**1. What is git?**

* Git is a free and open source distributed code management and version control system.
* Git allow user to track code change and manage their project using simple commands.

**2. Difference between git and GitHub?**

* **Git**
  + Git is a software
  + Git is a command-line tool
  + Git is installed locally on the system
  + Git is maintained by Linux.
  + Git was released in 2005.
* **GitHub** 
  + GitHub is a service.
  + GitHub is graphical user interface
  + GitHub is hosted on the web
  + GitHub is maintained by Microsoft.
  + GitHub was released in 2008.

**3. Why we use Linux?**

* **There are many reason to use Linux :-**
  + **Open source**
    - Linux is an open source operating system, any user use this operating system without licenses
  + **Security** 
    - This operating system is provided good security feature, like password protection, control access etc.
  + **Portable** 
    - Linux operating system is portable because it is to work with multiple hardware at the same time.
  + **Multi-user** 
    - Linux is a multi-user operating system because at the same time we can access memory, ram, application.

**4. What are features and Advantages of Linux?**

* **Features of Linux:-**
  + Open source
  + Multi-user
  + Security
  + Portability
* **Advantages of Linux :-**
  + **Lightweight :-**
    - Linux is a lightweight operating system. The requirements for running this operating system much less than others.
  + **Free :-**
    - The biggest advantage of the Linux system is that it is free to use. We can easily download it. And there is no need to buy any license.
  + **Performance :-**
    - It is providing high performance over different operating system.
  + **Privacy :-**
    - Linux always takes care of user privacy as it never takes much private information from the user.

**5. Here are some basic commands of Linux :-**

**Linux Commands :-**

1. **PWD Command :-**
   1. PWD stands for present working Directory, this command is to show which directory we are working and which is our current directory.

Ex :-

**ruhai@ruhail-Vostro-15-3568:/home$ pwd**

**/home**

1. **Cd Command :-**
   1. Cd stands for change directory, with the of this command we can switch one directory to another directory, and we can back present directory.

**ruhai@ruhail-Vostro-15-3568:/$ cd home/**

**ruhai@ruhail-Vostro-15-3568:/home$ cd ruhail**

**ruhai@ruhail-Vostro-15-3568:/home/ruhail$ cd ../../**

1. **Ls command :-**
   1. Ls stands for list, with the help o f this command we can list all files and directories.

**ruhail@ruhail-Vostro-15-3568:~/Desktop/Myproject$ ls**

**README.md requirment.txt test**

1. **Cat command :-**
   1. Cat stands for concatenate, this command is used to create a new empty file, and we can see all the content which is present in the file.

**ruhail@ruhail-Vostro-15-3568:~/Desktop$ cat > demo.txt**

**this is demo file**

**ruhail@ruhail-Vostro-15-3568:~/Desktop$ cat demo.txt**

**this is demo file**

1. **Clear command :-**
   1. Clear all the command which are written in terminal.

**Before using clear command :-**

**ruhail@ruhail-Vostro-15-3568:~/Desktop$ ls**

**demo.txt Myproject**

**ruhail@ruhail-Vostro-15-3568:~/Desktop$ cd Myproject/**

**ruhail@ruhail-Vostro-15-3568:~/Desktop/Myproject$**

**After using clear command :-**

**ruhail@ruhail-Vostro-15-3568:~/Desktop$**

1. **Who command :-**
   1. With the help of this command, display the currently logged user in to your Linux operating system.

**ruhail@ruhail-Vostro-15-3568:~/Desktop/Myproject$ who**

**ruhail :0 2022-01-27 18:12 (:0)**

**ruhai :1 2022-01-27 18:10 (:1)**

1. **Cal command :-**
   1. We can view a calendar with help of this command, and we can also view current month, date, year, using this command.

**ruhail@ruhail-Vostro-15-3568:~/Desktop/Myproject$ cal**

**January 2022**

**Su Mo Tu We Th Fr Sa**

**1**

**2 3 4 5 6 7 8**

**9 10 11 12 13 14 15**

**16 17 18 19 20 21 22**

**23 24 25 26 27 28 29**

**30 31**

* **Using cal -y command :-**

**ruhail@ruhail-Vostro-15-3568:~/Desktop/Myproject$ cal -y**

**2022**

**January February March**

**Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa**

**1 1 2 3 4 5 1 2 3 4 5**

**2 3 4 5 6 7 8 6 7 8 9 10 11 12 6 7 8 9 10 11 12**

**9 10 11 12 13 14 15 13 14 15 16 17 18 19 13 14 15 16 17 18 19**

**16 17 18 19 20 21 22 20 21 22 23 24 25 26 20 21 22 23 24 25 26**

**23 24 25 26 27 28 29 27 28 27 28 29 30 31**

**30 31**

**April May June**

**Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa**

**1 2 1 2 3 4 5 6 7 1 2 3 4**

**3 4 5 6 7 8 9 8 9 10 11 12 13 14 5 6 7 8 9 10 11**

**10 11 12 13 14 15 16 15 16 17 18 19 20 21 12 13 14 15 16 17 18**

**17 18 19 20 21 22 23 22 23 24 25 26 27 28 19 20 21 22 23 24 25**

**24 25 26 27 28 29 30 29 30 31 26 27 28 29 30**

**July August September**

**Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa**

**1 2 1 2 3 4 5 6 1 2 3**

**3 4 5 6 7 8 9 7 8 9 10 11 12 13 4 5 6 7 8 9 10**

**10 11 12 13 14 15 16 14 15 16 17 18 19 20 11 12 13 14 15 16 17**

**17 18 19 20 21 22 23 21 22 23 24 25 26 27 18 19 20 21 22 23 24**

**24 25 26 27 28 29 30 28 29 30 31 25 26 27 28 29 30**

**31**

**October November December**

**Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa Su Mo Tu We Th Fr Sa**

**1 1 2 3 4 5 1 2 3**

**2 3 4 5 6 7 8 6 7 8 9 10 11 12 4 5 6 7 8 9 10**

**9 10 11 12 13 14 15 13 14 15 16 17 18 19 11 12 13 14 15 16 17**

**16 17 18 19 20 21 22 20 21 22 23 24 25 26 18 19 20 21 22 23 24**

**23 24 25 26 27 28 29 27 28 29 30 25 26 27 28 29 30 31**

7.1

1. **Date command :-**
   1. This command is used to show current date and time.

**ruhail@ruhail-Vostro-15-3568:~/Desktop/Myproject$ date**

**Thursday 27 January 2022 10:11:55 PM IST**

1. **Touch command :-**
   1. Create an empty file using this command.

**ruhail@ruhail-Vostro-15-3568:~/Desktop/Myproject$ touch imp.txt**

**ruhail@ruhail-Vostro-15-3568:~/Desktop/Myproject$ ls**

**'assignment 1' imp.txt requirment.txt test.md**

**ChatBot README.md test**

1. **Mkdir Command :-**
   1. We can create a new directory using this command.

**ruhail@ruhail-Vostro-15-3568:~/Desktop/Myproject$ mkdir new**

**ruhail@ruhail-Vostro-15-3568:~/Desktop/Myproject$ ls**

**'assignment 1' imp.txt README.md test**

**ChatBot new requirment.txt test.md**

1. **Rmdir command :-**
   1. Delete any empty directory using this command.

**ruhail@ruhail-Vostro-15-3568:~/Desktop/Myproject$ rmdir new**

**ruhail@ruhail-Vostro-15-3568:~/Desktop/Myproject$ ls**

**'assignment 1' imp.txt requirment.txt test.md**

**ChatBot README.md test**

**10.1 rm -r directory name :-**

1. If we want to delete non-empty folder, then we will have to use this command.

**ruhail@ruhail-Vostro-15-3568:~/Desktop/Myproject$ ls**

**'assignment 1' imp.txt requirment.txt test.md**

**ChatBot README.md test**

**ruhail@ruhail-Vostro-15-3568:~/Desktop/Myproject$ rm -r test.md**

**ruhail@ruhail-Vostro-15-3568:~/Desktop/Myproject$ ls**

**'assignment 1' ChatBot imp.txt README.md requirment.txt test**

1. **Du command :-**
   1. Du stands for disk usage, with the help of this command we can show the size of all directory and the size of particular directory.

**Can see size of multi files or directories :-**

**ruhail@ruhail-Vostro-15-3568:~/Desktop/Myproject$ du**

**8 ./test**

**1136 ./assignment 1**

**12 ./.git/logs/refs/remotes/origin**

**16 ./.git/logs/refs/remotes**

**12 ./.git/logs/refs/heads**

**32 ./.git/logs/refs**

**40 ./.git/logs**

**4 ./.git/branches**

**12 ./.git/refs/remotes/origin**

**16 ./.git/refs/remotes**

**4 ./.git/refs/tags**

**12 ./.git/refs/heads**

**36 ./.git/refs**

**8 ./.git/info**

**56 ./.git/hooks**

**1032 ./.git/objects/c9**

**160 ./.git/objects/a8**

**8 ./.git/objects/c1**

**8 ./.git/objects/5a**

**Can see particular file or directory size :-**

**ruhail@ruhail-Vostro-15-3568:~/Desktop/Myproject$ du -b ChatBot**

**174612 ChatBot**

1. **MV command :-**
   1. The use of this command is to change the name of directory and file, and we can move the file and directory to one location to another location.

Here we can see in the below image, our folder name is imp after using MV

command our folder name has been change into important, basically MV

command is also used to rename our folder and file.

**ruhail@ruhail-Vostro-15-3568:~/Desktop$ ls**

**demo.txt Myproject test**

**ruhail@ruhail-Vostro-15-3568:~/Desktop$ mv demo.txt test**

**ruhail@ruhail-Vostro-15-3568:~/Desktop$ ls**

**Myproject test**

1. **Vi command :-**
   1. This command is used to edit any file content.

ruhail@ruhail-Vostro-15-3568:~$ vi f.txt

ruhail@ruhail-Vostro-15-3568:~$ cat f.txt

this is the edit file

1. **Uname command :-**
2. This command is used to find the information about the system. Like, which operating system you are using and the name of machine, kernel etc.

**ruhail@ruhail-Vostro-15-3568:~/Desktop$ uname**

**Linux**

**ruhail@ruhail-Vostro-15-3568:~/Desktop$ uname -r**

**5.13.0-27-generic**

**ruhail@ruhail-Vostro-15-3568:~/Desktop$ uname -a**

**Linux ruhail-Vostro-15-3568 5.13.0-27-generic #29~20.04.1-Ubuntu SMP Fri Jan 14 00:32:30 UTC 2022 x86\_64 x86\_64 x86\_64 GNU/Linux**

1. **Sudo command :-**
   1. Sudo stands for “SuperUser Do”, this command is help to install packages, and we can perform other task using sudo command.

**ruhail@ruhail-Vostro-15-3568:~/Desktop$ sudo apt update**

**[sudo] password for ruhail:**

**Hit:1 http://in.archive.ubuntu.com/ubuntu focal InRelease**

**Hit:2 https://dl.google.com/linux/chrome/deb stable InRelease**

**Get:3 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]**

**Hit:4 http://in.archive.ubuntu.com/ubuntu focal-updates InRelease**

**Hit:5 http://in.archive.ubuntu.com/ubuntu focal-backports InRelease**

**Get:6 http://security.ubuntu.com/ubuntu focal-security/main amd64 DEP-11 Metadata [40.6 kB]**

**Get:7 http://security.ubuntu.com/ubuntu focal-security/universe amd64 DEP-11 Metadata [66.3 kB]**

**Get:8 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 DEP-11 Metadata [2,464 B]**

**Fetched 223 kB in 47s (4,761 B/s)**

**Reading package lists... Done**

**Building dependency tree**

**Reading state information... Done**

**4 packages can be upgraded. Run 'apt list --upgradable' to see them.**

1. **Find command :-**
   1. This command is used to find all directories and files.
      1. Ex :- find -name test.txt

**ruhail@ruhail-Vostro-15-3568:~/Desktop$ find -name test**

**./test**

**./Myproject/test**

**./Myproject/.git/logs/refs/heads/test**

**./Myproject/.git/refs/heads/test**

1. **CP command :-**
   1. CP stands for copy, if we want to copy any file or directory into another dictionary, so we can use this command.

**ruhail@ruhail-Vostro-15-3568:~/Desktop$ cat >> f.txt**

**this is test file**

**ruhail@ruhail-Vostro-15-3568:~/Desktop$ ls**

**f.txt Myproject test**

**ruhail@ruhail-Vostro-15-3568:~/Desktop$ cp f.txt test**

**ruhail@ruhail-Vostro-15-3568:~/Desktop$ ls**

**f.txt Myproject test**

**ruhail@ruhail-Vostro-15-3568:~/Desktop$ ls test**

**demo.txt f.txt**

1. **Banner command :-**
   1. Banner command is used to write any name in star format.

ruhail@ruhail-Vostro-15-3568:~/Desktop$ banner Ruhail Khan

######

# # # # # # ## # #

# # # # # # # # # #

###### # # ###### # # # #

# # # # # # ###### # #

# # # # # # # # # #

# # #### # # # # # ######

# #

# # # # ## # #

# # # # # # ## #

### ###### # # # # #

# # # # ###### # # #

# # # # # # # ##

# # # # # # # #

1. **Sudo apt clean command :-**
   1. This command is help to remove junk file and temp file.

ruhail@ruhail-Vostro-15-3568:~/Desktop$ sudo apt clean

ruhail@ruhail-Vostro-15-3568:~/Desktop$

1. **Su command :-**
   1. Suppose you are present in student user, and you want to switch to root user, then you can use this command,
   2. in simple word, this command is used to switch one user to another user.

Example – [ student@localhost ~]# su – root then enter

1. **Echo command :-**
   1. With the help of this command, we can write anything in the file using this command, and we can be displaying data via passed argument string/text.

**ruhail@ruhail-Vostro-15-3568:~/Desktop$ echo "this is test file " >> f.txt**

**ruhail@ruhail-Vostro-15-3568:~/Desktop$ ls**

**f.txt Myproject test**

**ruhail@ruhail-Vostro-15-3568:~/Desktop$ cat f.txt**

**this is test file**

**this is test file**

**ruhail@ruhail-Vostro-15-3568:~/Desktop$ echo "the world is beautiful"**

**the world is beautiful**

1. **History command :-**
   1. With the help of this command, we can see all previous command using history command.

**ruhail@ruhail-Vostro-15-3568:~$ history**

**1 sudo apt install git**

**2 git --version**

**3 cd**

**4 git clone https://github.com/rajashri570/MI-15-EMBEDD.git**

**5 ls**

**6 git config --list**

**7 git config --global user.email "ruhail.tca1709079@tmu.ac.in"**

**8 git config --global user.name "ruhailkhan2016"**

1. **Cp –help command :-**
   1. This command is used to see all command which related to CP command.

**ruhail@ruhail-Vostro-15-3568:~$ cp --help**

**Usage: cp [OPTION]... [-T] SOURCE DEST**

**or: cp [OPTION]... SOURCE... DIRECTORY**

**or: cp [OPTION]... -t DIRECTORY SOURCE...**

**Copy SOURCE to DEST, or multiple SOURCE(s) to DIRECTORY.**

**Mandatory arguments to long options are mandatory for short options too.**

**-a, --archive same as -dR --preserve=all**

**--attributes-only don't copy the file data, just the attributes**

**--backup[=CONTROL] make a backup of each existing destination file**

**-b like --backup but does not accept an argument**

**--copy-contents copy contents of special files when recursive**

**-d same as --no-dereference --preserve=links**

**-f, --force if an existing destination file cannot be**

**opened, remove it and try again (this option**

**is ignored when the -n option is also used)**

**-i, --interactive prompt before overwrite (overrides a previous -n**

**option)**

**-H follow command-line symbolic links in SOURCE**

**-l, --link hard link files instead of copying**

**-L, --dereference always follow symbolic links in SOURCE**

-n, --no-clobber do not overwrite an existing file (overrides

a previous -i option)

-P, --no-dereference never follow symbolic links in SOURCE

-p same as --preserve=mode,ownership,timestamps

--preserve[=ATTR\_LIST] preserve the specified attributes (default:

mode,ownership,timestamps), if possible

additional attributes: context, links, xattr,

all

--no-preserve=ATTR\_LIST don't preserve the specified attributes

--parents use full source file name under DIRECTORY

-R, -r, --recursive copy directories recursively

--reflink[=WHEN] control clone/CoW copies. See below

--remove-destination remove each existing destination file before

attempting to open it (contrast with --force)

--sparse=WHEN control creation of sparse files. See below

--strip-trailing-slashes remove any trailing slashes from each SOURCE

argument

-s, --symbolic-link make symbolic links instead of copying

-S, --suffix=SUFFIX override the usual backup suffix

-t, --target-directory=DIRECTORY copy all SOURCE arguments into DIRECTORY

-T, --no-target-directory treat DEST as a normal file

-u, --update copy only when the SOURCE file is newer

than the destination file or when the

destination file is missing

-v, --verbose explain what is being done

-x, --one-file-system stay on this file system

-Z set SELinux security context of destination

file to default type

--context[=CTX] like -Z, or if CTX is specified then set the

SELinux or SMACK security context to CTX

--help display this help and exit

--version output version information and exit