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T22-115

EXPERIMENT – 3

AIM - To Perform various GIT operations on local and Remote repositories using GIT Cheat-Sheet

Theory:

Git is a distributed version control system that allows developers to track changes, collaborate, and manage source code efficiently. Git provides numerous commands to handle local and remote repositories.

1. Setting Up Git

Before performing Git operations, configure Git with your details: git config --

global user.name "Your Name" git config --global user.email

"your.email@example.com" Verify the configuration:

git config --list

2. Initializing a Git Repository To create a new Git repository: git init

This initializes a new repository in the current directory. 3.

Cloning a Repository To clone a remote repository: git clone

<repository_url> Example:

git clone https://github.com/your-username/repository.git

4. Staging and Committing Changes

- To check the status of the working directory:
- git status
- To add files to the staging area:

- git add <file_name> or to add all changes:

git add .

- To commit changes with a message:
- git commit -m "Your commit message" 5. Viewing Commit History To view commit logs:

git log

For a compact version: git log --oneline

6. Branching in Git

- To create a new branch:
- git branch <branch_name>
- To switch to another branch: · git checkout <branch_name>
- To create and switch to a new branch simultaneously:
- git checkout -b <branch_name> · To view all branches:
- git branch

7. Merging Branches

- First, switch to the main branch:
- git checkout main
- Merge a branch into the main branch:
- git merge <branch_name> 8. Pushing Changes to Remote Repository · To push changes to GitHub: · git push origin <branch_name> · If pushing for the first time:
- git push --set-upstream origin <branch_name>

9. Pulling Changes from Remote Repository To fetch and merge changes from a remote repository:

git pull origin <branch_name> 10. Handling Merge Conflicts If a merge conflict occurs:

1. Open conflicting files and resolve issues manually.
2. Add resolved files to the staging area:
3. git add <file_name>
4. Commit the resolved changes:
5. git commit -m "Resolved merge conflict"

11. Undoing Changes

- To undo changes before staging:
- git checkout -- <file_name> · To unstage a file:
- git reset HEAD <file_name>

- To revert the last commit: To delete a remote
- git revert HEAD

12. Deleting a Branch
    - To delete a local branch: · git branch -d <branch_name> · branch:
    - git push origin --delete <branch_name>
13. Creating and Using a .gitignore File

A .gitignore file is used to ignore specific files or directories:

```
echo "node_modules/" >> .gitignore
git add .gitignore git commit -m
"Added .gitignore file"
```

14. Checking Differences in Files
    - To compare working directory changes:
    - git diff
    - To compare staged changes:
    - git diff --staged
15. Stashing Changes

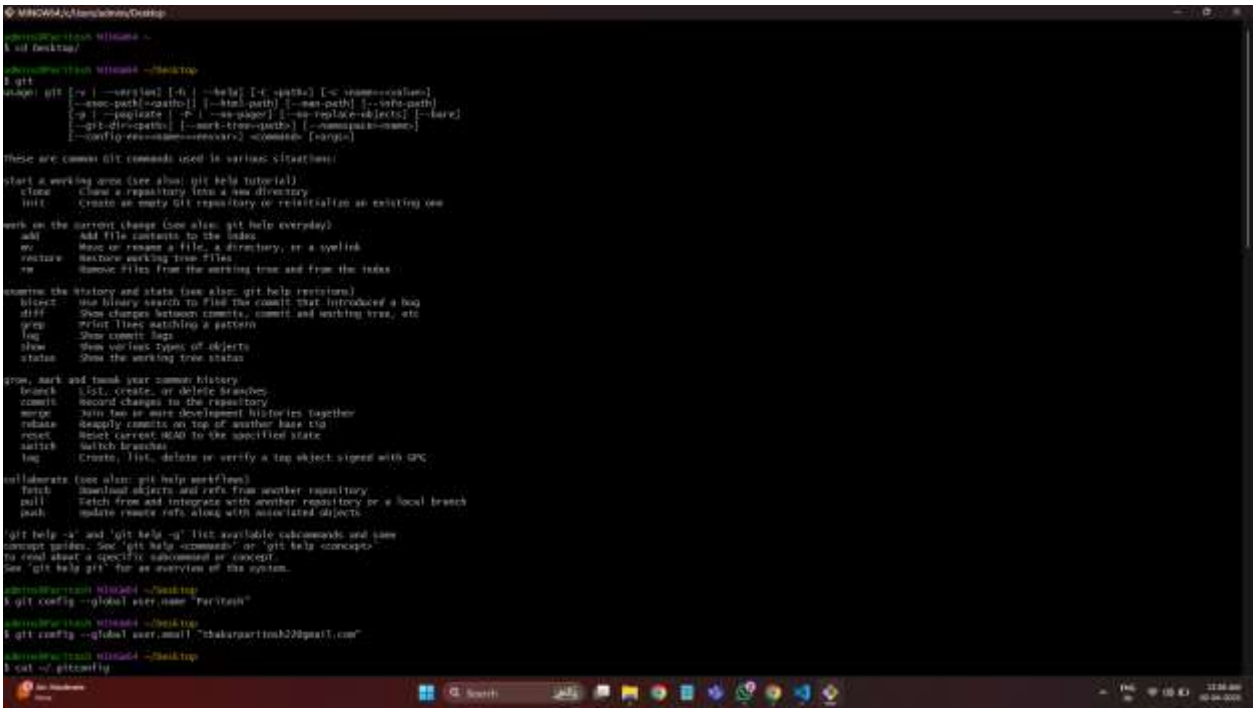
To temporarily save uncommitted changes:

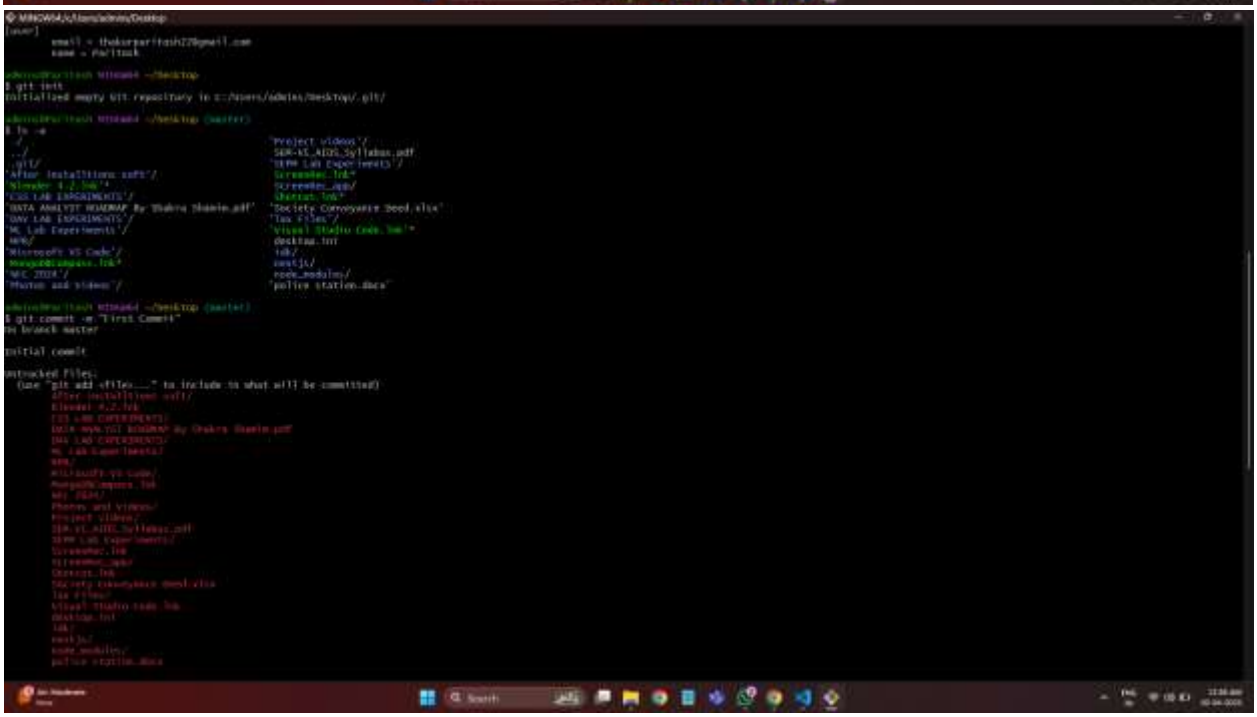
```
git stash
```

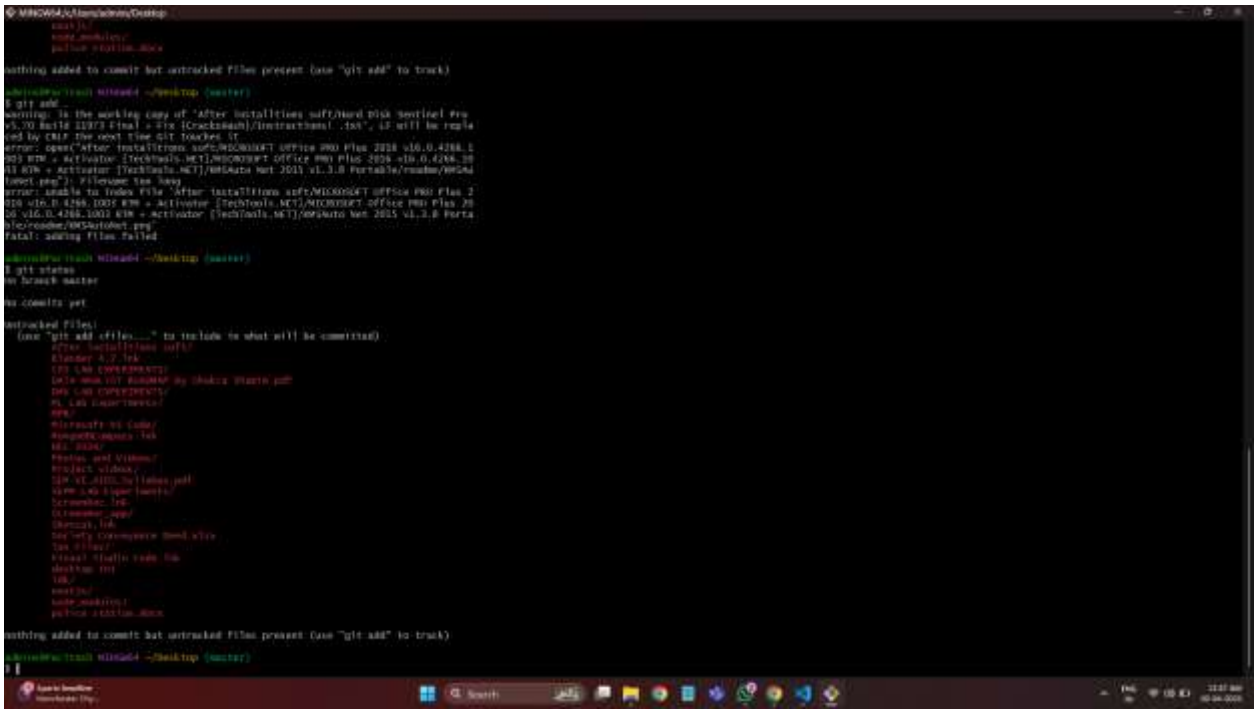
To apply the stashed changes:

```
git stash apply
```

Output:


MINGW64:/c/Users/admin/Desktop
admin@Paritosh MINGW64 ~
$ cd Desktop/
admin@Paritosh MINGW64 ~/Desktop
$ git
usage: git [-v | --version] [-h | --help] [-C <path>] [-c <name>=<value>]
[--exec-path[=<path>]] [--html-path] [--man-path] [--info-path]
[-p | --paginate | -P | --no-pager] [--no-replace-objects] [--bare]
[--git-dir=<path>] [--work-tree=<path>] [--namespace=<name>]
[--config-env=<name>=<envvar>] <command> [<args>]
These are common Git commands used in various situations:
start a working area (see also: git help tutorial)
clone Clone a repository into a new directory
init Create an empty Git repository or reinitialize an existing one
work on the current change (see also: git help everyday)
add Add file contents to the index
mv Move or rename a file, a directory, or a symlink
restore Restore working tree files
rm Remove files from the working tree and from the index
examine the history and state (see also: git help revisions)
bisect Use binary search to find the commit that introduced a bug
diff Show changes between commits, commit and working tree, etc
grep Print lines matching a pattern
log Show commit logs
show Show various types of objects
status Show the working tree status
grow, mark and tweak your common history
branch List, create, or delete branches
commit Record changes to the repository
merge Join two or more development histories together
rebase Reapply commits on top of another base tip
reset Reset current HEAD to the specified state
switch Switch branches
tag Create, list, delete or verify a tag object signed with GPG
collaborate (see also: git help workflows)
fetch Download objects and refs from another repository
pull Fetch from and integrate with another repository or a local branch
push Update remote refs along with associated objects
'git help -a' and 'git help -g' list available subcommands and some
concept guides. See 'git help <command>' or 'git help <concept>'
to read about a specific subcommand or concept.
See 'git help git' for an overview of the system.
admin@Paritosh MINGW64 ~/Desktop
$ git config --global user.name "Paritosh"
admin@Paritosh MINGW64 ~/Desktop
$ git config --global user.email "thakurparitosh22@gmail.com"
admin@Paritosh MINGW64 ~/Desktop
$ cat ~/.gitconfig


MINGW64:/c/Users/admin/Desktop
[user]
email = thakurparitosh22@gmail.com
name = Paritosh
admin@Paritosh MINGW64 ~/Desktop
$ git init
Initialized empty Git repository in c:/Users/admin/Desktop/.git/
admin@Paritosh MINGW64 ~/Desktop (master)
$ ls -a
./
../
.git/
'After Installtions soft'/
'Blender 4.2.lnk'*
'CCS LAB EXPERIMENTS'/
'DATA ANALYST ROADMAP By Shakra Shamim.pdf'
'DAV LAB EXPERIMENTS'/
'ML Lab Experiments'/
'MPR'/
'Microsoft VS Code'/
'MongoDBCompass.lnk'*
'NEC 2024'/
'Photos and videos'/
'Project Videos'/
'SEM-VI_AIDS_Syllabus.pdf'
'SEPM Lab Experiments'/
'Screenrec.lnk'*
'Screenrec_app'/
'Shotcut.lnk'*
'Society Conveyance Deed.xlsx'
'Tax Files'/
'Visual Studio Code.lnk'*
desktop.ini
'idk'/
'nextjs'/
'node_modules'/
'police station.docx'
admin@Paritosh MINGW64 ~/Desktop (master)
$ git commit -m "First Commit"
On branch master
Initial commit
Untracked files:
(use "git add <file>..." to include in what will be committed)
'After Installtions soft'/
'Blender 4.2.lnk'
'CCS LAB EXPERIMENTS'/
'DATA ANALYST ROADMAP By Shakra Shamim.pdf'
'DAV LAB EXPERIMENTS'/
'ML Lab Experiments'/
'MPR'/
'Microsoft VS Code'/
'MongoDBCompass.lnk'
'NEC 2024'/
'Photos and videos'/
'Project Videos'/
'SEM-VI_AIDS_Syllabus.pdf'
'SEPM Lab Experiments'/
'Screenrec.lnk'
'Screenrec_app'/
'Shotcut.lnk'
'Society Conveyance Deed.xlsx'
'Tax Files'/
'Visual Studio Code.lnk'
desktop.ini
'idk'/
'nextjs'/
'node_modules'/
'police station.docx'



CONCLUSION:

Thus, we have successfully studied and performed various GIT operations on local and Remote repositories using GIT Cheat-Sheet.