

# Fatima Jinnah Women University

## Subject: Cloud Computing



Name:

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Registration number:

2023-BSE-064

Submitted To:

Sir Shoaib

# LAB 7

## Task 1

```
tehreem064@tehreem:~$ printenv
SHELL=/bin/bash
PWD=/home/tehreem064
LOGNAME=tehreem064
XDG_SESSION_TYPE=tty
HOME=/home/tehreem064
LANG=en_US.UTF-8
LS_COLORS=rs=0:di=01;34:ln=01;36:mh=00:pi=40;33:so=01;35:do=01;35:bd=40;33:01:cd=4
0;33:01:or=40;31;01:mi=00:su=37;41:sg=30;43:ca=00:tw=30;42:ow=34;42:st=37;44:ex=01
;32:*.tar=01;31:*.tgz=01;31:*.arc=01;31:*.arj=01;31:*.taz=01;31:*.lha=01;31:*.lz4=
01;31:*.lzh=01;31:*.lzma=01;31:*.tlz=01;31:*.txz=01;31:*.tzo=01;31:*.tz=01;31:*.z
ip=01;31:*.z=01;31:*.dz=01;31:*.gz=01;31:*.lrz=01;31:*.lz=01;31:*.lzo=01;31:*.xz=0
1;31:*.zst=01;31:*.tzst=01;31:*.bz2=01;31:*.bz=01;31:*.tbz=01;31:*.tbz2=01;31:*.tz
=01;31:*.deb=01;31:*.rpm=01;31:*.jar=01;31:*.war=01;31:*.ear=01;31:*.sar=01;31:*.r
ar=01;31:*.alz=01;31:*.ace=01;31:*.zoo=01;31:*.cpio=01;31:*.7z=01;31:*.rz=01;31:*.c
ab=01;31:*.wim=01;31:*.swm=01;31:*.dwm=01;31:*.esd=01;31:*.avif=01;35:*.jpg=01;35
:*.jpeg=01;35:*.mjpg=01;35:*.mjpeg=01;35:*.gif=01;35:*.bmp=01;35:*.pbm=01;35:*.pgm
=01;35:*.ppm=01;35:*.tga=01;35:*.xbm=01;35:*.xpm=01;35:*.tif=01;35:*.tiff=01;35:*
.png=01;35:*.svg=01;35:*.svgz=01;35:*.mng=01;35:*.pcx=01;35:*.mov=01;35:*.mpg=01;35
:*.mpeg=01;35:*.m2v=01;35:*.mkv=01;35:*.webm=01;35:*.webp=01;35:*.ogm=01;35:*.mp4=
01;35:*.m4v=01;35:*.mp4v=01;35:*.vob=01;35:*.qt=01;35:*.nuv=01;35:*.wmv=01;35:*.as
f=01;35:*.rm=01;35:*.rmvb=01;35:*.flc=01;35:*.avi=01;35:*.fli=01;35:*.flv=01;35:*
.g1=01;35:*.dl=01;35:*.xcf=01;35:*.xdw=01;35:*.yuv=01;35:*.cgm=01;35:*.emf=01;35:*
.cmy=01;35:*.cmy=01;35:*.auc=00:36:*.au=00:36:*.flac=00:36:*.m4a=00:36:*.mid=00:36:*
```

```
tehreem064@tehreem:~$ printenv | grep SHELL
printenv | grep HOME
printenv | grep USER
SHELL=/bin/bash
HOME=/home/tehreem064
USER=tehreem064
tehreem064@tehreem:~$
```

## Task 2

```
tehreem064@tehreem:~$ export DB_URL="postgres://db.example.local:5432/mydb"
export DB_USER="labuser"
export DB_PASSWORD="labpass123"
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ echo "$DB_URL"
echo "$DB_USER"
echo "$DB_PASSWORD"
postgres://db.example.local:5432/mydb
labuser
labpass123
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ printenv | grep '^DB_'
DB_PASSWORD=labpass123
DB_USER=labuser
DB_URL=postgres://db.example.local:5432/mydb
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ echo "$DB_URL"
printenv | grep '^DB_'
postgres://db.example.local:5432/mydb
DB_PASSWORD=labpass123
DB_USER=labuser
DB_URL=postgres://db.example.local:5432/mydb
tehreem064@tehreem:~$
```

## Task 3

```
# enable programmable completion features (you don't need to enable
# this, if it's already enabled in /etc/bash.bashrc and /etc/profile
# sources /etc/bash.bashrc).
if ! shopt -oq posix; then
    if [ -f /usr/share/bash-completion/bash_completion ]; then
        . /usr/share/bash-completion/bash_completion
    elif [ -f /etc/bash_completion ]; then
        . /etc/bash_completion
    fi
fi

# add at the end:
# Lab 7 persistent DB variables
export DB_URL="postgres://db.example.local:5432/mydb"
export DB_USER="labuser"
export DB_PASSWORD="labpass123"
-- INSERT --
```

124,32 Bot

```
tehreem064@tehreem:~$ vim ~/.bashrc
tehreem064@tehreem:~$ source ~/.bashrc
echo "$DB_URL"
echo "$DB_USER"
echo "$DB_PASSWORD"
printenv | grep '^DB_'
postgres://db.example.local:5432/mydb
labuser
labpass123
DB_PASSWORD=labpass123
DB_USER=labuser
DB_URL=postgres://db.example.local:5432/mydb
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ echo "$DB_URL"
printenv | grep '^DB_'
postgres://db.example.local:5432/mydb
DB_PASSWORD=labpass123
DB_USER=labuser
DB_URL=postgres://db.example.local:5432/mydb
tehreem064@tehreem:~$
```

## Task 4

```
tehreem064@tehreem:~$ sudo cat /etc/environment
[sudo] password for tehreem064:
PATH="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr
/local/games:/snap/bin"
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ echo "$PATH"
/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local
/games:/snap/bin
tehreem064@tehreem:~$
```

```
Class="CC-<your_class_name>""

PATH="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr
/local/games:/snap/bin"
~
~
~
~
~
~
~
```

```
tehreem064@tehreem:~$ cat /etc/environment

Class="CC-<your_class_name>"

PATH="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr
/local/games:/snap/bin"
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ echo $Class
echo "$PATH"

/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local
/games:/snap/bin
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ cat > ~/welcome <<'EOF'
#!/bin/bash
echo "Welcome to Cloud Computing $USER"
EOF

chmod +x ~/welcome
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ cd ~
./welcome
Welcome to Cloud Computing tehreem064
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ cd ~
./welcome
Welcome to Cloud Computing tehreem064
tehreem064@tehreem:~$ vim ~/.bashrc
# add at end:
PATH=$PATH:~
fi

# colored GCC warnings and errors
#export GCC_COLORS='error=01;31:warning=01;35:note=01;36:caret=01;32:locus=01:quot
e=01'

# some more ls aliases
alias ll='ls -alF'
alias la='ls -A'
alias l='ls -CF'
```

```
tehreem064@tehreem:~$ source ~/.bashrc
cd ~
welcome
Welcome to Cloud Computing tehreem064
tehreem064@tehreem:~$ █
```

## Task 5

```
tehreem064@tehreem:~$ sudo ufw enable
sudo ufw status verbose
Command may disrupt existing ssh connections. Proceed with operation (y|n)? y
Firewall is active and enabled on system startup
Status: active
Logging: on (low)
Default: deny (incoming), allow (outgoing), deny (routed)
New profiles: skip
tehreem064@tehreem:~$ █
```

```
tehreem064@tehreem:~$ sudo ufw deny 22/tcp
sudo ufw status numbered
Rule added
Rule added (v6)
Status: active

      To              Action      From
      --              -----      -----
[ 1] 22/tcp          DENY IN    Anywhere
[ 2] 22/tcp (v6)    DENY IN    Anywhere (v6)
```

```
tehreem064@tehreem:~$ ssh tehreem064@192.168.40.128
The authenticity of host '192.168.40.128 (192.168.40.128)' can't be established.
ED25519 key fingerprint is SHA256:0edOf/UUC6yLvnIYmM3hBL2KTnIfGlAiv+dmM5Q2jgM.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.40.128' (ED25519) to the list of known hosts.
tehreem064@192.168.40.128's password:
Permission denied, please try again.
tehreem064@192.168.40.128's password:
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.8.0-87-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

System information as of Mon Nov 17 03:22:27 PM UTC 2025

System load: 0.21          Processes:           239
Usage of /:   94.4% of 9.75GB  Users logged in:      1
Memory usage: 13%          IPv4 address for ens33: 192.168.40.128
Swap usage:   0%

=> / is using 94.4% of 9.75GB

Expanded Security Maintenance for Applications is not enabled.

11 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

12 additional security updates can be applied with ESM Apps.
Learn more about enabling ESM Apps service at https://ubuntu.com/esm

Last login: Mon Nov 17 15:15:02 2025 from 192.168.40.1
tehreem064@tehreem:~$ sudo ufw allow 22/tcp
sudo ufw reload
sudo ufw status
[sudo] password for tehreem064:
Rule updated
Rule updated (v6)
Firewall reloaded
```

```
tehreem064@tehreem:~$ sudo ufw allow 22/tcp
sudo ufw reload
sudo ufw status
[sudo] password for tehreem064:
Rule updated
Rule updated (v6)
Firewall reloaded
Status: active

To                         Action      From
--                         ----      ---
22/tcp                      ALLOW      Anywhere
22/tcp (v6)                  ALLOW      Anywhere (v6)
```

```
tehreem064@tehreem:~$ ssh tehreem064@192.168.40.128
tehreem064@192.168.40.128's password:
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.8.0-87-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

System information as of Mon Nov 17 03:22:27 PM UTC 2025

System load: 0.21          Processes:           239
Usage of /:   94.4% of 9.75GB  Users logged in:      1
Memory usage: 13%           IPv4 address for ens33: 192.168.40.128
Swap usage:   0%

=> / is using 94.4% of 9.75GB

Expanded Security Maintenance for Applications is not enabled.

11 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

12 additional security updates can be applied with ESM Apps.
Learn more about enabling ESM Apps service at https://ubuntu.com/esm

Last login: Mon Nov 17 15:22:27 2025 from 192.168.40.128
tehreem064@tehreem:~$ 
```

## Task 6

```
PS C:\Users\tehre> ssh-keygen -t ed25519 -f "$env:USERPROFILE\.ssh\id_lab7" -C "lab_key"
Generating public/private ed25519 key pair.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in C:\Users\tehre\.ssh\id_lab7
Your public key has been saved in C:\Users\tehre\.ssh\id_lab7.pub
The key fingerprint is:
SHA256: [REDACTED] lab_key
The key's randomart image is:
++-[ED25519 256] ++
. +oo.OB+
. oo*.+o.
o.o. ...
. ... *
S o =...*.
+ oo*. B
. =...+*o
* ....E.
o.o.
-----[SHA256]-----
PS C:\Users\tehre> ls -la ~/.ssh
Get-ChildItem : A parameter cannot be found that matches parameter name 'la'.
At line:1 char:4
+ ls -la ~/.ssh
+
+ ~~~
+ CategoryInfo          : InvalidArgument: (:) [Get-ChildItem], ParameterBindin
gException
+ FullyQualifiedErrorId : NamedParameterNotFound,Microsoft.PowerShell.Commands.
GetChildItemCommand

PS C:\Users\tehre> ls "$env:USERPROFILE\.ssh"

    Directory: C:\Users\tehre\.ssh

              Mode                LastWriteTime        Length Name
-----      -a---        10/3/2025     6:11 AM       116 config
              -a---        10/3/2025     5:39 AM       419 id_ed25519
              -a---        10/3/2025     5:39 AM       109 id_ed25519.pub
              -a---       11/17/2025    8:46 PM       399 id_lab7
              -a---       11/17/2025    8:46 PM       90 id_lab7.pub
              -a---       10/17/2025   9:19 PM      1674 known_hosts
              -a---       10/17/2025   9:19 PM      925 known_hosts.old

PS C:\Users\tehre>
```

```
PS C:\Users\tehre> type $env:USERPROFILE\.ssh\id_lab7.pub
ssh-ed25519 [REDACTED]
key
PS C:\Users\tehre>
```

```
PS C:\Users\tehre> Clear-Content $env:USERPROFILE\.ssh\known_hosts
PS C:\Users\tehre> type $env:USERPROFILE\.ssh\known_hosts
PS C:\Users\tehre>
```

```
PS C:\Users\tehre> ssh tehreem064@192.168.40.128
The authenticity of host '192.168.40.128 (192.168.40.128)' can't be established.
ED25519 key fingerprint is SHA256:0edOf/UUC6yLvnIYmM3hBL2KTnIfG1Aiv+dmMSQ2jgM.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])?
Host key verification failed.
PS C:\Users\tehre> ssh tehreem064@192.168.40.128
The authenticity of host '192.168.40.128 (192.168.40.128)' can't be established.
ED25519 key fingerprint is SHA256:0edOf/UUC6yLvnIYmM3hBL2KTnIfG1Aiv+dmMSQ2jgM.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.40.128' (ED25519) to the list of known hosts.
tehreem064@192.168.40.128's password:
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.8.0-87-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

System information as of Mon Nov 17 03:49:57 PM UTC 2025

System load:  0.01           Processes:          252
Usage of /:   94.4% of 9.75GB  Users logged in:    1
Memory usage: 14%            IPv4 address for ens33: 192.168.40.128
Swap usage:   0%
=> / is using 94.4% of 9.75GB

Expanded Security Maintenance for Applications is not enabled.

11 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

12 additional security updates can be applied with ESM Apps.
Learn more about enabling ESM Apps service at https://ubuntu.com/esm

Last login: Mon Nov 17 15:43:04 2025 from 192.168.40.128
```

```
PS C:\Users\tehre> type $env:USERPROFILE\.ssh\known_hosts
192.168.40.128 ssh-ed25519 AAAAC3NzaC1lZDI1NTE5AAAImiU1IbIPbdtpkRGYSOLz67r1/P6FjkpmFiEiXhE9
U1L
192.168.40.128 ssh-rsa AAAAB3NzaC1yc2EAAAQABAAQgQDIU7Gds5dY6xGpXj2gpavat94Er734AuHSQqg2o
COVKQfvktcuDjkZqQ6tmFow8jviPiATXxrBXKyCFFRqs0Q5Jz0cKajT7cnJaDrVp+NvoTCIfHCkgW4+4gPGfcBmIQ8J
ZS85L6cW2fB4pgCRxfIxKa9pQuM2jlylnQxocgQspQJ7JicV5B2jX1JrNVqh+Zm59sb8eF5MMoMR8os12dHnP8Mklvw
KXEYKYKR+aJk6MqGi8ZD1N7FenikXymTkmRay8KH07xR6pEVBZShM1IX+dKJrE5q/QZ8PFggb0WhdyPAEwsKeAb+yYq
elwyr4wXX6+1vqp1nIHuVJS1Soz82Rzbzkv7abKioN11fL7m+QG4ueYj20vp4BqoS5r0Z70F9yG11pZtokhTywXLZjh0J
73dTumAq5ch2bUAuaw4tLJdGVUXGOfD0o1nbApp2cj6NZFZiJC25SWi14TOgPDj6wLGJ6WP3ZWCa4Xruy+a6iU8udqc
VhZ076pMkbeLn8=
192.168.40.128 ecdsa-sha2-nistp256 AAAAE2VjZHNhLXNoYTItbmlzdHAyNTYAAAIBmlzdHAyNTYAAABBISL/
t1u0a4Y4o9QBMTkYkTKepOcws7oU4AoBY+zmpcRtdnDpTMavH155EgoBT3ZPyMxNP3AJbZ3CjgQjRQou8YY=
PS C:\Users\tehre>
```

```
tehreem064@tehreem:~$ mkdir -p ~/.ssh
chmod 700 ~/.ssh
> ~/.ssh/authorized_keys
```

```
tehreem064@tehreem:~$ echo "-----BEGIN RSA PRIVATE KEY-----" >> ~/.ssh/authorized_keys
-----END RSA PRIVATE KEY-----" >> ~/.ssh/authorized_keys
tehreem064@tehreem:~$ chmod 600 ~/.ssh/authorized_keys
tehreem064@tehreem:~$ cat ~/.ssh/authorized_keys
ssh-ed25519 AAAAC3NzaC1lZDI1NTE5AAAIA5Lv6tmK/6hjHirMUPxHxZd9/4MTh3nKZXADhIs7ZXe
tehreem064@tehreem:~$
```

```
tehreem064@192.168.40.128's password:  
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.8.0-87-generic x86_64)  
  
 * Documentation: https://help.ubuntu.com  
 * Management: https://landscape.canonical.com  
 * Support: https://ubuntu.com/pro  
  
System information as of Mon Nov 17 04:46:32 PM UTC 2025  
  
System load: 0.12 Processes: 254  
Usage of /: 94.4% of 9.75GB Users logged in: 1  
Memory usage: 14% IPv4 address for ens33: 192.168.40.128  
Swap usage: 0%  
  
=> / is using 94.4% of 9.75GB  
  
* Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s  
just raised the bar for easy, resilient and secure K8s cluster deployment.  
  
https://ubuntu.com/engage/secure-kubernetes-at-the-edge  
  
Expanded Security Maintenance for Applications is not enabled.  
  
11 updates can be applied immediately.  
To see these additional updates run: apt list --upgradable  
  
12 additional security updates can be applied with ESM Apps.  
Learn more about enabling ESM Apps service at https://ubuntu.com/esm  
  
Last login: Mon Nov 17 16:38:01 2025 from 192.168.40.1
```

```
tehreem064@tehreem:~$ ssh -i ~/.ssh/id_lab7 tehreem064@192.168.40.128  
tehreem064@192.168.40.128's password:  
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.8.0-87-generic x86_64)  
  
 * Documentation: https://help.ubuntu.com  
 * Management: https://landscape.canonical.com  
 * Support: https://ubuntu.com/pro  
  
System information as of Mon Nov 17 04:46:32 PM UTC 2025  
  
System load: 0.12 Processes: 254  
Usage of /: 94.4% of 9.75GB Users logged in: 1  
Memory usage: 14% IPv4 address for ens33: 192.168.40.128  
Swap usage: 0%  
  
=> / is using 94.4% of 9.75GB  
  
* Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s  
just raised the bar for easy, resilient and secure K8s cluster deployment.  
  
https://ubuntu.com/engage/secure-kubernetes-at-the-edge  
  
Expanded Security Maintenance for Applications is not enabled.  
  
11 updates can be applied immediately.  
To see these additional updates run: apt list --upgradable  
  
12 additional security updates can be applied with ESM Apps.  
Learn more about enabling ESM Apps service at https://ubuntu.com/esm  
  
Last login: Mon Nov 17 16:46:33 2025 from 192.168.40.1  
tehreem064@tehreem:~$
```

## **Exam Evaluation Questions**

Q1

```
lehrem06@tchreem:~$ env
SHELL=/bin/bash
DB_PASSWORD=labouser123
PWD=/home/lehrem064
LOGNAME=lehrem064
XDG_SESSION_TYPE=tty
DB_USER=labouser
HOME=/home/lehrem064
LANG=en_US.UTF-8
LS -l
..tar@01:31:..tgt@01:31:..arc@01:31:..arj@01:31:..tarz@01:31:..lha@01:31:..l2z@01:31:..lzh@01:31:..lma@01:31:..lzip@01:31:..txz@01:31:..tzo@01:31:..tzw@01:31:..zip@01:31:..tar@01:31:..tgt@01:31:..arc@01:31:..arj@01:31:..tarz@01:31:..lha@01:31:..l2z@01:31:..lzh@01:31:..lma@01:31:..lzip@01:31:..txz@01:31:..tzo@01:31:..tzw@01:31:..zip@01:31:..tar@01:31:..tgt@01:31:..arc@01:31:..arj@01:31:..tarz@01:31:..lha@01:31:..l2z@01:31:..lzh@01:31:..lma@01:31:..lzip@01:31:..txz@01:31:..tzo@01:31:..tzw@01:31:..zip@01:31:..deb@01:31:..rpm@01:31:..jar@01:31:..war@01:31:..ear@01:31:..sar@01:31:..rar@01:31:..alz@01:31:..ace@01:31:..zoo@01:31:..cpio@01:31:..7z@01:31:..rz@01:31:..cab@01:31:..win@01:31:..swm@01:31:..esd@01:31:..avif@01:35:..qzr@01:31:..lz@01:31:..xz@01:31:..zst@01:31:..tzst@01:31:..bz2@01:31:..bz@01:31:..tbz@01:31:..tbz2@01:31:..tz@01:31:..deb@01:31:..tgt@01:35:..xpm@01:35:..xpmc@01:35:..tif@01:35:..tiff@01:35:..png@01:35:..mpng@01:35:..mpeg@01:35:..mpjepg@01:35:..gif@01:35:..bmp@01:35:..pbm@01:35:..pgm@01:35:..ppm@01:35:..ppm@01:35:..m2v@01:35:..mkv@01:35:..webm@01:35:..webp@01:35:..ogg@01:35:..mp4@01:35:..m4v@01:35:..mp4v@01:35:..vob@01:35:..nuv@01:35:..wmv@01:35:..asf@01:35:..rmvbm@01:35:..flc@01:35:..avi@01:35:..flv@01:35:..flv@01:35:..gl@01:35:..dl@01:35:..xcf@01:35:..xvd@01:35:..yuv@01:35:..cgm@01:35:..emf@01:35:..ogv@01:35:..cgx@01:35:..aac@00:36:..xspf@00:36:..xflac@01:35:..ogg@01:35:..mid@00:36:..mka@00:36:..mp3@00:36:..mpo@00:36:..ogg@00:36:..raw@00:36:..wav@00:36:..oga@00:36:..opus@00:36:..spx@00:36:..xspf@00:36:..@#00:90:*=#00:90:*.bak@00:90:*.crdownload@00:90:*.dpkg-dist@00:90:*.dpkg-new@00:90:*.dpkg-old@00:90:*.tmp@00:90:*.ucf-dist@00:90:*.ucf-new@00:90:*.ucf-old@00:90:*.orig@00:90:*.part@00:90:*.rej@00:90:*.rpmmew@00:90:*.rpmporig@00:90:*.rpmsave@00:90:*.swp@00:90:*.tmp@00:90:*.ucf@00:90:*.SSH_CONNECTION@192.168.40.1 55725 192.168.40.128 22
SSH_CONNECTION=192.168.40.1 55725 192.168.40.128 22
LESSCLOSE=/usr/bin/lesspipe %s %
XDG_SESSION_CLASS=user
TERM=xterm
LESSOPEN=| /usr/bin/lesspipe %
USER=tchreem064
SHLVL=1
DB_URL=postgres://db.example.local:5432/mydb
NGD_SESSION_ID@71
NGD_RUNTIME_DIR@/run/user/1000
SSH_CLIENT@192.168.40.1 55725 22
XDG_DATA_DIRS=@/usr/share/gnome:@/usr/local/share:/usr/share:@/var/lib/snapd/desktop
PATH=@/usr/local/sbin:@/usr/local/bin:@/usr/sbin:@/usr/bin:@/usr/games:@/usr/local/games:@/snap/bin
UBUS_SESSION_BUS_ADDRESS=@unix:unitpath=/run/user/1000/bus
SSH_TTY=@/dev/pts/5
Class=@CC_Your.class.name@
/usr/bin/env
tchreem06@tchreem:~$
```

```
tehreem064@tehreem:~$ echo $PATH  
/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/snap/bin  
tehreem064@tehreem:~$ echo $LANG  
en_US.UTF-8  
tehreem064@tehreem:~$ echo $PWD  
/home/tehreem064  
tehreem064@tehreem:~$
```

Q2

```
tehreem064@tehreem:~$ export STUDENT_NAME="Tehreem"  
export STUDENT_ROLL_NUMBER="2023-BSE-064"  
export STUDENT_SEMESTER="5"
```

```
tehreem064@tehreem:~$ echo $STUDENT_NAME  
echo $STUDENT_ROLL_NUMBER  
echo $STUDENT_SEMESTER  
Tehreem  
2023-BSE-064  
5
```

```
tehreem064@tehreem:~$ printenv | grep STUDENT_
STUDENT_NAME=Tehreem
STUDENT_SEMESTER=5
STUDENT_ROLL_NUMBER=2023-BSE-064
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ echo $STUDENT_NAME  
echo $STUDENT_ROLL_NUMBER  
echo $STUDENT_SEMESTER  
  
printenv | grep STUDENT_  
  
tehreem064@tehreem:~$
```

## Q3

```
export STUDENT_NAME="Tehreem"
export STUDENT_ROLL_NUMBER="2023-BSE-064"
export STUDENT_SEMESTER="5"

^G Help      ^O Write Out  ^W Where Is  ^K Cut      ^T Execute  ^C Location
^X Exit      ^R Read File  ^\ Replace   ^U Paste    ^J Justify  ^/ Go To Line
```

```
tehreem064@tehreem:~$ nano ~/.bashrc
tehreem064@tehreem:~$ nano ~/.bashrc
tehreem064@tehreem:~$ . ~/.bashrc
tehreem064@tehreem:~$ echo $STUDENT_NAME
echo $STUDENT_ROLL_NUMBER
echo $STUDENT_SEMESTER
Tehreem
2023-BSE-064
5
tehreem064@tehreem:~$ printenv | grep '^STUDENT_'
STUDENT_NAME=Tehreem
STUDENT_SEMESTER=5
STUDENT_ROLL_NUMBER=2023-BSE-064
tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ echo $STUDENT_NAME
printenv | grep '^STUDENT_'
Tehreem
STUDENT_NAME=Tehreem
STUDENT_SEMESTER=5
STUDENT_ROLL_NUMBER=2023-BSE-064
tehreem064@tehreem:~$
```

## Q4

```
tehreem064@tehreem:~$ sudo ufw enable
Command may disrupt existing ssh connections. Proceed with operation (y|n)? y
Firewall is active and enabled on system startup
tehreem064@tehreem:~$ sudo ufw status
Status: active

To                         Action      From
--                         --          --
22/tcp                      ALLOW       Anywhere
22/tcp (v6)                  ALLOW       Anywhere (v6)

tehreem064@tehreem:~$
```

```
tehreem064@tehreem:~$ sudo nano /etc/ufw/before.rules
tehreem064@tehreem:~$ sudo ufw reload
Firewall reloaded
tehreem064@tehreem:~$ sudo ufw status numbered
Status: active

      To           Action    From
      --           -----   ---
[ 1] 22/tcp       ALLOW IN  Anywhere
[ 2] 22/tcp (v6) ALLOW IN  Anywhere (v6)

tehreem064@tehreem:~$
```

```
PS C:\Users\tehre> ping 192.168.40.128

Pinging 192.168.40.128 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.

[
```

```
tehreem064@tehreem:~$ sudo ufw reload
Firewall reloaded
tehreem064@tehreem:~$ sudo ufw status
Status: active

      To           Action    From
      --           -----   ---
22/tcp        ALLOW     Anywhere
22/tcp (v6)  ALLOW     Anywhere (v6)

tehreem064@tehreem:~$
```

```
PS C:\Users\tehre> ping 172.17.0.1

Pinging 172.17.0.1 with 32 bytes of data:
Reply from 172.17.0.1: bytes=32 time=25ms TTL=249

Ping statistics for 172.17.0.1:
  Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 25ms, Maximum = 25ms, Average = 25ms
PS C:\Users\tehre>
```