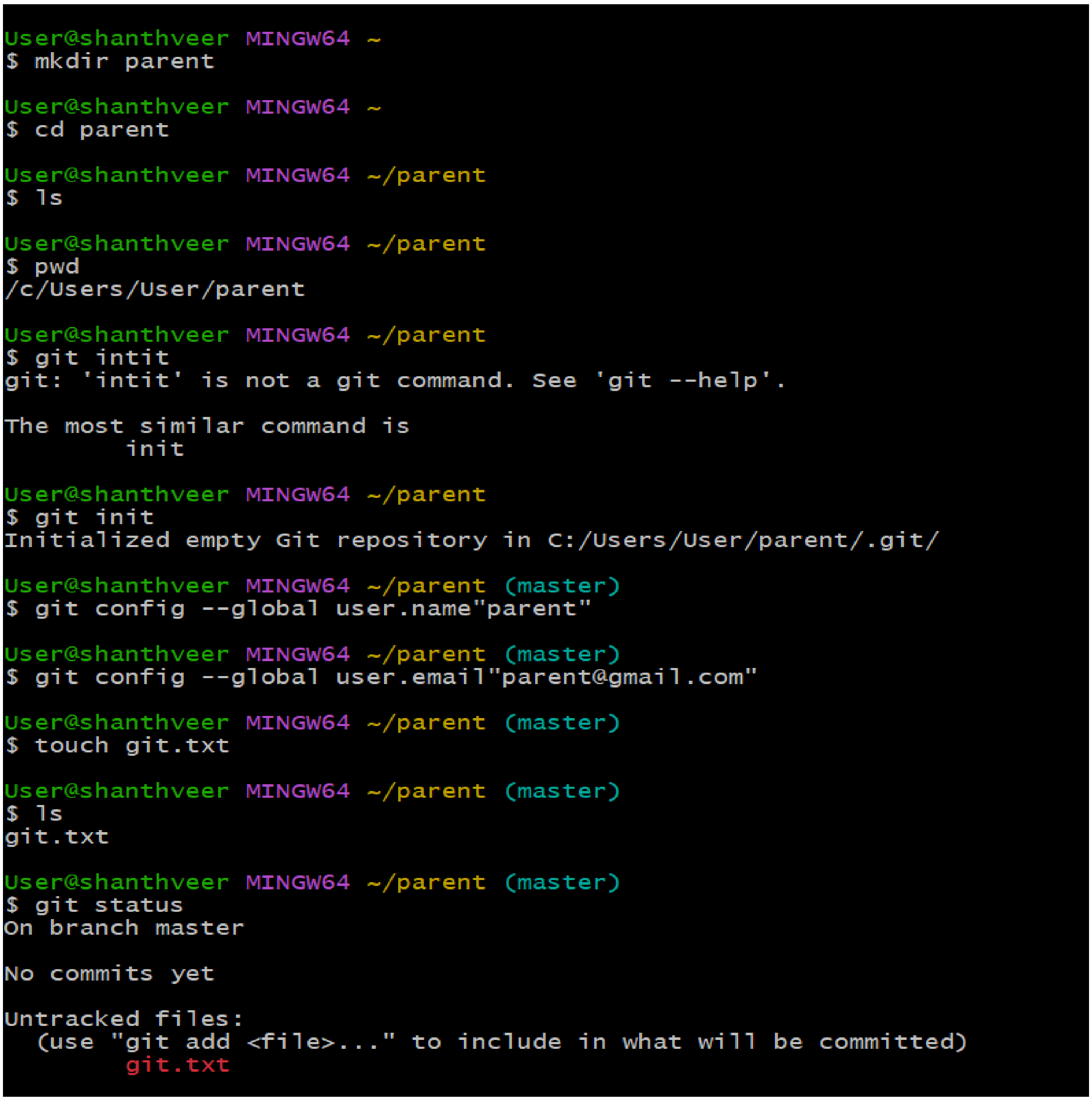
STEP 17: git commit -m "added file":
* Creates a new commit with the specified message.
* All staged changes are committed to the repository.
Viewing Commit History

STEP 18: git status:
* Shows the current state of the working directory.
* It indicates which files are tracked, untracked, modified, or staged.

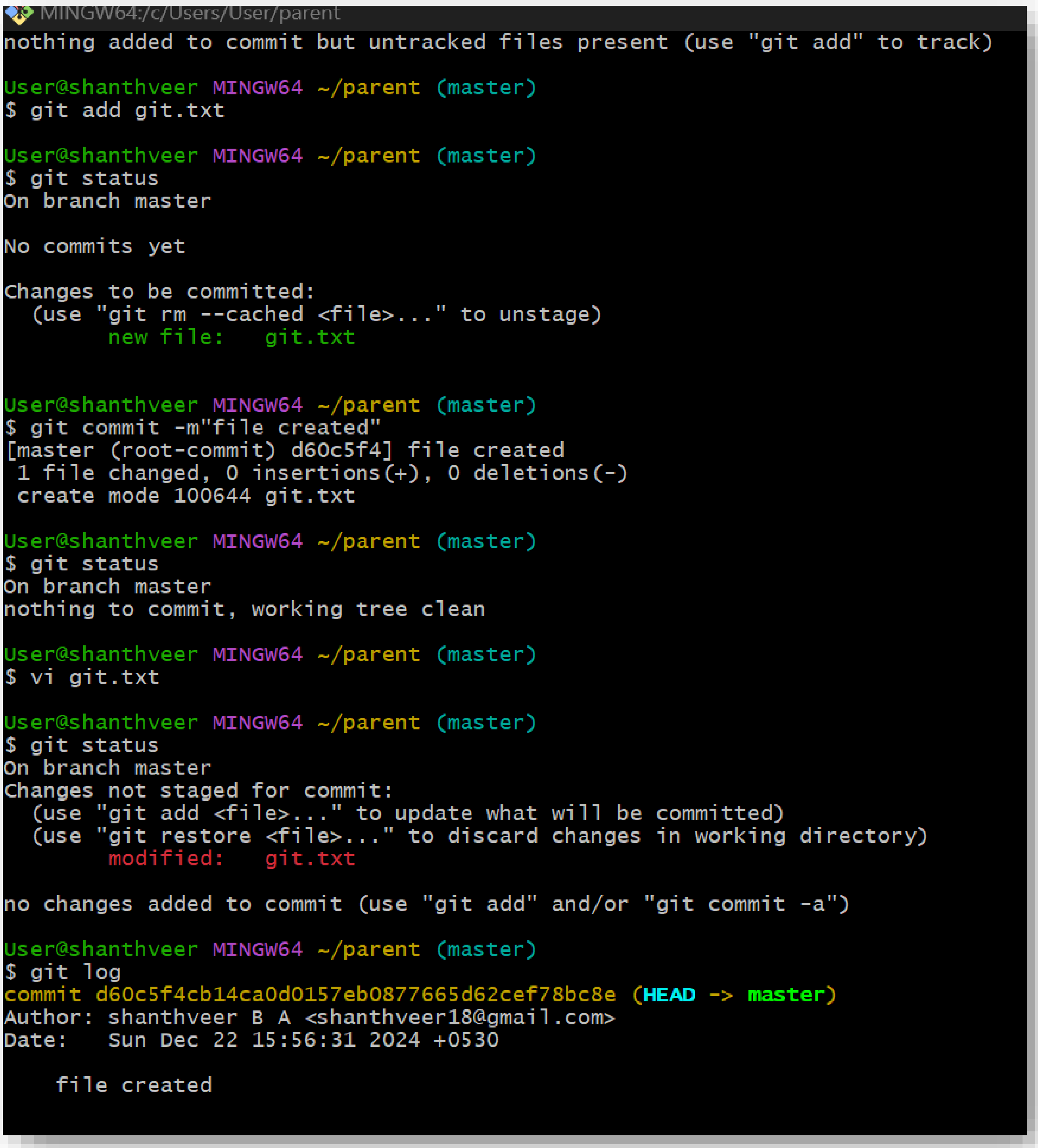
STEP 19: git log:
* Shows the commit history of the current repository. It displays information about each commit, such as the commit hash, author, date, and commit message.

These commands are fundamental to using Git for version control. By mastering these commands, you can effectively manage your projects and collaborate with others.

OUTPUT:



```
User@shanthveer MINGW64 ~
$ mkdir parent

User@shanthveer MINGW64 ~
$ cd parent

User@shanthveer MINGW64 ~/parent
$ ls

User@shanthveer MINGW64 ~/parent
$ pwd
/c/Users/User/parent

User@shanthveer MINGW64 ~/parent
$ git intit
git: 'intit' is not a git command. See 'git --help'.

The most similar command is
        init

User@shanthveer MINGW64 ~/parent
$ git init
Initialized empty Git repository in C:/Users/User/parent/.git/

User@shanthveer MINGW64 ~/parent (master)
$ git config --global user.name"parent"

User@shanthveer MINGW64 ~/parent (master)
$ git config --global user.email"parent@gmail.com"

User@shanthveer MINGW64 ~/parent (master)
$ touch git.txt

User@shanthveer MINGW64 ~/parent (master)
$ ls
git.txt

User@shanthveer MINGW64 ~/parent (master)
$ git status
On branch master

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        git.txt
```


MINGW64:/c/Users/User/parent

```
nothing added to commit but untracked files present (use "git add" to track)

User@shanthveer MINGW64 ~/parent (master)
$ git add git.txt

User@shanthveer MINGW64 ~/parent (master)
$ git status
On branch master

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
        new file:   git.txt


User@shanthveer MINGW64 ~/parent (master)
$ git commit -m"file created"
[master (root-commit) d60c5f4] file created
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 git.txt

User@shanthveer MINGW64 ~/parent (master)
$ git status
On branch master
nothing to commit, working tree clean

User@shanthveer MINGW64 ~/parent (master)
$ vi git.txt

User@shanthveer MINGW64 ~/parent (master)
$ git status
On branch master
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   git.txt

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

User@shanthveer MINGW64 ~/parent (master)
$ git log
commit d60c5f4cb14ca0d0157eb0877665d62cef78bc8e (HEAD -> master)
Author: shanthveer B A <shanthveer18@gmail.com>
Date:   Sun Dec 22 15:56:31 2024 +0530

    file created
```

PROGRAM-02

2)Create a new branch named "new" Switch to the "master" branch. Merge the "new" into "master."

STEP 1: git branch new:
* This command creates a new branch named "new". This new branch is a copy of the current branch's state.

STEP 2: git branch:
* This command lists all the branches in the current repository. You should see both "master" and "new" branches now.

STEP 3: git checkout new:
* This command switches your working directory to the newly created "new" branch. Any changes you make from now on will be specific to this branch.

STEP 4: vi file3.txt
* This command opens the file "file3.txt" in the vi text editor. You can editthe contents of this file.

STEP 5: git add :
* This command stages all the changes made to tracked files in thecurrent directory. In this case, it stages the changes made to "file3.txt".

STEP 6: git commit -m "edited file":
* This command creates a new commit on the "new" branch with themessage "edited file".

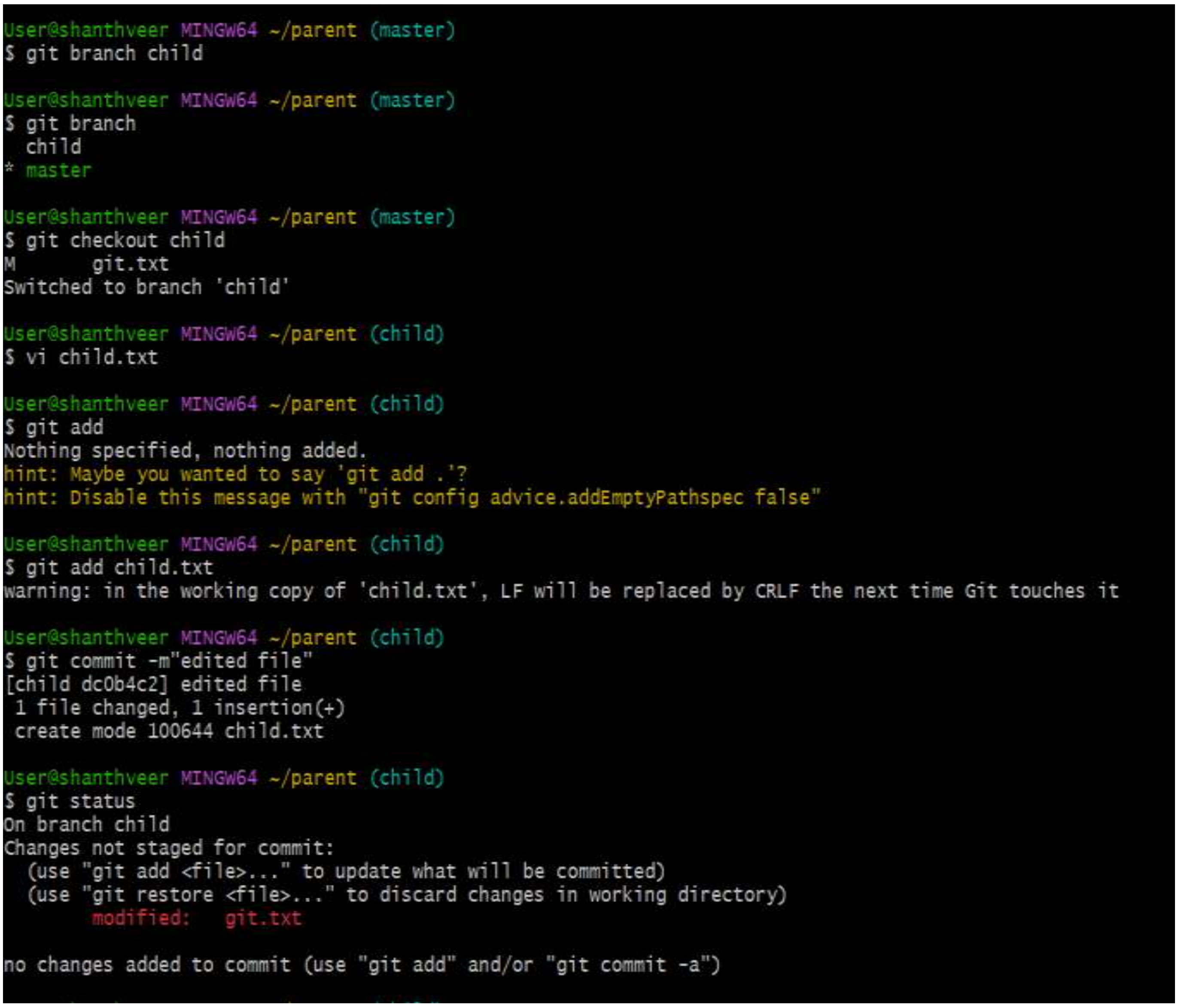
The staged changes are included in this commit.
STEP 7: git status:
* This command shows the current state of the working directory. It willshow that you're on the "new" branch and there are no changes to be committed.

STEP 8: git checkout master:
* This command switches your working directory back to the "master"branch. Any changes you make from now on will be specific to this branch.

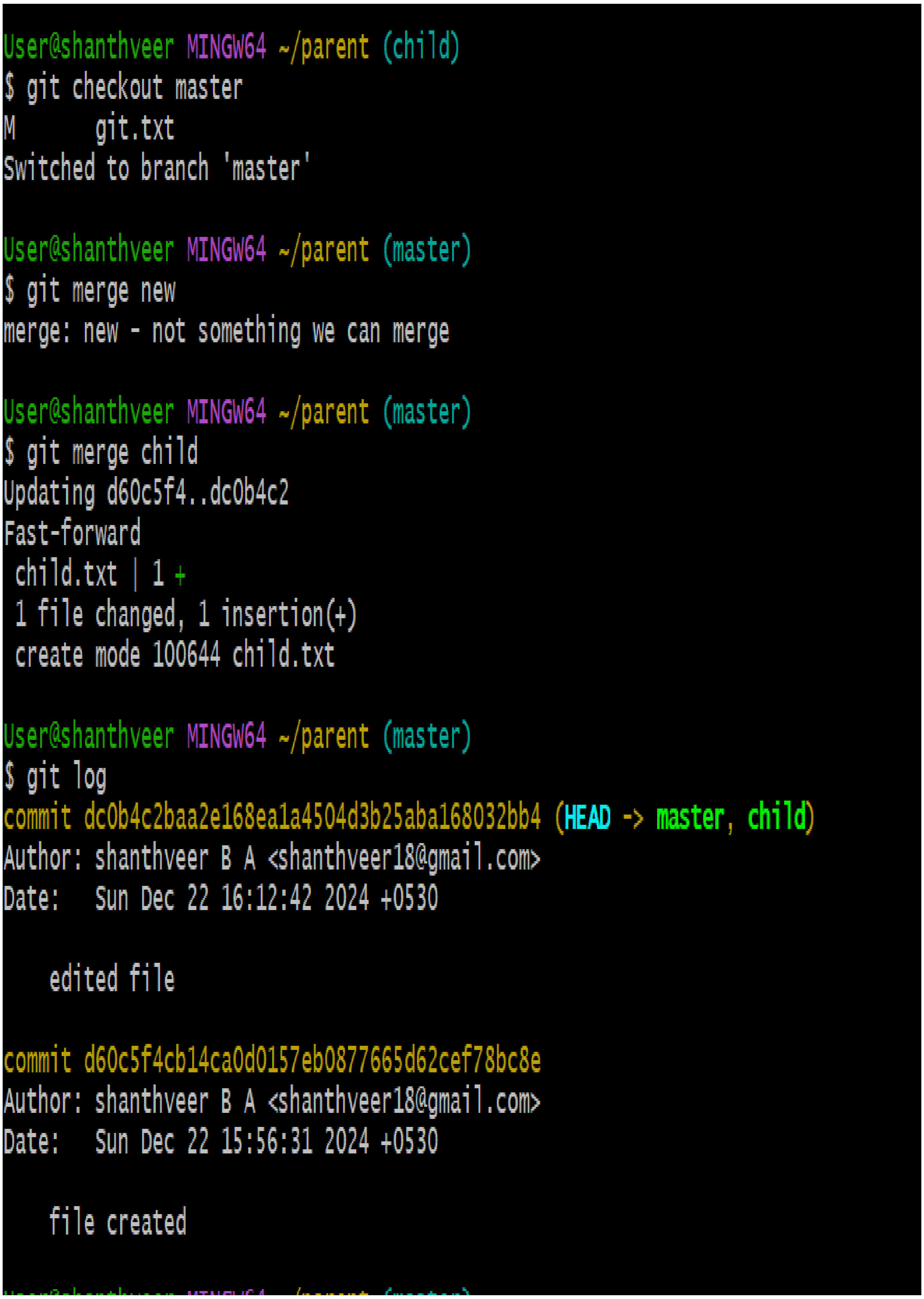
STEP 9: git merge new:
* This command merges the changes from the "new" branch into the "master" branch. Git will automatically try to combine the changes from both branches. If there are conflicts, you'll need to resolve them manually.

STEP 10: git log:
* This command shows the commit history of the current branch. Youshould see the commit you made on the "new" branch, followed by the merge commit that combined the changes from "new" into "master". In essence, what we've done is:
* Created a new branch to work on a specific feature or bug fix. * Made changes to the file "file3.txt" on the new branch. * Committed the changes to the new branch.
* Merged the changes from the new branch back into the main branch. This is a common workflow in Git for managing different development tasks and keeping your codebase organized.

OUTPUT:



```
User@shanthveer MINGW64 ~/parent (master)
$ git branch child

User@shanthveer MINGW64 ~/parent (master)
$ git branch
  child
* master

User@shanthveer MINGW64 ~/parent (master)
$ git checkout child
M       git.txt
Switched to branch 'child'

User@shanthveer MINGW64 ~/parent (child)
$ vi child.txt

User@shanthveer MINGW64 ~/parent (child)
$ git add
Nothing specified, nothing added.
hint: Maybe you wanted to say 'git add .'?
hint: Disable this message with "git config advice.addEmptyPathspec false"

User@shanthveer MINGW64 ~/parent (child)
$ git add child.txt
warning: in the working copy of 'child.txt', LF will be replaced by CRLF the next time Git touches it

User@shanthveer MINGW64 ~/parent (child)
$ git commit -m"edited file"
[child dc0b4c2] edited file
 1 file changed, 1 insertion(+)
 create mode 100644 child.txt

User@shanthveer MINGW64 ~/parent (child)
$ git status
On branch child
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   git.txt

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


```
User@shanthveer MINGW64 ~/parent (child)
$ git checkout master
M       git.txt
Switched to branch 'master'

User@shanthveer MINGW64 ~/parent (master)
$ git merge new
merge: new - not something we can merge

User@shanthveer MINGW64 ~/parent (master)
$ git merge child
Updating d60c5f4..dc0b4c2
Fast-forward
 child.txt | 1 +
 1 file changed, 1 insertion(+)
 create mode 100644 child.txt

User@shanthveer MINGW64 ~/parent (master)
$ git log
commit dc0b4c2baa2e168ea1a4504d3b25aba168032bb4 (HEAD -> master, child)
Author: shanthveer B A <shanthveer18@gmail.com>
Date:   Sun Dec 22 16:12:42 2024 +0530

    edited file

commit d60c5f4cb14ca0d0157eb0877665d62cef78bc8e
Author: shanthveer B A <shanthveer18@gmail.com>
Date:   Sun Dec 22 15:56:31 2024 +0530

    file created

```

PROGRAM-03

3)Write the commands to stash your changes, switch branches, and then apply the stashed changes.

STEP 1: git branch new:
* This command creates a new branch named "new". This new branch is a copy of the current branch's state.

STEP 2: git checkout new:
* This command switches your working directory to the newly created"new" branch. Any changes you make from now on will be specific to this branch.

STEP 3: vi file4.txt:
* This command opens the file "file4.txt" in the vi text editor. You can edit the contents of this file.

STEP 4: git stash:
* This command temporarily saves your uncommitted changes. This is useful when you need to switch branches or perform other tasks without committing your current work.

STEP 5: git checkout master:
* This command switches your working directory back to the "master"branch.

STEP 6: git stash apply:
* This command applies the saved changes from the stash to the currentbranch, which is "master" in this case.

STEP 7: git status:
* This command shows the current state of the working directory. It will show that there are changes to be committed.

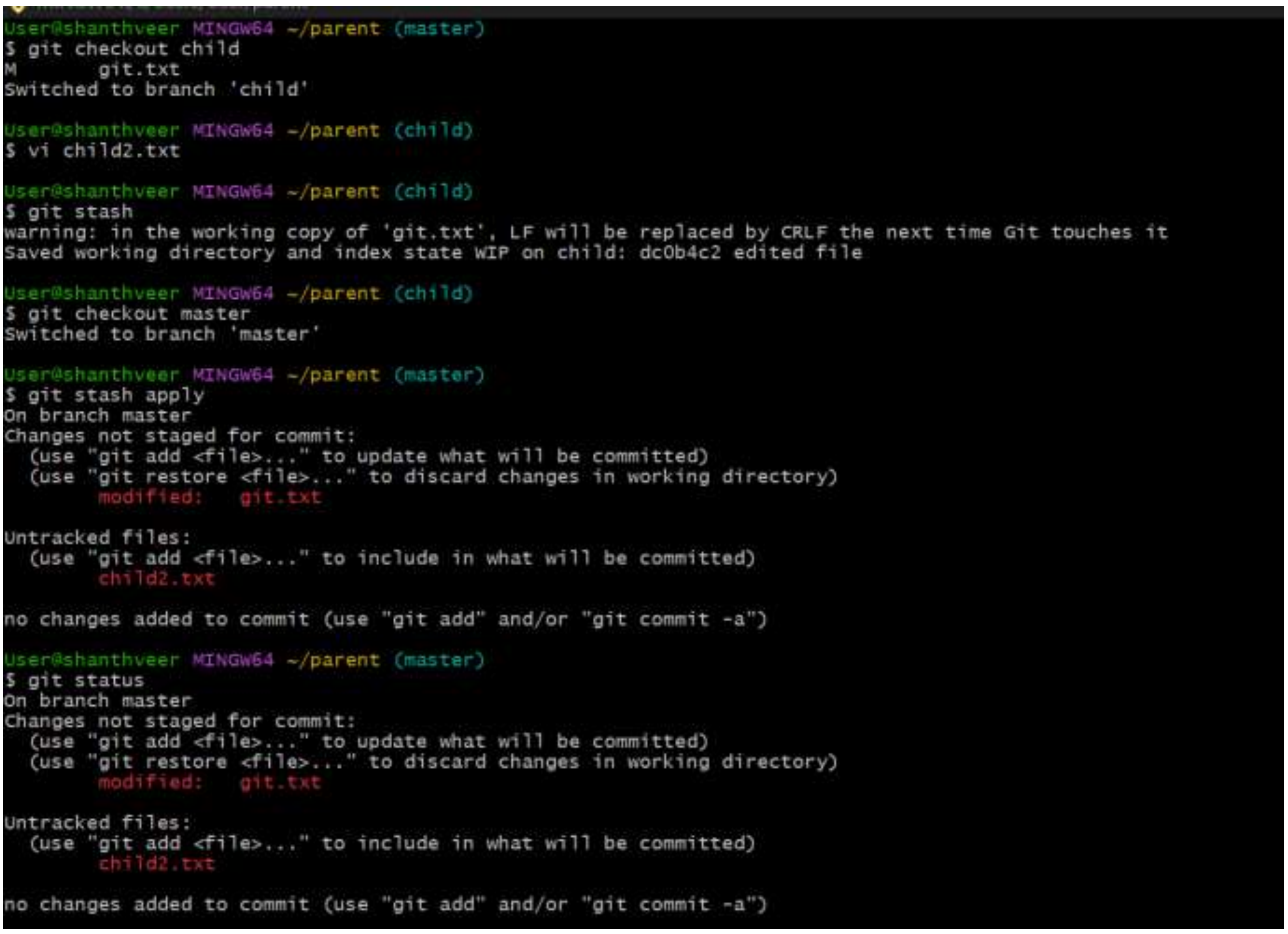
STEP 8: git add .:
* This command stages all the changes made to tracked files in thecurrent directory, which are the changes applied from the stash.

STEP 9: git status:
* This command shows the current state of the working directory. It willshow that there are staged changes to be committed.

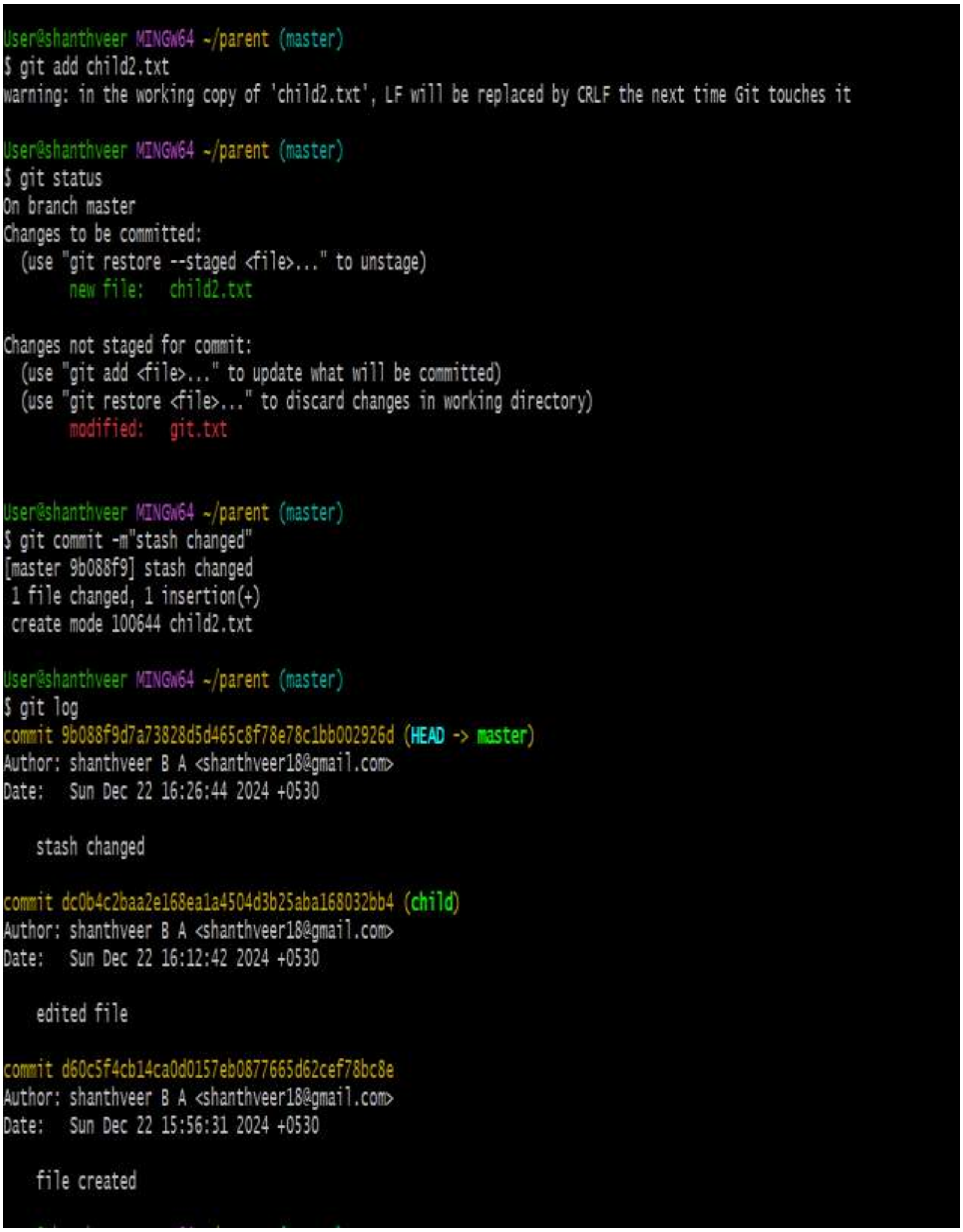
STEP 10: git commit -m "stash changed":
* This command creates a new commit on the "master" branch with themessage "stash changed". The staged changes are included in this commit.

STEP 11: git log:
* This command shows the commit history of the current branch. Youshould see the commit you just made, which includes the changes from the stash. In essence, what we've done is: * Created a new branch to work on a specific feature or bug fix.
* Made changes to the file "file4.txt" on the new branch. * Temporarily saved the changes using git stash.
* Switched back to the main branch. * Applied the saved changes to the main branch using git stash apply. * Committed the applied changes to the main branch.
This workflow is useful when you need to switch between tasks or branches without losing your current work.
By stashing your changes, you can temporarily save them and restore them later when needed.

OUTPUT:



```
User@shanthveer MINGW64 ~/parent (master)
$ git checkout child
M       git.txt
Switched to branch 'child'

User@shanthveer MINGW64 ~/parent (child)
$ vi child2.txt

User@shanthveer MINGW64 ~/parent (child)
$ git stash
warning: in the working copy of 'git.txt', LF will be replaced by CRLF the next time Git touches it
Saved working directory and index state WIP on child: dc0b4c2 edited file

User@shanthveer MINGW64 ~/parent (child)
$ git checkout master
Switched to branch 'master'

User@shanthveer MINGW64 ~/parent (master)
$ git stash apply
On branch master
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   git.txt

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        child2.txt

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

User@shanthveer MINGW64 ~/parent (master)
$ git status
On branch master
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   git.txt

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        child2.txt

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



```
User@shanthveer MINGW64 ~/parent (master)
$ git add child2.txt
warning: in the working copy of 'child2.txt', LF will be replaced by CRLF the next time Git touches it

User@shanthveer MINGW64 ~/parent (master)
$ git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        new file:   child2.txt

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   git.txt


User@shanthveer MINGW64 ~/parent (master)
$ git commit -m"stash changed"
[master 9b088f9] stash changed
 1 file changed, 1 insertion(+)
 create mode 100644 child2.txt

User@shanthveer MINGW64 ~/parent (master)
$ git log
commit 9b088f9d7a73828d5d465c8f78e78c1bb002926d (HEAD -> master)
Author: shanthveer B A <shanthveer18@gmail.com>
Date:   Sun Dec 22 16:26:44 2024 +0530

    stash changed

commit dc0b4c2baa2e168ea1a4504d3b25aba168032bb4 (child)
Author: shanthveer B A <shanthveer18@gmail.com>
Date:   Sun Dec 22 16:12:42 2024 +0530

    edited file

commit d60c5f4cb14ca0d0157eb0877665d62cef78bc8e
Author: shanthveer B A <shanthveer18@gmail.com>
Date:   Sun Dec 22 15:56:31 2024 +0530

    file created
```

PROGRAM-04

4) Clone a remote Git repository to your local machine.

Breaking Down the Commands Let's break down each command step-by-step:

STEP 1: mkdir clone:

* mkdir: This is a command-line utility used to create a new directory. * clone: This is the name of the directory you want to create. So, this command creates a new directory named "clone" in your current working directory.

STEP 2: cd clone:

* cd: This command is used to change your current working directory. * clone: This is the name of the directory you want to change into. This command will move you into the newly created "clone" directory.

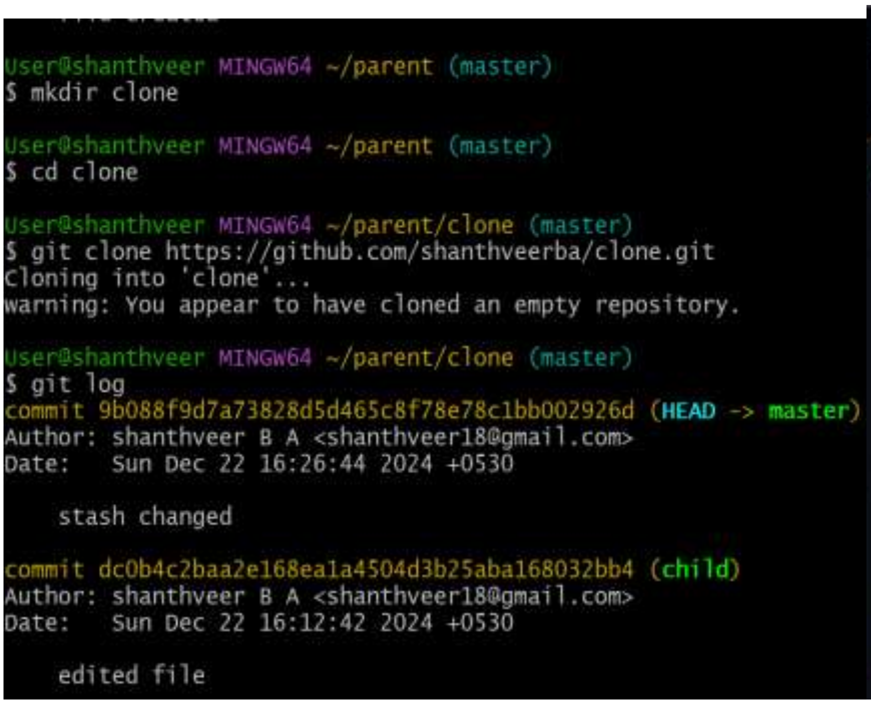
STEP 3: git clone (paste URL):

* Create Github credentials

* git clone: This Git command is used to clone an existing Git repository. * (paste URL): This is where you would paste the URL of the Git repository you want to clone.

This command will fetch the entire history of the remote repository and create a local copy of it within the "clone" directory.

OUTPUT:



```
User@shanthveer MINGW64 ~/parent (master)
$ mkdir clone

User@shanthveer MINGW64 ~/parent (master)
$ cd clone

User@shanthveer MINGW64 ~/parent/clone (master)
$ git clone https://github.com/shanthveerba/clone.git
Cloning into 'clone'...
warning: You appear to have cloned an empty repository.

User@shanthveer MINGW64 ~/parent/clone (master)
$ git log
commit 9b088f9d7a73828d5d465c8f78e78c1bb002926d (HEAD -> master)
Author: shanthveer B A <shanthveer18@gmail.com>
Date:   Sun Dec 22 16:26:44 2024 +0530

    stash changed

commit dc0b4c2baa2e168ea1a4504d3b25aba168032bb4 (child)
Author: shanthveer B A <shanthveer18@gmail.com>
Date:   Sun Dec 22 16:12:42 2024 +0530

    edited file
```

clone
Set up GitHub Copilot
Add collaborators to this repository
Quick setup — if you've done this kind of thing before

PROGRAM-05

5) Fetch the latest changes from a remote repository and rebase your local branch onto the updated remote branch.

Understanding the Commands

Let's break down each command step-by-step:

STEP 1: cd repository name:

* Purpose: This command changes the current directory to the specified repository. * Explanation:

* cd: Stands for "change directory." * repository name: Replace this with the actual name of your Git repository. * Example: cd my-project This would change your current working directory to the folder named "my-project".

STEP 2: git fetch origin:

* Purpose: This command fetches the latest changes from the remote repository named "origin" to your local repository.

* Explanation: * git fetch: Fetches commits, files, and other objects from a remote repository. * origin: Refers to the default remote repository, usually set up when you clone a repository.

* What happens: * It downloads new commits, branches, and tags from the remoterepository. * These changes are stored locally but are not immediately merged into your current branch.

STEP 3: git rebase origin/main:

* Purpose: This command reapplies your local commits on top of the latestcommits from the remote "main" branch.

* Explanation: * git rebase: Rebases your current branch onto another branch. * origin/main: Refers to the remote "main" branch.

* What happens: * It replays your local commits on top of the latest commits from the remote "main" branch. * This creates a linear commit history, making it easier to review and understand the changes.

STEP 4: git log:

* Purpose: This command displays a log of commits in your localrepository. * Explanation:

* git log: Shows the commit history. * What happens:

* It displays a list of commits, including their hash, author, date, and commit message. * You can use various options with git log to customize the output, such as filtering by author, date, or commit message. Key Points to Remember:

* Always fetch before rebasing to ensure you have the latest changesfrom the remote repository.

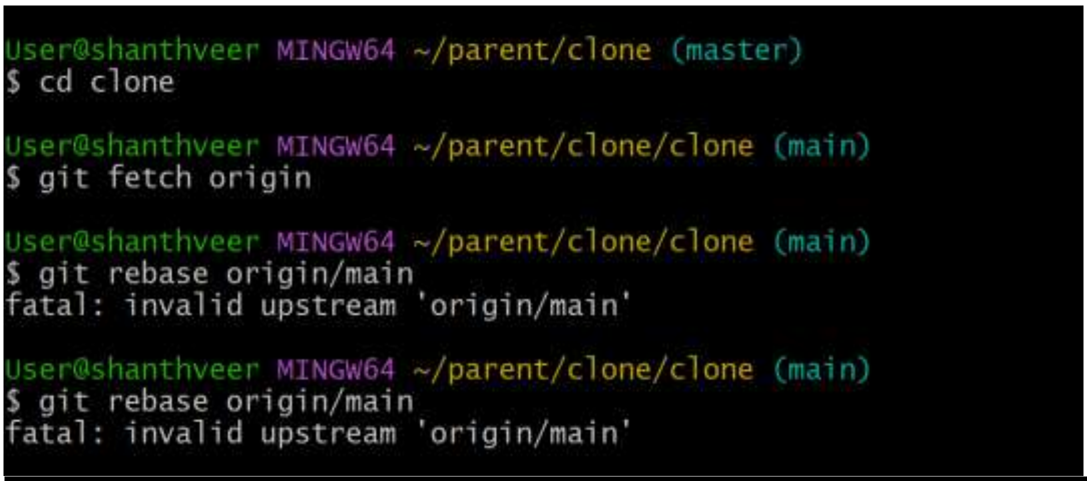
*Rebasing can be a powerful tool, but it can also be complex. Use it with caution, especially in shared repositories.

* Git log is a valuable tool for understanding the history of your project and identifying specific changes.

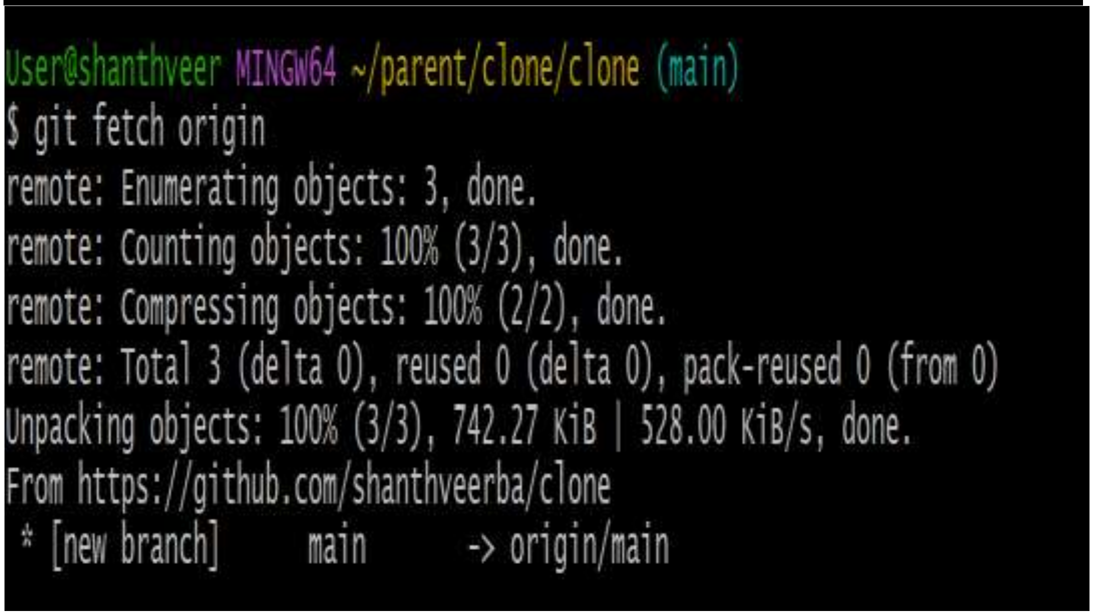
By understanding these commands and their functions, you can effectively manage your Git

workflow and keep your local repository upto-date with the remote repository.

OUTPUT:



```
User@shanthveer MINGW64 ~/parent/clone (master)
$ cd clone

User@shanthveer MINGW64 ~/parent/clone/clone (main)
$ git fetch origin

User@shanthveer MINGW64 ~/parent/clone/clone (main)
$ git rebase origin/main
fatal: invalid upstream 'origin/main'

User@shanthveer MINGW64 ~/parent/clone/clone (main)
$ git rebase origin/main
fatal: invalid upstream 'origin/main'
```



```
User@shanthveer MINGW64 ~/parent/clone/clone (main)
$ git fetch origin
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
Unpacking objects: 100% (3/3), 742.27 KiB | 528.00 KiB/s, done.
From https://github.com/shanthveerba/clone
 * [new branch]      main       -> origin/main
```

PROGRAM-06

6) Write the command to merge “feature-branch” into “master” while providing a custom commit message for the merge.

STEP 1: git branch feature-branch:

* Purpose: Creates a new branch named "feature-branch" off of the currently checked-out branch.

* How it works: * Git creates a new pointer to the current commit. * This new pointer is named "feature-branch."

* You can now make changes on this new branch without affecting the original branch.

STEP 2: git checkout feature-branch:

* Purpose: Switches the active branch to "sub-branch." * How it works:

* Git updates the working directory to match the state of the "sub-branch." * Any changes you make from this point on will be applied to the "sub-branch."

STEP 3: vi file5.txt:

* Purpose: Opens the file "file5.txt" in the vi text editor. * How it works:

* This command is not specific to Git but is a common Linux command toedit text files. * You can use vi to make changes to the file, which will be reflected in the "sub-branch" when you commit.

STEP 4: git commit -m "commit":

Commits the staged changes with the message "commit".

STEP 5: git checkout master:

Switches to the master branch (or main, depending on your project setup).

STEP 6: git merge feature-branch:

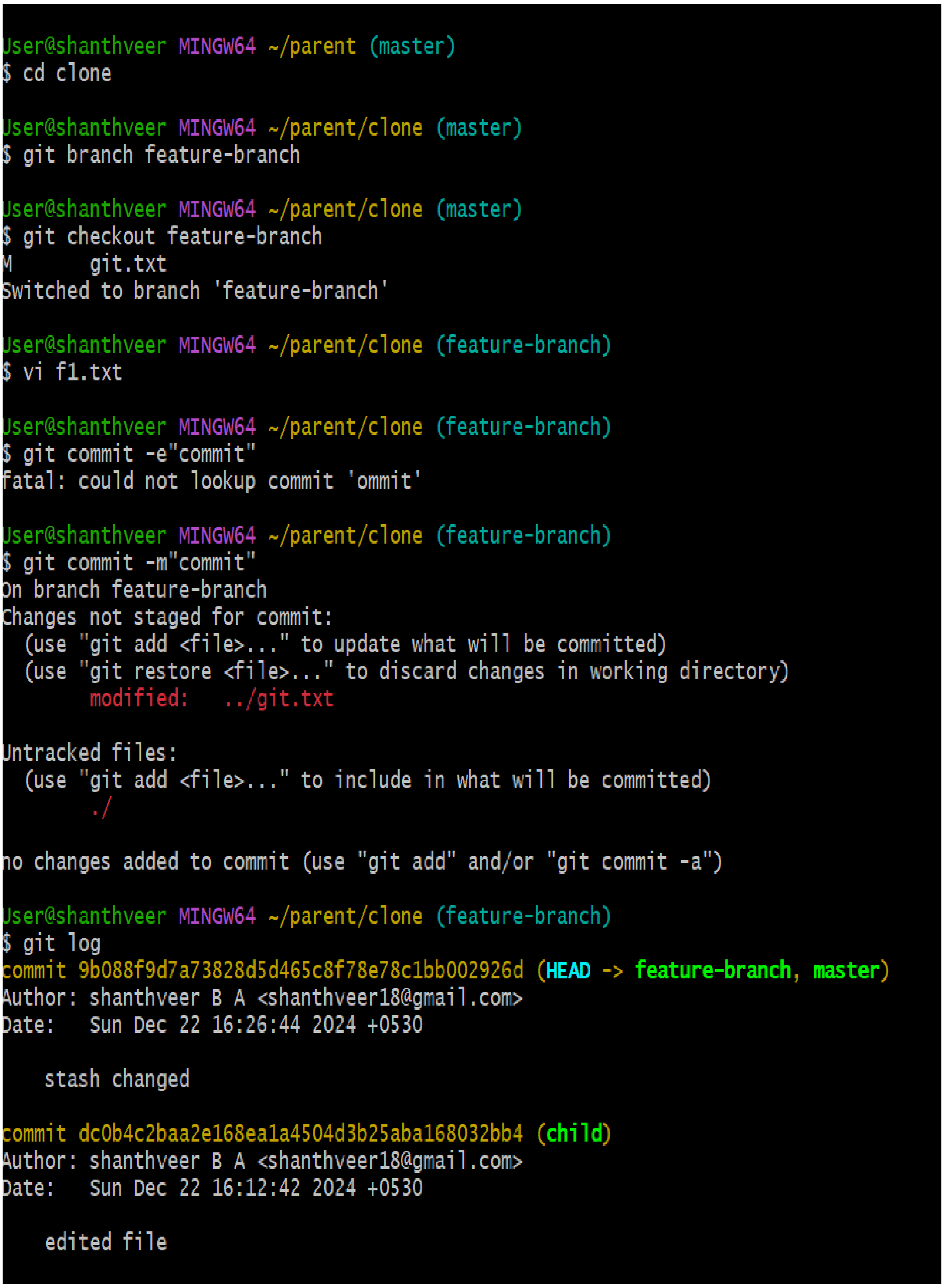
Merges the changes from feature-branch into the current branch (master in this case).

STEP 7: git log:

* Purpose: Shows the commit history of the current branch. * How it works:

* Git displays a list of commits, starting from the most recent. * Each commit is shown with its hash, author, date, and a brief message. * This command helps you understand the history of your project andidentify specific changes.

OUTPUT:



```
User@shanthveer MINGW64 ~/parent (master)
$ cd clone

User@shanthveer MINGW64 ~/parent/clone (master)
$ git branch feature-branch

User@shanthveer MINGW64 ~/parent/clone (master)
$ git checkout feature-branch
M       git.txt
Switched to branch 'feature-branch'

User@shanthveer MINGW64 ~/parent/clone (feature-branch)
$ vi f1.txt

User@shanthveer MINGW64 ~/parent/clone (feature-branch)
$ git commit -e"commit"
fatal: could not lookup commit 'ommit'

User@shanthveer MINGW64 ~/parent/clone (feature-branch)
$ git commit -m"commit"
On branch feature-branch
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   ../git.txt

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        ./

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

User@shanthveer MINGW64 ~/parent/clone (feature-branch)
$ git log
commit 9b088f9d7a73828d5d465c8f78e78c1bb002926d (HEAD -> feature-branch, master)
Author: shanthveer B A <shanthveer18@gmail.com>
Date:   Sun Dec 22 16:26:44 2024 +0530

    stash changed

commit dc0b4c2baa2e168ea1a4504d3b25aba168032bb4 (child)
Author: shanthveer B A <shanthveer18@gmail.com>
Date:   Sun Dec 22 16:12:42 2024 +0530

    edited file
```

PROGRAM-07

7) Write the command to create a lightweight git tag named “V1.0” for a commit in your local repository.

STEP 1: git tag V1.0 <commit_id>:

* This command creates a tag named "V1.0" and associates it with the specified commit ID. This tag marks a specific point in your project's history, often representing a release version.

STEP 2: git show V1.0: *

This command displays detailed information about the commit taggedas "V1.0". It shows the commit message, author, date, and the changes introduced in that commit.

STEP 3: git tag V1.1 <commit_id>:

* This command creates another tag named "V1.1" and associates it with adifferent commit ID. This might represent a subsequent release or a major update.

STEP 4: git show V1.1:

* Similar to the previous command, this displays detailed information about the commit tagged as "V1.1". Why Use Git Tags?

* Release Management: Tags help identify specific releases and their corresponding code.

* Historical Reference: You can easily reference past versions of your project. * Code Review: Tags can be used to mark specific points for review or comparison. * Rollback: In case of issues, you can revert to a tagged version. Additional Notes: * Lightweight Tags: The commands above create lightweight tags, whichare simply pointers to commits.

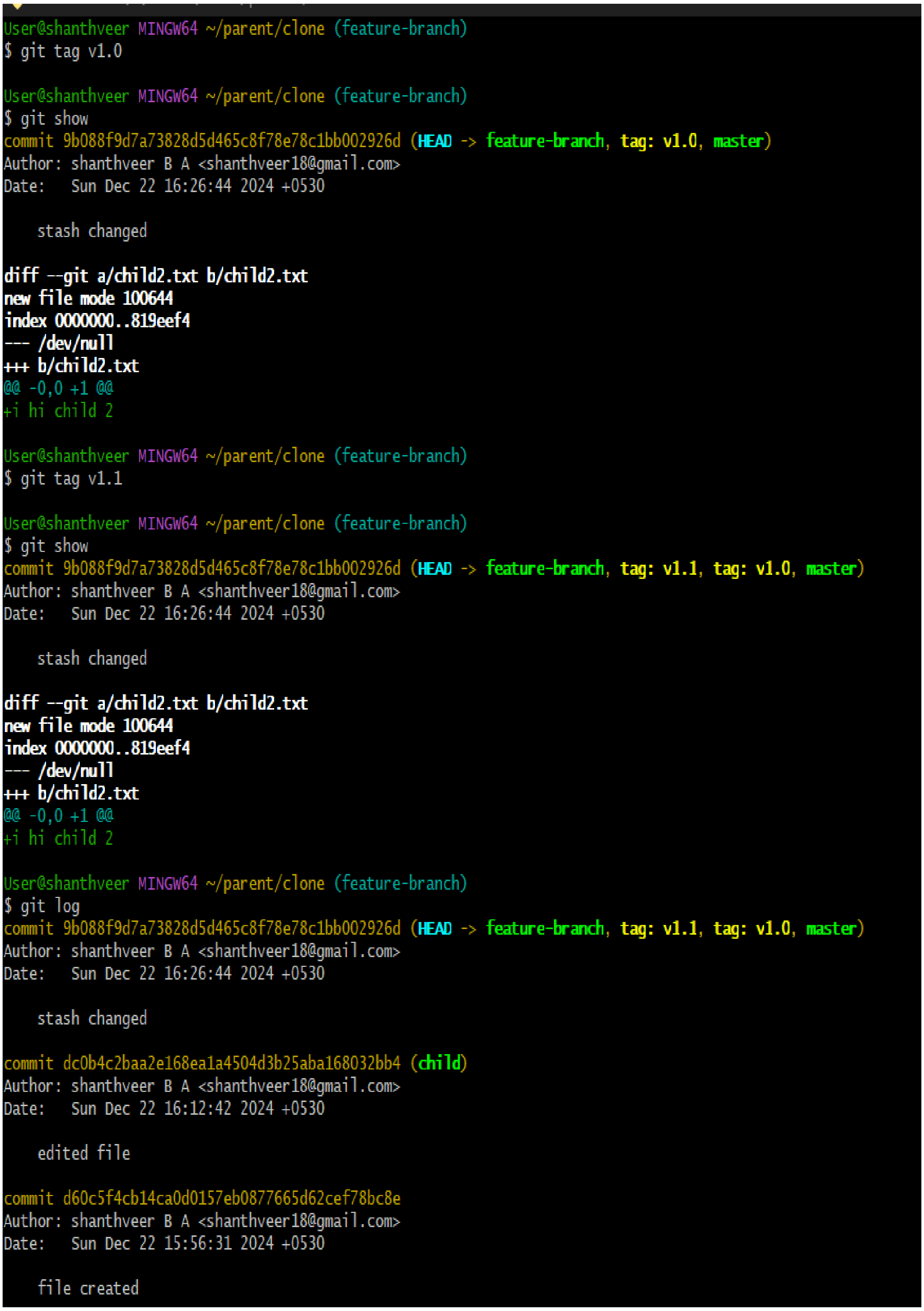
* Annotated Tags: You can create annotated tags using the -a flag, which allows you to add additional metadata, such as a tagger, date, and a message.

* Tagging the Latest Commit: To tag the latest commit, you can use the HEAD reference:

git tag V1.0 HEAD

* Pushing Tags to a Remote Repository: git push origin V1.0 V1.1 By effectively using Git tags, you can maintain a clear and organized project history, making it easier to managereleases, track changes, and collaborate with others.

OUTPUT:



```
User@shanthveer MINGW64 ~/parent/clone (feature-branch)
$ git tag v1.0

User@shanthveer MINGW64 ~/parent/clone (feature-branch)
$ git show
commit 9b088f9d7a73828d5d465c8f78e78c1bb002926d (HEAD -> feature-branch, tag: v1.0, master)
Author: shanthveer B A <shanthveer18@gmail.com>
Date:   Sun Dec 22 16:26:44 2024 +0530

    stash changed

diff --git a/child2.txt b/child2.txt
new file mode 100644
index 0000000..819eef4
--- /dev/null
+++ b/child2.txt
@@ -0,0 +1 @@
+i hi child 2

User@shanthveer MINGW64 ~/parent/clone (feature-branch)
$ git tag v1.1

User@shanthveer MINGW64 ~/parent/clone (feature-branch)
$ git show
commit 9b088f9d7a73828d5d465c8f78e78c1bb002926d (HEAD -> feature-branch, tag: v1.1, tag: v1.0, master)
Author: shanthveer B A <shanthveer18@gmail.com>
Date:   Sun Dec 22 16:26:44 2024 +0530

    stash changed

diff --git a/child2.txt b/child2.txt
new file mode 100644
index 0000000..819eef4
--- /dev/null
+++ b/child2.txt
@@ -0,0 +1 @@
+i hi child 2

User@shanthveer MINGW64 ~/parent/clone (feature-branch)
$ git log
commit 9b088f9d7a73828d5d465c8f78e78c1bb002926d (HEAD -> feature-branch, tag: v1.1, tag: v1.0, master)
Author: shanthveer B A <shanthveer18@gmail.com>
Date:   Sun Dec 22 16:26:44 2024 +0530

    stash changed

commit dc0b4c2baa2e168ea1a4504d3b25aba168032bb4 (child)
Author: shanthveer B A <shanthveer18@gmail.com>
Date:   Sun Dec 22 16:12:42 2024 +0530

    edited file

commit d60c5f4cb14ca0d0157eb0877665d62cef78bc8e
Author: shanthveer B A <shanthveer18@gmail.com>
Date:   Sun Dec 22 15:56:31 2024 +0530

    file created
```

PROGRAM-08

8) Write the command to cherry-pick a range of commits from “main” to the current branch.

Understanding the Commands Let's break down each command and its purpose within a Git repository:

STEP 1: git checkout main:

* Purpose: Switches the active branch to "main". * How it works:

* Git updates the working directory to match the state of the "main" branch. * Any changes you make from this point on will be applied to the "main" branch.

STEP 2: git cherry-pick (paste commit ID):

* Purpose: Applies the changes introduced by a specific commit to thecurrent branch. * How it works:

* You provide the commit ID of the change you want to cherry-pick. * Git identifies the changes introduced by that commit.

* It creates a new commit on the current branch with those changes. * This is useful when you want to apply a specific fix or feature from one branch to another.

STEP 3: git log:

* Purpose: Shows the commit history of the current branch. * How it works:

* Git displays a list of commits, starting from the most recent.

* Each commit is shown with its hash, author, date, and a brief message.

* This command helps you understand the history of your project andidentify specific changes.

Example Scenario: Imagine you have a "feature-branch" where you've made a great improvement. You want to apply this improvement to the "main" branch without merging the entire "feature-branch." * Switch to the "main" branch:

git checkout main * Cherry-pick the commit: git cherry-pick <commit-id> Replace <commit-id> with the actual ID of the commit you want to cherry-pick. You can find the commit ID from the git log output.

* Verify the changes: git log

You should now see the cherry-picked commit in the log of the "main" branch. Important Considerations:

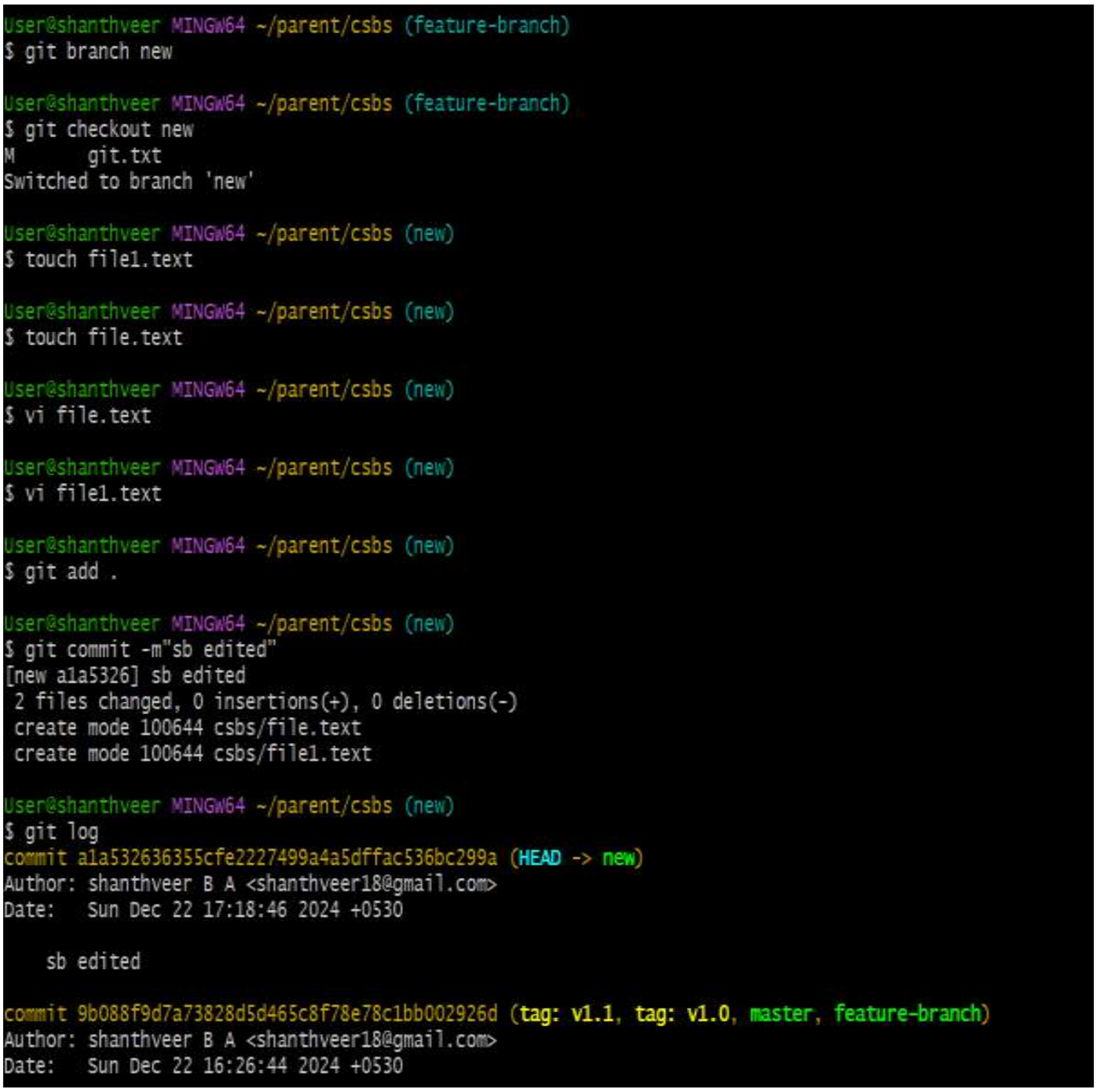
* Conflict Resolution: If there are conflicts between the cherry-picked commit and the current state of the "main" branch, Git will prompt you to resolve them manually.
* Multiple Commits: You can cherry-pick multiple commits by providing their respective IDs.

* Selective Cherry-Picking: Be cautious when cherry-picking commits, as it can introduce unintended side effects if the commits are tightly coupled with other changes.

By understanding these commands, you can effectively manage your Git workflow and

selectively apply changes between branch.

OUTPUT:



```
User@shanthveer MINGW64 ~/parent/csbs (feature-branch)
$ git branch new

User@shanthveer MINGW64 ~/parent/csbs (feature-branch)
$ git checkout new
M       git.txt
Switched to branch 'new'

User@shanthveer MINGW64 ~/parent/csbs (new)
$ touch file1.text

User@shanthveer MINGW64 ~/parent/csbs (new)
$ touch file.text

User@shanthveer MINGW64 ~/parent/csbs (new)
$ vi file.text

User@shanthveer MINGW64 ~/parent/csbs (new)
$ vi file1.text

User@shanthveer MINGW64 ~/parent/csbs (new)
$ git add .

User@shanthveer MINGW64 ~/parent/csbs (new)
$ git commit -m"sb edited"
[new a1a5326] sb edited
 2 files changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 csbs/file.text
 create mode 100644 csbs/file1.text

User@shanthveer MINGW64 ~/parent/csbs (new)
$ git log
commit a1a532636355cfe2227499a4a5dffac536bc299a (HEAD -> new)
Author: shanthveer B A <shanthveer18@gmail.com>
Date:   Sun Dec 22 17:18:46 2024 +0530

    sb edited

commit 9b088f9d7a73828d5d465c8f78e78c1bb002926d (tag: v1.1, tag: v1.0, master, feature-branch)
Author: shanthveer B A <shanthveer18@gmail.com>
Date:   Sun Dec 22 16:26:44 2024 +0530
```

PROGRAM-09

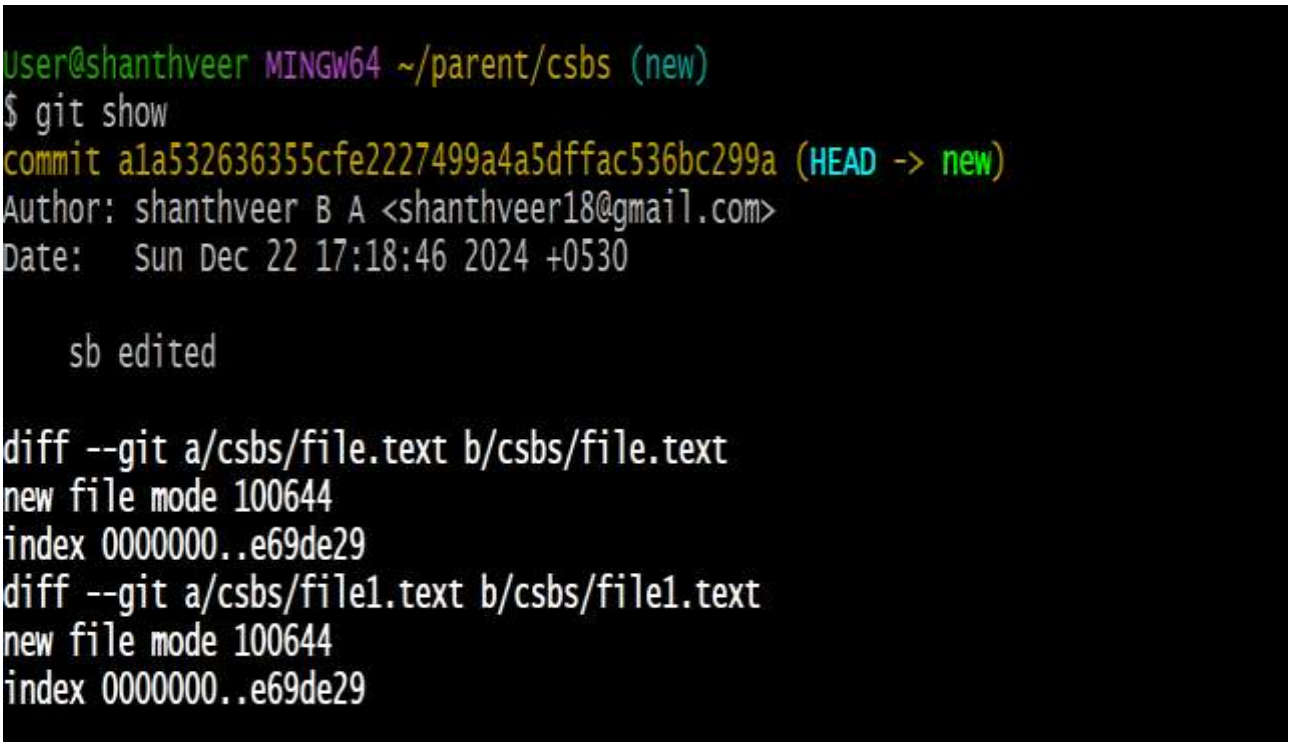
9)Given a commit ID, how would you use Git to view the details of that specific commit, including the author, date, and commit message?

STEP 1: git show <commit ID>:

git show displays detailed information about a Git object, most commonly a commit. By default, it shows the commit hash, author, date, commit message, and diff of the changes. It can be used with a variety of arguments (commit hash, branch, tag, etc.) to inspect different

parts of the repository's history.

OUTPUT:



```
User@shanthveer MINGW64 ~/parent/csbs (new)
$ git show
commit a1a532636355cfe2227499a4a5dffac536bc299a (HEAD -> new)
Author: shanthveer B A <shanthveer18@gmail.com>
Date:   Sun Dec 22 17:18:46 2024 +0530

    sb edited

diff --git a/csbs/file.text b/csbs/file.text
new file mode 100644
index 0000000..e69de29
diff --git a/csbs/file1.text b/csbs/file1.text
new file mode 100644
index 0000000..e69de29
```

PROGRAM-10

10)Write the command to list all commits made by the author “Mokshith” on “2024-12-04”.

STEP 1: git log --author="author name" --since="start date" -until="end date":

This Git command is a powerful tool for filtering and analyzing your project's commit history. It allows you to view specific commits based on the author, date range, and other criteria. Breakdown of the Command:

* git log: This is the basic command to view the commit history. * --author="author name": This flag filters the commits to only show those authored by the specified "author name."

* --since="start date": This flag limits the log to commits made after the specified "start date."

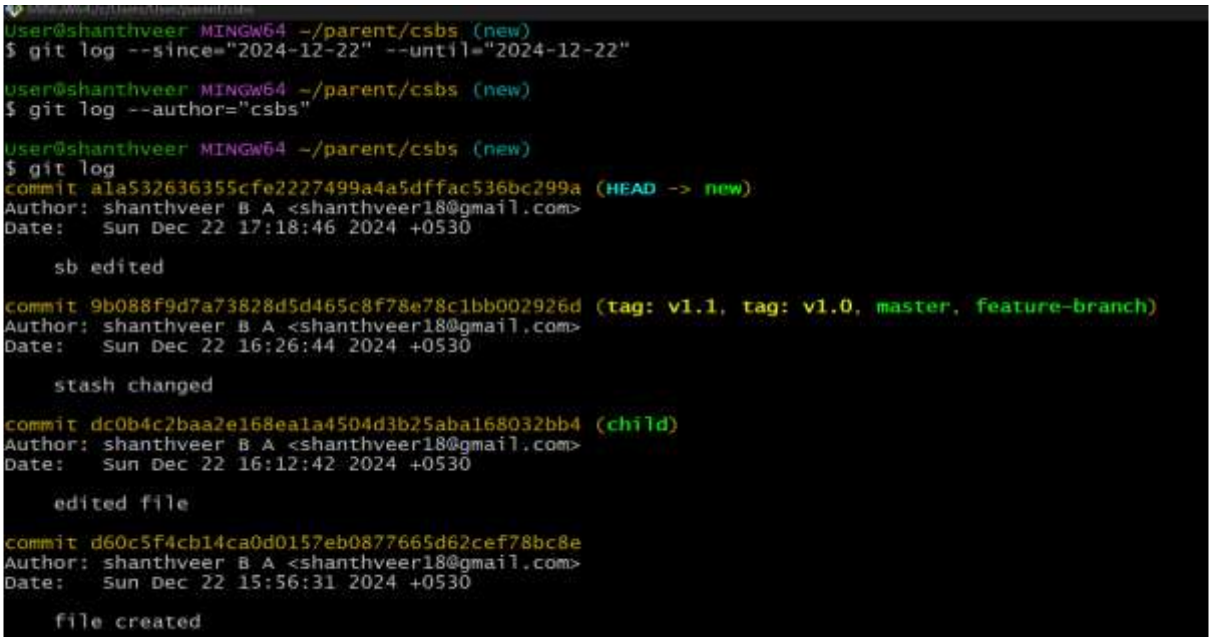
* --until="end date": This flag limits the log to commits made before the specified "end date." How to Use It:

* Specify the Author: * Replace "author name" with the actual name of the author you want to filter by. You can use partial names or email addresses as well. * Specify the Date Range:

* Replace "start date" and "end date" with the desired dates. You can usevarious date formats, such as: * YYYY-MM-DD (e.g., 2023-11-22)

* relative dates (e.g., yesterday, 2 weeks ago) * specific time periods (e.g., 2023-01-01..2023-12-31) Example:

To view all commits made by "John Doe" between January 1st, 2023, and December 31st,2023: git log --author="John Doe" --since="2023-01-01" --until="2024-01-0



```
User@shanthveer MINGW64 ~/parent/csbs (new)
$ git log --since="2024-12-22" --until="2024-12-22"

User@shanthveer MINGW64 ~/parent/csbs (new)
$ git log --author="csbs"

User@shanthveer MINGW64 ~/parent/csbs (new)
$ git log
commit a1a532636355cfe2227499a4a5dffac536bc299a (HEAD -> new)
Author: shanthveer B A <shanthveer18@gmail.com>
Date:   Sun Dec 22 17:18:46 2024 +0530

    sb edited

commit 9b088f9d7a73828d5d465c8f78e78c1bb002926d (tag: v1.1, tag: v1.0, master, feature-branch)
Author: shanthveer B A <shanthveer18@gmail.com>
Date:   Sun Dec 22 16:26:44 2024 +0530

    stash changed

commit dc0b4c2baa2e168ea1a4504d3b25aba168032bb4 (child)
Author: shanthveer B A <shanthveer18@gmail.com>
Date:   Sun Dec 22 16:12:42 2024 +0530

    edited file

commit d60c5f4cb14ca0d0157eb0877665d62cef78bc8e
Author: shanthveer B A <shanthveer18@gmail.com>
Date:   Sun Dec 22 15:56:31 2024 +0530

    file created
```

PROGRAM-11

11) Write the command to display the last two commits in the repository's history.

STEP 1: git log -n:

This command is used to view the most recent n commits in your Git repository. The -n flag specifies the number of commits to display. Example: git log -5

This command will display the last 5 commits in your current branch. Analyzing Git History with git log -n

* Quick Overview: You can quickly get a snapshot of recent changeswithout scrolling through a long list of commits.

* Identifying Recent Issues: By looking at the commit messages, you can identify recent bug fixes or feature additions.

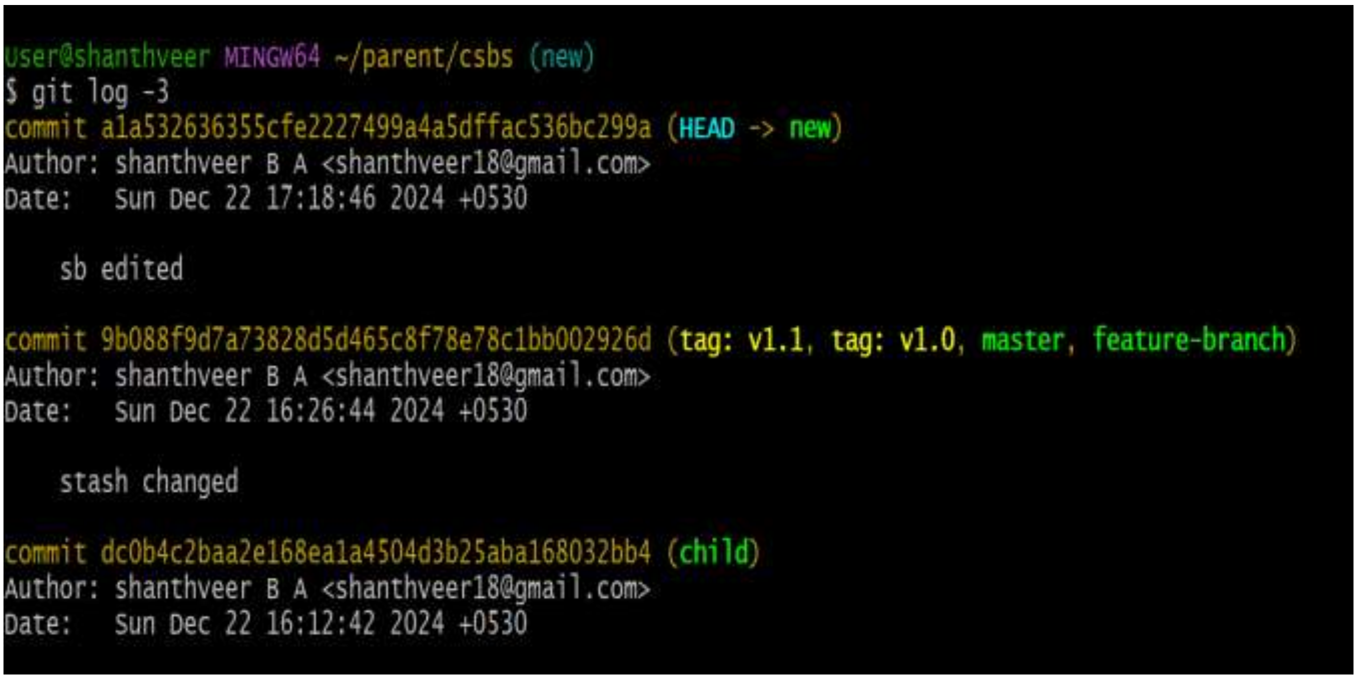
* Reviewing Code Changes: You can use git show <commit-hash> to view the specific changes introduced by a commit. Changing Git History with git log -n While git log -n is primarily used for analyzing history, you can use it indirectly to change Git history. For example:

* Identifying Commits for Revert or Cherry-Pick: You can use this command to find specific commits that you want to revert or cherry-pick to another branch.

* Reviewing Code Changes Before Rebase: You can use git log -n to review the commits

you plan to rebase onto another branch.

OUTPUT:



```
User@shanthveer MINGW64 ~/parent/csbs (new)
$ git log -3
commit a1a532636355cfe2227499a4a5dffac536bc299a (HEAD -> new)
Author: shanthveer B A <shanthveer18@gmail.com>
Date:   Sun Dec 22 17:18:46 2024 +0530

    sb edited

commit 9b088f9d7a73828d5d465c8f78e78c1bb002926d (tag: v1.1, tag: v1.0, master, feature-branch)
Author: shanthveer B A <shanthveer18@gmail.com>
Date:   Sun Dec 22 16:26:44 2024 +0530

    stash changed

commit dc0b4c2baa2e168ea1a4504d3b25aba168032bb4 (child)
Author: shanthveer B A <shanthveer18@gmail.com>
Date:   Sun Dec 22 16:12:42 2024 +0530
```

PROGRAM-12

12) Write the commands to undo the changes introduced by the commit with the ID “abc123”.

STEP 1: git revert <COMMIT ID>:

This Git command is used to reverse the changes introduced by a specific commit. It creates a new commit that undoes the changes made by the original commit. How it works: * Identify the Commit: You need to find the commit ID of the commit youwant to revert. You can use git log to find it.

* Execute the Command: Run the git revert <COMMIT ID> command, replacing <COMMIT ID> with the actual ID of the commit.

* Create a New Commit: Git creates a new commit that reverses the changes. The commit message will typically include information about the original commit and the revert.

Key Points: * Preserves History: Revert creates a new commit, preserving the original commit in the history. This is useful for undoing mistakes or reverting unwanted changes.

* Resolves Conflicts: If there are conflicts between the revert and the current state of the branch, Git will prompt you to resolve them manually. * Multiple Reverts: You can revert multiple commits by providing their respective IDs.

Example: git revert 1234567890abcdef This command will revert the commit with the ID 1234567890abcdef.

Analyzing and Changing Git History with git revert * Undoing Mistakes: If you realize that a previous commit introduced a bug or unwanted changes, you can use git revert to undo those changes. * Reverting Specific Changes: You can revert specific commits without affecting other changes in the same branch. * Creating a Clean History: By carefully using git revert, you can keep your Git history clean and understandable. Important Considerations:

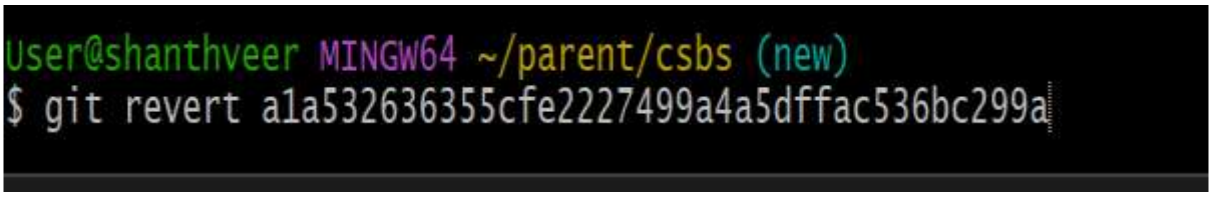
* Careful Usage: Revert can sometimes introduce unintended side effects, especially if the

reverted commit is part of a complex series of changes.

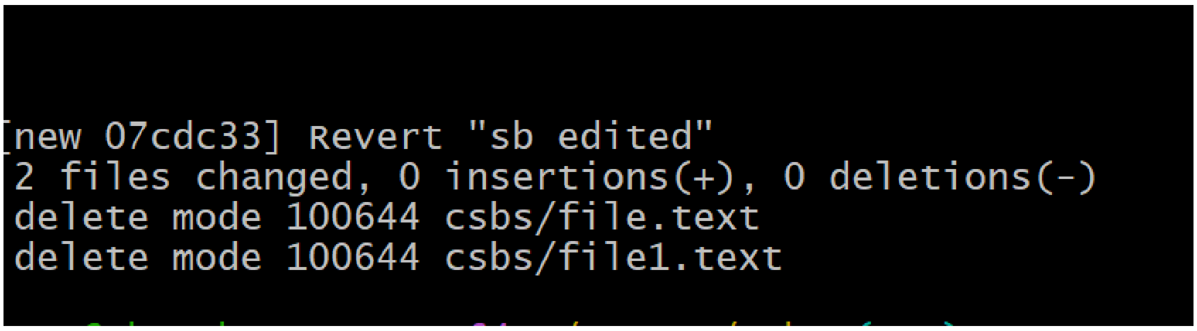
* Use with Caution: Always back up your repository before makingsignificant changes to the history.

* Consider Alternatives: If you need to modify the history more extensively, consider using Git's interactive rebase or reset commands. By understanding git revert, you can effectively manage your Git history and undo changes when necessary.

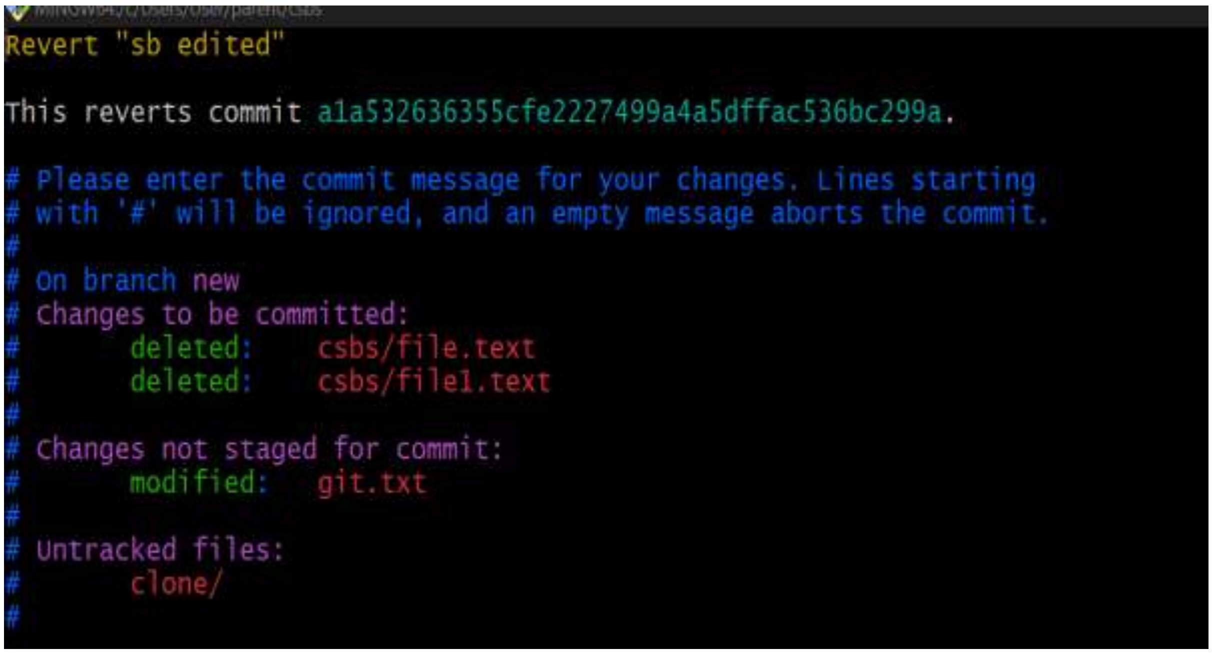
OUTPUT:



```
User@shanthveer MINGW64 ~/parent/csbs (new)
$ git revert a1a532636355cfe2227499a4a5dffac536bc299a
```



```
[new 07cdc33] Revert "sb edited"
 2 files changed, 0 insertions(+), 0 deletions(-)
 delete mode 100644 csbs/file.text
 delete mode 100644 csbs/file1.text
```



```
Revert "sb edited"

This reverts commit a1a532636355cfe2227499a4a5dffac536bc299a.

# Please enter the commit message for your changes. Lines starting
# with '#' will be ignored, and an empty message aborts the commit.
#
# On branch new
# Changes to be committed:
#       deleted:    csbs/file.text
#       deleted:    csbs/file1.text
#
# Changes not staged for commit:
#       modified:   git.txt
#
# Untracked files:
#       clone/
#
```