



FATIMA JINNAH WOMEN UNIVERSITY

Submitted To:

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Section:

5A

CLOUD COMPUTING

LAB 07

Task 1

```
lab_key
ubuntu027@ubuntu:/tmp$ printenv
SHELL=/bin/bash
PWD=/tmp
LOGNAME=ubuntu027
XDG_SESSION_TYPE=ttty
MOTD_SHOWN=pam
HOME=/home/ubuntu027
LANG=en_US.UTF-8
LS_COLORS=rs=0:di=01;34:ln=01;36:mh=00:pi=
```

Task 2

```
ubuntu027@ubuntu:~$ export DB_URL="https:example.com"
ubuntu027@ubuntu:~$ echo "DB_URL"
DB_URL
ubuntu027@ubuntu:~$ echo "$DB_URL"
https:example.com
ubuntu027@ubuntu:~$ echo "$DB_NAME"

ubuntu027@ubuntu:~$ export DB_NAME="xyz"
ubuntu027@ubuntu:~$ echo "$DB_NAME"
xyz
ubuntu027@ubuntu:~$ export DB_PASSWD="123"
ubuntu027@ubuntu:~$ echo "$DB_PASSWD"
123
ubuntu027@ubuntu:~$
```

```
123
ubuntu027@ubuntu:~$ printenv | grep DB
DB_PASSWD=123
DB_URL=https:example.com
DB_NAME=xyz
DBUS_SESSION_BUS_ADDRESS=unix:path=/run/user/1000/bus
ubuntu027@ubuntu:~$ printenv | grep '^DB'
DB_PASSWD=123
DB_URL=https:example.com
DB_NAME=xyz
DBUS_SESSION_BUS_ADDRESS=unix:path=/run/user/1000/bus
ubuntu027@ubuntu:~$ |
```

```
Last login: Mon Nov 24 15:07:56 2025 from 192.168.72.1
ubuntu027@ubuntu:~$ echo "$DB_URL"

ubuntu027@ubuntu:~$ printenv | grep '^DB'
DBUS_SESSION_BUS_ADDRESS=unix:path=/run/user/1000/bus
ubuntu027@ubuntu:~$
```

Task 3

```
# enable programmable completion features (you don't need to
# this, if it's already enabled in /etc/bash.bashrc and /etc
# 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
export DB_URL= "https://example.com"
export DB_NAME= "XYZ"
export DB_PASSWD="123"
```

```
-bash: source: /home/ubuntu027/: is a directory
ubuntu027@ubuntu:~$ printenv | grep '^DB'
DB_PASSWD=123
DB_URL=
DB_NAME=
DBUS_SESSION_BUS_ADDRESS=unix:path=/run/user/1000/bus
ubuntu027@ubuntu:~$
```

```
Expanded Security Maintenance for Applications is not enabled.

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

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

New release '24.04.3 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

*** System restart required ***
Last login: Mon Nov 24 15:27:15 2025 from 192.168.72.1
ubuntu027@ubuntu:~$ printenv | grep '^DB'
DB_PASSWD=123
DB_URL=https://example.com
DB_NAME=XYZ
DBUS_SESSION_BUS_ADDRESS=unix:path=/run/user/1000/bus
ubuntu027@ubuntu:~$
```

TASK4

```
DBUS_SESSION_BUS_ADDRESS=unix:path=/run/user/1000/bus
ubuntu027@ubuntu:~$ sudo cat /etc/environment
[sudo] password for ubuntu027:
PATH="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/u
sr/local/games:/snap/bin"
ubuntu027@ubuntu:~$ echo "$PATH"
/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/loc
al/games:/snap/bin
ubuntu027@ubuntu:~$ sudo vim /etc/environment
```

ubuntu027@ubuntu: ~

```
PATH="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/snap/bin"
Class="cc-5A"
```

```
~
~
```

Last login: Mon Nov 24 15:34:21 2025 from 192.168.72.1

ubuntu027@ubuntu:~\$ echo "\$Class"

cc-5A

ubuntu027@ubuntu:~\$ echo "\$PATH"

/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/snap/bin

ubuntu027@ubuntu:~\$

al/games:/snap/bin

ubuntu027@ubuntu:~\$ cat > ~/welcome <<'EOF'

> echo "Welcome to Cloud Computing \$USER"

EOF

ubuntu027@ubuntu:~\$ chmod +x ~/welcome

ubuntu027@ubuntu:~\$ cd ~

ubuntu027@ubuntu:~\$./welcome

Welcome to Cloud Computing ubuntu027

ubuntu027@ubuntu:~\$

al/games:/snap/bin

ubuntu027@ubuntu:~\$ vim ~/.bashrc

ubuntu027@ubuntu:~\$ source ~/.bashrc

ubuntu027@ubuntu:~\$ echo "\$PATH"

/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/snap/bin:/home/ubuntu027

ubuntu027@ubuntu:~\$

ubuntu027@ubuntu:~\$ cd /tmp

ubuntu027@ubuntu:/tmp\$ welcome

Welcome to Cloud Computing ubuntu027

ubuntu027@ubuntu:/tmp\$ |

Task 5

```

ubuntu027@ubuntu:/tmp$ sudo ufw enable
[sudo] password for ubuntu027:
Command may disrupt existing ssh connections. Proceed with operation (y|n)? y
Firewall is active and enabled on system startup
ubuntu027@ubuntu:/tmp$ sudo ufw status verbose
Status: active
Logging: on (low)
Default: deny (incoming), allow (outgoing), disabled (routed)
New profiles: skip
ubuntu027@ubuntu:/tmp$ sudo ufw deny 22/tcp
Rule added
Rule added (v6)
ubuntu027@ubuntu:/tmp$ sudo ufw status numbered
Status: active

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

ubuntu027@ubuntu:/tmp$ sudo ufw allow 22/tcp
Rule updated
Rule updated (v6)

```

CA. Command Prompt

```

Microsoft Windows [Version 10.0.19045.6466]
(c) Microsoft Corporation. All rights reserved.

C:\Users\IRRAJ>ssh ubuntu027@192.168.72.142
ssh: connect to host 192.168.72.142 port 22: Connection timed out

C:\Users\IRRAJ>_

```

```

[ 1] 22/tcp             DENY IN    Anywhere
[ 2] 22/tcp (v6)        DENY IN    Anywhere (v6)

ubuntu027@ubuntu:/tmp$ sudo ufw allow 22/tcp
Rule updated
Rule updated (v6)
ubuntu027@ubuntu:/tmp$ sudo ufw status numbered
Status: active

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

ubuntu027@ubuntu:/tmp$ |

```

```

C:\Users\IRRAJ>ssh ubuntu027@192.168.72.142
ubuntu027@192.168.72.142's password:
Welcome to Ubuntu 22.04.5 LTS (GNU/Linux 5.15.0-160-generic x86_64)

* Documentation:  https://help.ubuntu.com

```

Task 6

```
ubuntu027@ubuntu:/tmp$ ssh-keygen -t ed25519 -f ~/.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 /home/ubuntu027/.ssh/id_lab7
Your public key has been saved in /home/ubuntu027/.ssh/id_lab7.pub
The key fingerprint is:
SHA256:meIqad3lxcv5Ui6UqmccoZ90SHdIrw/K95CuoGaSNm0 lab_key
The key's randomart image is:
+--[ED25519 256]--+
|                    |
|.                   |
|..o   o            |
|                    |
```

```
+B+E==. B + o. |
|*. *=+. += . +o. |
+----[SHA256]-----+
ubuntu027@ubuntu:/tmp$ ls -la ~/ .ssh
ls: cannot access '.ssh': No such file or directory
/home/ubuntu027/:
total 224
drwxr-x--- 23 ubuntu027 ubuntu027 4096 Nov 24 15:55 .
drwxr-xr-x  5 root      root      4096 Nov  7 05:07 ..
-rw-rw-r--  1 ubuntu027 ubuntu027  427 Oct 23 09:04 answer.md
-rw-rw-r--  1 ubuntu027 ubuntu027   66 Oct 23 16:06 apt_update_vs_upgrade.md
-rw-----  1 ubuntu027 ubuntu027 5089 Nov 24 15:45 .bash_history
-rw-r--r--  1 ubuntu027 ubuntu027  220 Jan  6 2022 .bash_logout
-rw-r--r--  1 ubuntu027 ubuntu027 3864 Nov 24 15:55 .bashrc
drwx-----  7 ubuntu027 ubuntu027 4096 Oct 24 06:17 .cache
drwx-----  6 ubuntu027 ubuntu027 4096 Oct 24 06:17 .config
drwxr-xr-x  2 ubuntu027 ubuntu027 4096 Oct 24 06:00 Desktop
drwxrwxr-x  2 ubuntu027 ubuntu027 4096 Nov  7 06:50 dir1
-rw-r--r--  1 ubuntu027 ubuntu027   23 Oct 24 06:00 .dmrc
drwxr-xr-x  2 ubuntu027 ubuntu027 4096 Oct 24 06:00 Documents
drwxr-xr-x  2 ubuntu027 ubuntu027 4096 Oct 24 06:00 Downloads
drwx-----  3 ubuntu027 ubuntu027 4096 Oct 24 06:00 .gnupg
-rw-----  1 ubuntu027 ubuntu027    0 Oct 24 06:00 .ICEauthority
```

```
ubuntu027@ubuntu:/tmp$ cat ~/.ssh/id_lab7.pub
ssh-ed25519 AAAAC3NzaC1lZDI1NTE5AAAAIL8sYY0+LCLZS18B2YNewjhmTqT6bLK09qbDzduYuQGV
lab_key
ubuntu027@ubuntu:/tmp$ mkdir -p ~/.ssh
ubuntu027@ubuntu:/tmp$ chmod 700 ~/.ssh
ubuntu027@ubuntu:/tmp$ > ~/.ssh/authorized_keys
ubuntu027@ubuntu:/tmp$ echo "ssh-ed25519 AAAAC3NzaC1lZDI1NTE5AAAAIL8sYY0+LCLZS18
B2YNewjhmTqT6bLK09qbDzduYuQGV lab_key" >> ~/.ssh/authorized_keys
ubuntu027@ubuntu:/tmp$ chmod 600 ~/.ssh/authorized_keys
ubuntu027@ubuntu:/tmp$ cat ~/.ssh/authorized_keys
ssh-ed25519 AAAAC3NzaC1lZDI1NTE5AAAAIL8sYY0+LCLZS18B2YNewjhmTqT6bLK09qbDzduYuQGV
lab_key
ubuntu027@ubuntu:/tmp$ |
```