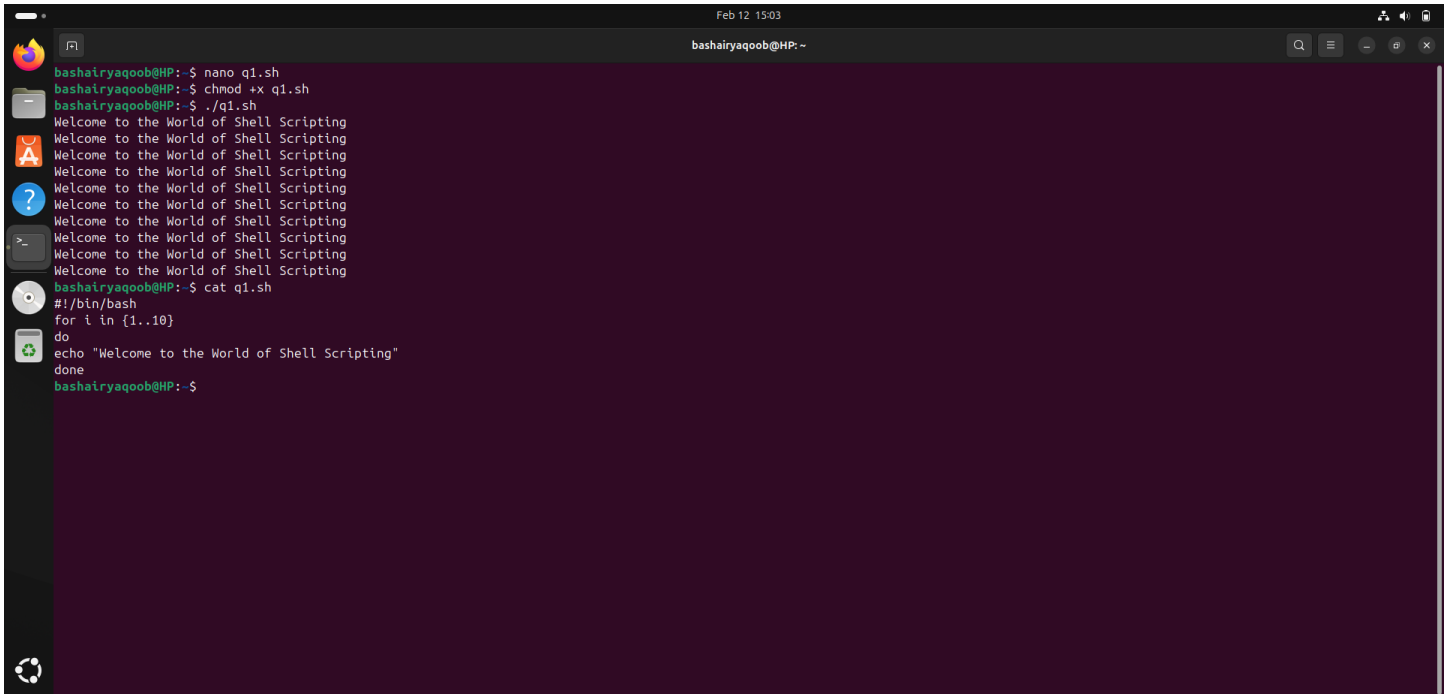


## OS LAB 3:

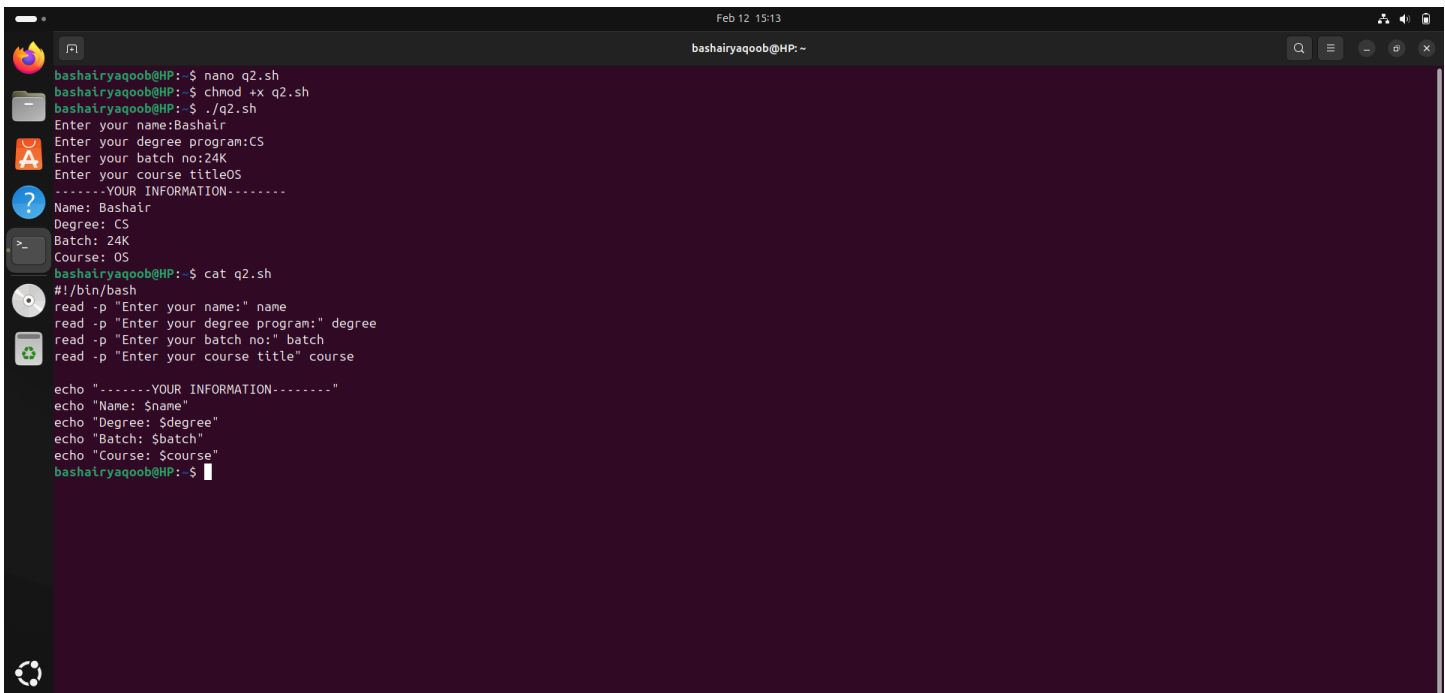
24k-0810

### Task 1:

A terminal window titled 'bashairyaqoob@HP: ~' showing the execution of a shell script. The user runs 'nano q1.sh', 'chmod +x q1.sh', and './q1.sh'. The script outputs 'Welcome to the World of Shell Scripting' ten times. Then, the user runs 'cat q1.sh', displaying the script's content: a loop from 1 to 10 that echoes the same welcome message.

```
bashairyaqoob@HP:~$ nano q1.sh
bashairyaqoob@HP:~$ chmod +x q1.sh
bashairyaqoob@HP:~$ ./q1.sh
Welcome to the World of Shell Scripting
Welcome to the World of Shell Scripting
Welcome to the World of Shell Scripting
Welcome to the World of Shell Scripting
Welcome to the World of Shell Scripting
Welcome to the World of Shell Scripting
Welcome to the World of Shell Scripting
Welcome to the World of Shell Scripting
Welcome to the World of Shell Scripting
Welcome to the World of Shell Scripting
bashairyaqoob@HP:~$ cat q1.sh
#!/bin/bash
for i in {1..10}
do
echo "Welcome to the World of Shell Scripting"
done
bashairyaqoob@HP:~$
```

### Task 2:

A terminal window titled 'bashairyaqoob@HP: ~' showing the execution of a shell script. The user runs 'nano q2.sh', 'chmod +x q2.sh', and './q2.sh'. The script prompts for name, degree program, batch no, and course title, then displays the collected information. Finally, the user runs 'cat q2.sh', showing the script's code which uses 'read' and 'echo' commands.

```
bashairyaqoob@HP:~$ nano q2.sh
bashairyaqoob@HP:~$ chmod +x q2.sh
bashairyaqoob@HP:~$ ./q2.sh
Enter your name:Bashair
Enter your degree program:CS
Enter your batch no:24K
Enter your course titleOS
-----YOUR INFORMATION-----
Name: Bashair
Degree: CS
Batch: 24K
Course: OS
bashairyaqoob@HP:~$ cat q2.sh
#!/bin/bash
read -p "Enter your name:" name
read -p "Enter your degree program:" degree
read -p "Enter your batch no:" batch
read -p "Enter your course title" course

echo "-----YOUR INFORMATION-----"
echo "Name: $name"
echo "Degree: $degree"
echo "Batch: $batch"
echo "Course: $course"
bashairyaqoob@HP:~$
```

## Task 3:

```
Feb 12 15:27
bashairyaqoob@HP: ~
bashairyaqoob@HP:~$ nano q3.sh
bashairyaqoob@HP:~$ chmod +x q3.sh
bashairyaqoob@HP:~$ ./q3.sh
Enter a number:7
The entered number is positive!
bashairyaqoob@HP:~$ cat q3.sh
#!/bin/bash
read -p "Enter a number:" numb

if [[ $numb -gt 0 ]]
then
    echo "The entered number is positive!"
elif [[ $numb -lt 0 ]]
then
    echo "The entered number is negative!"
else
    echo "The number is zero"
fi
bashairyaqoob@HP:~$
```

## Task 4:

```
Feb 12 15:54
bashairyaqoob@HP: ~
bashairyaqoob@HP:~$ nano q4.sh
bashairyaqoob@HP:~$ chmod +x q4.sh
bashairyaqoob@HP:~$ ./q4.sh
Enter a number: 7
Prime Number
bashairyaqoob@HP:~$ ./q4.sh
Enter a number: 1
Not prime
bashairyaqoob@HP:~$ cat q4.sh
#!/bin/bash
read -p "Enter a number: " n

if [[ $n -le 1 ]]
then
    echo "Not prime"
    exit
fi

for ((i=2; i<=n/2; i++))
do
    if((n%i==0))
    then
        echo "Not prime"
    fi
done
echo "Prime Number"
bashairyaqoob@HP:~$
```

## Task 5:

```
Feb 12 16:04
bashairyaqoob@HP: ~
bashairyaqoob@HP:~$ nano q5.sh
bashairyaqoob@HP:~$ chmod +x q5.sh
bashairyaqoob@HP:~$ ./q5.sh
Enter 5 numbers:
3 6 0 9 15
Maximum: 15
Minimum: 0
bashairyaqoob@HP:~$ cat q5.sh
#!/bin/bash

echo "Enter 5 numbers: "
read n1 n2 n3 n4 n5

max=$n1
min=$n1

for num in $n2 $n3 $n4 $n5
do
    if [[ $num -gt $max ]]; then
        max=$num
    fi

    if [[ $num -lt $min ]]; then
        min=$num
    fi
done

echo "Maximum: $max"
echo "Minimum: $min"
bashairyaqoob@HP:~$
```

## Task 6:

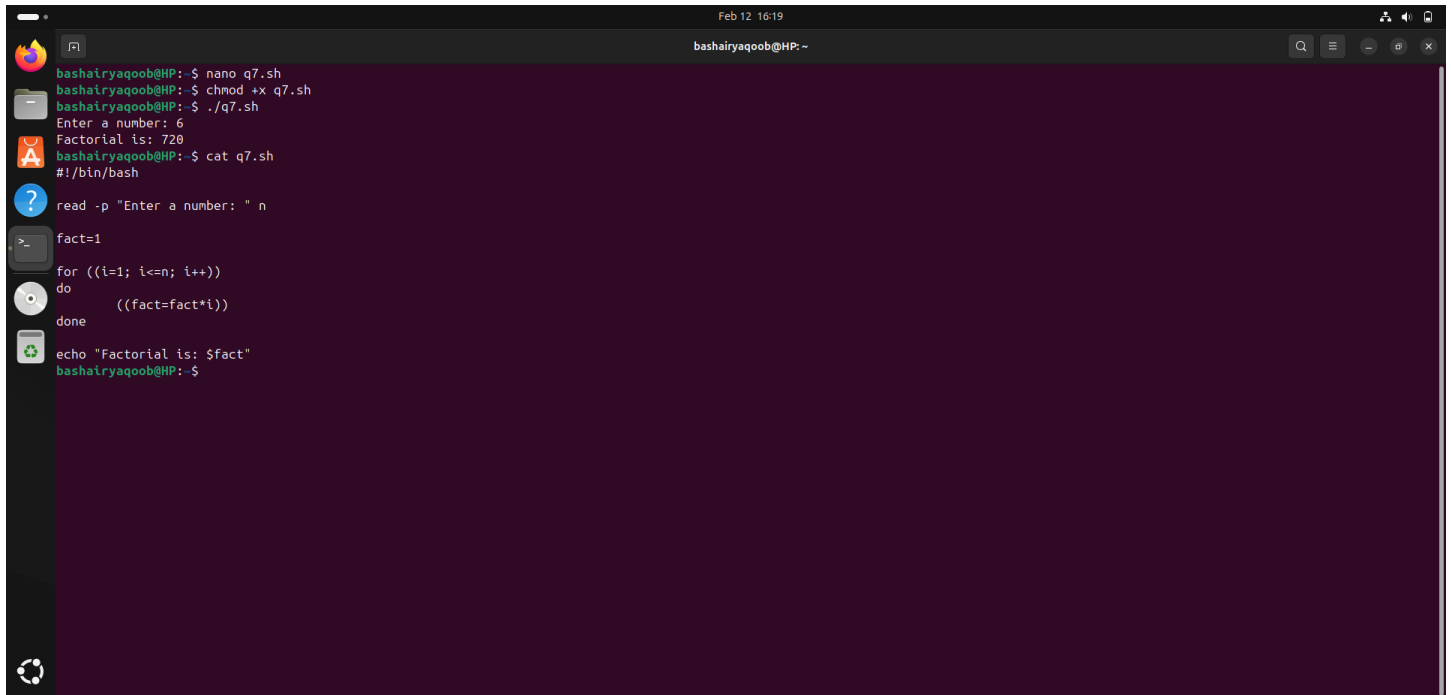
```
Feb 12 16:10
bashairyaqoob@HP: ~
bashairyaqoob@HP:~$ nano q6.sh
bashairyaqoob@HP:~$ chmod +x q6.sh
bashairyaqoob@HP:~$ ./q6.sh
Enter number of terms:5
Fibonacci series:
0 1 1 2 3
bashairyaqoob@HP:~$ cat q6.sh
#!/bin/bash

read -p "Enter number of terms:" n
a=0
b=1

echo "Fibonacci series:"
for ((i=0; i<n; i++))
do
    echo -n "$a "
    ((temp=a+b))
    a=$b
    b=$temp
done
echo

bashairyaqoob@HP:~$
```

## Task 7:



A terminal window titled "bashairyaqoob@HP: ~" with a timestamp of "Feb 12 16:19". The terminal shows the following sequence of commands and output:

```
bashairyaqoob@HP:~$ nano q7.sh
bashairyaqoob@HP:~$ chmod +x q7.sh
bashairyaqoob@HP:~$ ./q7.sh
Enter a number: 6
Factorial is: 720
bashairyaqoob@HP:~$ cat q7.sh
#!/bin/bash

read -p "Enter a number: " n

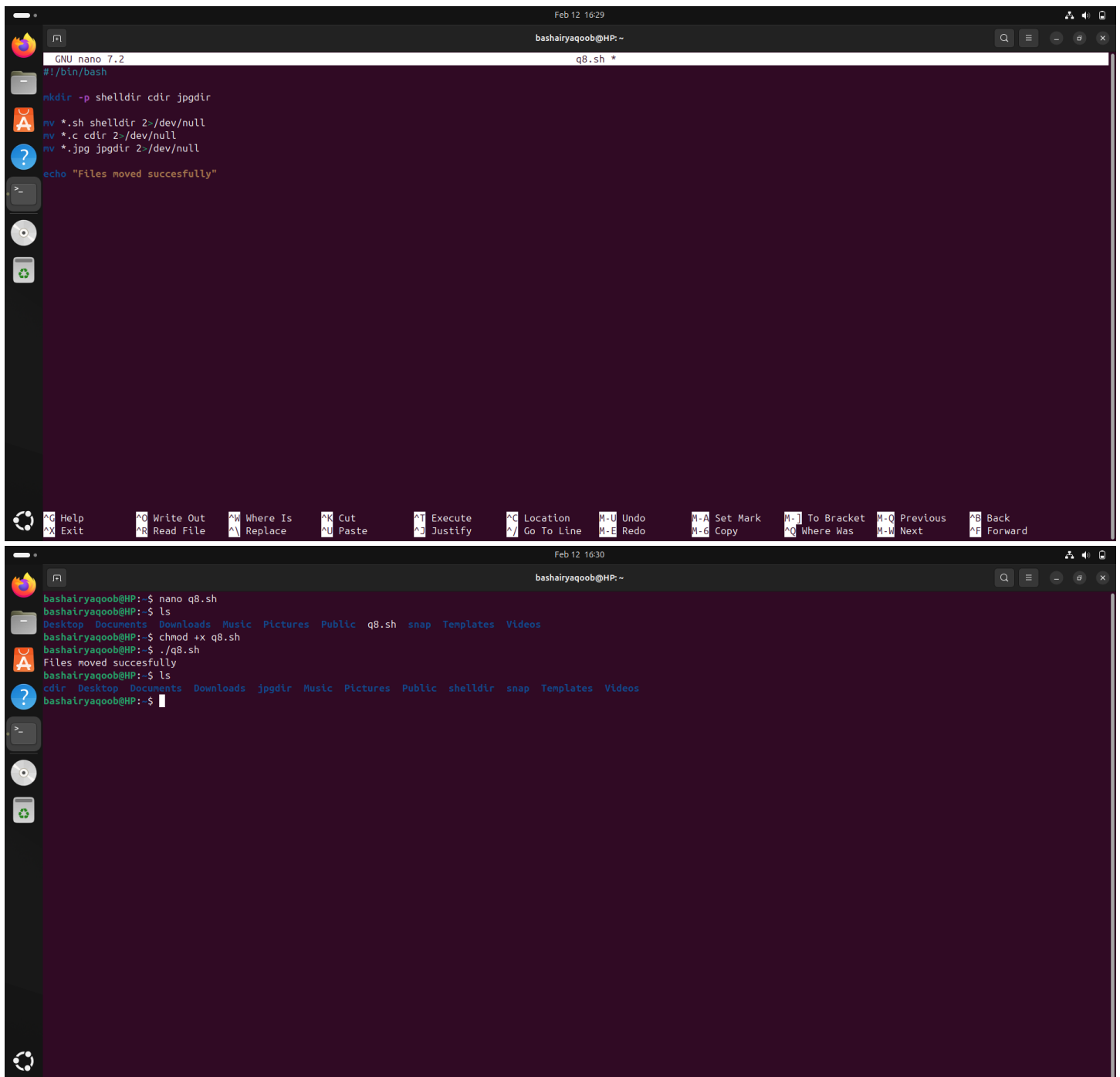
fact=1

for ((i=1; i<=n; i++))
do
    ((fact=fact*i))
done

echo "Factorial is: $fact"
bashairyaqoob@HP:~$
```

The script q7.sh is a bash script that calculates the factorial of a number entered by the user. It uses a for loop to iterate from 1 to the input number, multiplying the current value of fact by the loop index i. The final result is printed using echo.

## Task 8:



The image displays two screenshots of a Linux terminal window, showing the process of creating and running a shell script.

**Top Screenshot (Feb 12 16:29):** The terminal shows the user editing a file named `q8.sh` using the `nano` text editor. The script content is as follows:

```
#!/bin/bash

mkdir -p shelldir cdir jpgdir

mv *.sh shelldir 2>/dev/null
mv *.c cdire 2>/dev/null
mv *.jpg jpgdir 2>/dev/null

echo "Files moved successfully"
```

The bottom status bar of the terminal window lists various keyboard shortcuts for editing and navigation, such as `Ctrl+H` for Help, `Ctrl+W` for Write Out, and `Ctrl+Q` for Exit.

**Bottom Screenshot (Feb 12 16:30):** The terminal shows the user executing the script `q8.sh` in the `bashairyaqoob@HP: ~` directory. The output of the script is displayed:

```
bashairyaqoob@HP:~$ nano q8.sh
bashairyaqoob@HP:~$ ls
Desktop Documents Downloads Music Pictures Public q8.sh snap Templates Videos
bashairyaqoob@HP:~$ chmod +x q8.sh
bashairyaqoob@HP:~$ ./q8.sh
Files moved successfully
bashairyaqoob@HP:~$ ls
cdire Desktop Documents Downloads jpgdir Music Pictures Public shelldir snap Templates Videos
bashairyaqoob@HP:~$
```

The output confirms that the files were moved successfully to their respective directories: `shelldir`, `cdire`, and `jpgdir`.

## Task 9:

```
Feb 12 16:36
bashairyaqoob@HP: ~
bashairyaqoob@HP:~$ nano q9.sh
bashairyaqoob@HP:~$ chmod +x q9.sh
bashairyaqoob@HP:~$ ./q9.sh
Updating system..
[sudo] password for bashairyaqoob:
Hit:1 http://pk.archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:3 http://pk.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:4 http://pk.archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:5 http://pk.archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [1,741 kB]
Get:6 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [1,446 kB]
Get:7 http://pk.archive.ubuntu.com/ubuntu noble-updates/main Translation-en [324 kB]
Get:8 http://pk.archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [175 kB]
Get:9 http://pk.archive.ubuntu.com/ubuntu noble-updates/main amd64 c-n-f Metadata [16.5 kB]
Get:10 http://pk.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Packages [2,588 kB]
Get:11 http://pk.archive.ubuntu.com/ubuntu noble-updates/restricted Translation-en [593 kB]
Get:12 http://pk.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Components [212 B]
Get:13 http://pk.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 c-n-f Metadata [556 B]
Get:14 http://pk.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [1,528 kB]
Get:15 http://pk.archive.ubuntu.com/ubuntu noble-updates/universe Translation-en [313 kB]
Get:16 http://pk.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [386 kB]
Get:17 http://security.ubuntu.com/ubuntu noble-security/main Translation-en [234 kB]
Get:18 http://pk.archive.ubuntu.com/ubuntu noble-updates/universe amd64 c-n-f Metadata [31.9 kB]
Get:19 http://pk.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Packages [32.1 kB]
Get:20 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Packages [2,445 kB]
Get:21 http://pk.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Components [940 B]
Get:22 http://pk.archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 c-n-f Metadata [496 B]
Get:23 http://pk.archive.ubuntu.com/ubuntu noble-backports/main amd64 Components [7,316 B]
Get:24 http://pk.archive.ubuntu.com/ubuntu noble-backports/restricted amd64 Components [216 B]
Get:25 http://pk.archive.ubuntu.com/ubuntu noble-backports/universe amd64 Components [10.5 kB]
Get:26 http://security.ubuntu.com/ubuntu noble-security/main amd64 Components [21.5 kB]
Get:27 http://pk.archive.ubuntu.com/ubuntu noble-backports/multiverse amd64 Components [212 B]
Get:28 http://security.ubuntu.com/ubuntu noble-security/main amd64 c-n-f Metadata [9,892 B]
Get:29 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Packages [2,445 kB]
Get:30 http://security.ubuntu.com/ubuntu noble-security/restricted Translation-en [562 kB]
Get:31 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Components [212 B]
Get:32 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 c-n-f Metadata [536 B]
Get:33 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Packages [929 kB]

Feb 12 16:36
bashairyaqoob@HP: ~
ctags vim-doc vim-scripts
The following NEW packages will be installed:
vim vim-runtime
0 upgraded, 2 newly installed, 0 to remove and 78 not upgraded.
Need to get 9,162 kB of archives.
After this operation, 41.6 MB of additional disk space will be used.
Get:1 http://pk.archive.ubuntu.com/ubuntu noble-updates/main amd64 vim-runtime all 2:9.1.0016-1ubuntu7.9 [7,281 kB]
Get:2 http://pk.archive.ubuntu.com/ubuntu noble-updates/main amd64 vim amd64 2:9.1.0016-1ubuntu7.9 [1,881 kB]
Fetched 9,162 kB in 8s (1,145 kB/s)
Selecting previously unselected package vim-runtime.
(Reading database ... 153785 files and directories currently installed.)
Preparing to unpack .../vim-runtime_2%3a9.1.0016-1ubuntu7.9_all.deb ...
Adding 'diversion of /usr/share/vim/vim91/doc/help.txt to /usr/share/vim/vim91/doc/help
.txt.vim-tiny by vim-runtime'
Adding 'diversion of /usr/share/vim/vim91/doc/tags to /usr/share/vim/vim91/doc/tags.vim
-tiny by vim-runtime'
Unpacking vim-runtime (2:9.1.0016-1ubuntu7.9) ...
Selecting previously unselected package vim.
Preparing to unpack .../vim_2%3a9.1.0016-1ubuntu7.9_amd64.deb ...
Unpacking vim (2:9.1.0016-1ubuntu7.9) ...
Setting up vim-runtime (2:9.1.0016-1ubuntu7.9) ...
Setting up vim (2:9.1.0016-1ubuntu7.9) ...
update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/ex (ex) in auto mode
update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/rview (rview) in auto
mode
update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/rvim (rvim) in auto m
ode
update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/vi (vi) in auto mode
update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/view (view) in auto m
ode
update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/vim (vim) in auto mod
e
update-alternatives: using /usr/bin/vim.basic to provide /usr/bin/vimdiff (vimdiff) in
auto mode
Processing triggers for man-db (2.12.0-4build2) ...
Installation Completed!
bashairyaqoob@HP:~$
```