Day 1 : 10 Aug 2022   Week -1 - GIT and Linux commands

GIT commands:

1. configuring user:
git config --global user.name "name"
git config –global user.email emailid

```
yashwa-pt5861@yash-pt5861:~$ git version
git version 2.25.1
yashwa-pt5861@yash-pt5861:~$ git config --global user.name "yashwanthika"
yashwa-pt5861@yash-pt5861:~$ git config --global user.email "yashwanthika2000@gmail
.com"
yashwa-pt5861@yash-pt5861:~$ git config --global --list
user.name=yashwanthika
user.email=yashwanthika2000@gmail.com
```

creating a folder in local machine

create a repository (folder)
mkdir repository_name

2. change present working directory to the repository
to create git repository
git init

3.git add – staging or preparing a file for commit
options:
 git add [file] – adds file to the stagging area ,
git add . Or git add * - adds one or more files to the stagging area

4. git status – lists all the files that have to be commited

```
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ git status
On branch master

No commits yet

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

nothing added to commit but untracked files present (use "git add" to track)
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ git add .
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ git status
On branch master

No commits yet

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

6. git commit -captures the projects currently staged changes

7. git log – lists the version history for the current branch

```
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ git commit -m "Added Read me"
[master (root-commit) 95f06c9] Added Read me
 1 file changed, 2 insertions(+)
 create mode 100644 README.md
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ git status
On branch master
nothing to commit, working tree clean
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ git log
commit 95f06c9cde47725d44694dd62ffff97e6c4245f6 (HEAD -> master)
Author: yashwanthika <yashwanthika2000@gmail.com>
Date:   Wed Aug 10 11:38:30 2022 +0530

    Added Read me
```

up on modification of the file it is observed in the git status

```
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ vim README.md
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ 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:   README.md

no changes added to commit (use "git add" and/or "git commit -a")
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ git add .
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        modified:   README.md
```

9. git diff :shows the difference which are not yet staged

```
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ git diff
diff --git a/README.md b/README.md
index 684b362..a9e9749 100644
--- a/README.md
+++ b/README.md
@@ -1,2 +1,2 @@

-This is a read me file. File modified
+This is a read me file. File modified again
```

10.git reset
It unstages the file

```
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        modified:   README.md

yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ git reset README.md
Unstaged changes after reset:
M       README.md
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ 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:   README.md

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

11. git branch
options:
git branch : returns the current branch
git branch -av : returns list all branches
git branch [branch_name] :creates a new branch
git branch -d [branch_name]: deletes the branch

```
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yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ git branch
* master
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ git branch new_branch
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ git branch -d new_branch
Deleted branch new branch (was 2dda201).
```

12.git checkout
git checkout [branch] : lets user swicth to the specified branch
git checkout -b [branch]: creates a new branch and swithes to it

13.git merge
git merge [branch] : merges the specified branch's history into the current branch

```
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ git checkout -b new_branch
Switched to a new branch 'new_branch'
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ git merge new_branch
Already up to date.
```

14.git push
git push -u origin [branch_name]: sends the branch commits to the remote repository
git push origin -delete [branch_name]:deletes the branch in the remote repository

```
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ git remote set-url origin https://ghp_
XYxpEaUxr5jEKJwFof86jk98aj9d6A4Fn4PS@github.com/yashwanthika/git_lessons.git
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ git push -u origin master
Enumerating objects: 6, done.
Counting objects: 100% (6/6), done.
Delta compression using up to 16 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (6/6), 490 bytes | 490.00 KiB/s, done.
Total 6 (delta 0), reused 0 (delta 0)
To https://github.com/yashwanthika/git_lessons.git
 * [new branch]      master -> master
Branch 'master' set up to track remote branch 'master' from 'origin'.
```

15. git pull

git pull [Repository link]: Fetches and merges the changes on the remote server to the current working directory

```
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ git pull https://github.com/yashwanthika/git_lessons.git
From https://github.com/yashwanthika/git_lessons
 * branch            HEAD        -> FETCH_HEAD
warning: refname '2dda201b539bcc23bfc3e5e726a4a5f87632ded8' is ambiguous.
Git normally never creates a ref that ends with 40 hex characters
because it will be ignored when you just specify 40-hex. These refs
may be created by mistake. For example,

  git switch -c $br $(git rev-parse ...)

where "$br" is somehow empty and a 40-hex ref is created. Please
examine these refs and maybe delete them. Turn this message off by
running "git config advice.objectNameWarning false"
Already up to date.
```

16. git fetch

git fetch [Repository link]: Fetches the contents from the remote repository

```
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ git fetch https://github.com/yashwanthika/git_lessons.git
From https://github.com/yashwanthika/git_lessons
 * branch            HEAD        -> FETCH_HEAD
```

17. git stash

git stash save - stores the modified tracked files
git stash pop - restores the recenntly stashed file
git stash list – lists all stashed files
git stash drop – discards th recently stashed file

```
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ git stash save
Saved working directory and index state WIP on master: 2dda201 updated Readme
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ git stash pop
On branch master
Your branch is up to date with 'origin/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:    README.md

no changes added to commit (use "git add" and/or "git commit -a")
Dropped refs/stash@{0} (5e0f9dad7b4ae17813b688c3643dcf51c7c1b14b)
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ git stash list
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ git stash save
Saved working directory and index state WIP on master: 2dda201 updated Readme
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ git stash list
stash@{0}: WIP on master: 2dda201 updated Readme
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ git stash drop
Dropped refs/stash@{0} (3aa7b044d1603904175460c824acb80f976df371)
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ git stash list
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$
```

Linux commands:
1. find your linux distribution
    command : uname -o

```
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ uname -o
GNU/Linux
```

2. find linux kernel version
    command : uname -r

```
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ uname -r
5.15.0-43-generic
```

3.find number of CPUs
command:nproc

```
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ nproc
16
```

to get details about CPU lscpu command is used
4.check RAM size
        command: grep MemTotal /proc/meminfo

```
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ grep MemTotal /proc/meminfo
MemTotal:        16104020 kB
```

5.monitor currently running processes and their RAM/CPU usage
command: ps aux

```
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ ps aux
USER         PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root           1  0.0  0.0 167484 11476 ?        Ss   Aug08   0:23 /sbin/init splash
root           2  0.0  0.0      0     0 ?        S    Aug08   0:00 [kthreadd]
root           3  0.0  0.0      0     0 ?        I<   Aug08   0:00 [rcu_gp]
root           4  0.0  0.0      0     0 ?        I<   Aug08   0:00 [rcu_par_gp]
root           5  0.0  0.0      0     0 ?        I<   Aug08   0:00 [netns]
root           7  0.0  0.0      0     0 ?        I<   Aug08   0:00 [kworker/0:0H-events_hig
root          10  0.0  0.0      0     0 ?        I<   Aug08   0:00 [mm_percpu_wq]
root          11  0.0  0.0      0     0 ?        S    Aug08   0:00 [rcu_tasks_rude_]
root          12  0.0  0.0      0     0 ?        S    Aug08   0:00 [rcu_tasks_trace]
root          13  0.0  0.0      0     0 ?        S    Aug08   0:00 [ksoftirqd/0]
root          14  0.0  0.0      0     0 ?        I    Aug08   2:18 [rcu_sched]
root          15  0.0  0.0      0     0 ?        S    Aug08   0:00 [migration/0]
root          16  0.0  0.0      0     0 ?        S    Aug08   0:00 [idle_inject/0]
root          17  0.0  0.0      0     0 ?        S    Aug08   0:00 [cpuhp/0]
root          18  0.0  0.0      0     0 ?        S    Aug08   0:00 [cpuhp/1]
root          19  0.0  0.0      0     0 ?        S    Aug08   0:00 [idle_inject/1]
root          20  0.0  0.0      0     0 ?        S    Aug08   0:00 [migration/1]
root          21  0.0  0.0      0     0 ?        S    Aug08   0:08 [ksoftirqd/1]
root          23  0.0  0.0      0     0 ?        I<   Aug08   0:00 [kworker/1:0H-events_hig
```

6.sort running processes by their RAM/CPU usage
command: top

```
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ top

top - 17:15:04 up 2 days,  8:09,  1 user,  load average: 0.26, 0.42, 0.42
Tasks: 473 total,   1 running, 470 sleeping,   2 stopped,   0 zombie
%Cpu(s):  0.6 us,  0.4 sy,  0.0 ni, 99.1 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem :  15726.6 total,   7224.8 free,   3355.1 used,   5146.8 buff/cache
MiB Swap:  30720.0 total,  30712.5 free,      7.4 used.  10847.9 avail Mem

    PID USER       PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND
 363938 yashwa-+   20   0   24.5g 166436 101000 S   6.7   1.0   7:16.14 chrome
   3895 yashwa-+   20   0   16.9g 261360 123936 S   3.3   1.6  44:19.66 chrome
   3236 yashwa-+   20   0  737092 110608  68328 S   2.3   0.7  43:19.11 Xorg
   3370 yashwa-+   20   0 4936948 289004  80604 S   2.0   1.8  39:32.68 gnome-shell
    325 root      -51   0       0      0      0 S   1.7   0.0  13:17.31 irq/96-DLL0945:
 343713 yashwa-+   20   0  815392  52960  40308 S   1.0   0.3   0:28.29 gnome-terminal-
   3827 yashwa-+   20   0   16.9g 308208 149608 S   0.7   1.9  20:43.63 chrome
   3011 kernoops   20   0   11260    436      0 S   0.3   0.0   0:02.30 kerneloops
   3899 yashwa-+   20   0   16.3g 115500  70948 S   0.3   0.7   7:54.45 chrome
   4237 yashwa-+   20   0   24.5g 370280 125108 S   0.3   2.3   6:45.91 chrome
 373140 root       20   0       0      0      0 I   0.3   0.0   0:18.07 kworker/12:2-events
 375777 root       20   0       0      0      0 I   0.3   0.0   0:00.53 kworker/2:2-mm_per+
 391243 root        0 -20       0      0      0 I   0.3   0.0   0:03.21 kworker/u33:3-i915+
      1 root       20   0  167484  11476   8324 S   0.0   0.1   0:24.24 systemd
      2 root       20   0       0      0      0 S   0.0   0.0   0:00.21 kthreadd
      3 root        0 -20       0      0      0 I   0.0   0.0   0:00.00 rcu_gp
      4 root        0 -20       0      0      0 I   0.0   0.0   0:00.00 rcu_par_gp
      5 root        0 -20       0      0      0 I   0.0   0.0   0:00.00 netns
      7 root        0 -20       0      0      0 I   0.0   0.0   0:00.00 kworker/0:0H-event+
     10 root        0 -20       0      0      0 I   0.0   0.0   0:00.00 mm_percpu_wq
     11 root       20   0       0      0      0 S   0.0   0.0   0:00.00 rcu_tasks_rude_
     12 root       20   0       0      0      0 S   0.0   0.0   0:00.00 rcu_tasks_trace
     13 root       20   0       0      0      0 S   0.0   0.0   0:00.65 ksoftirqd/0
     14 root       20   0       0      0      0 I   0.0   0.0   2:19.20 rcu_sched
```

7.check if your laptop has any GPU
command:lspci | grep VGA

```
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ lspci | grep VGA
00:02.0 VGA compatible controller: Intel Corporation Device 9a60 (rev 01)
```

8.find the number of disks in your machine and their usage
command:du

```
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ du
0        ./.git/branches
52       ./.git/hooks
4        ./.git/info
8        ./.git/refs/heads
4        ./.git/refs/tags
4        ./.git/refs/remotes/origin
4        ./.git/refs/remotes
16       ./.git/refs
0        ./.git/objects/pack
0        ./.git/objects/info
8        ./.git/objects/a9
4        ./.git/objects/ac
4        ./.git/objects/95
4        ./.git/objects/68
4        ./.git/objects/44
4        ./.git/objects/2d
4        ./.git/objects/26
4        ./.git/objects/2b
4        ./.git/objects/5e
4        ./.git/objects/6f
4        ./.git/objects/3a
48       ./.git/objects
8        ./.git/logs/refs/heads
4        ./.git/logs/refs/remotes/origin
4        ./.git/logs/refs/remotes
12       ./.git/logs/refs
16       ./.git/logs
164      ./.git
168      .
```

9.find all the USB devices connected in your machine
command:lsusb

```
yashwa-pt5861@yash-pt5861:~/work/week_1/git_lessons$ lsusb
Bus 004 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 003 Device 004: ID 8087:0026 Intel Corp.
Bus 003 Device 003: ID 0c45:6a11 Microdia Integrated_Webcam_HD
Bus 003 Device 002: ID 27c6:63ac Shenzhen Goodix Technology Co.,Ltd. Goodix USB2.0 MISC
Bus 003 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
```