



**FATIMA JINNAH WOMEN UNIVERSITY**

**Submitted To:**

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**Section:**

**5A**

**CLOUD COMPUTING**

**LAB 07**

## Task 1

```
!ab_key
ubuntu027@ubuntu:/tmp$ printenv
SHELL=/bin/bash
PWD=/tmp
LOGNAME=ubuntu027
XDG_SESSION_TYPE=tty
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 "$PATH"  
/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/snap/bin  
ubuntu027@ubuntu:~$
```

```
~/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:~$
```

```
~/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)
```

#### Windows 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:meIqad3lxvc5Ui6UqmcgoZ90SHdIrw/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
```

```
-rw----- 1 ubuntu027 ubuntu027 6297 Nov 24 14:32 .Xsession-errors.old
ubuntu027@ubuntu:/tmp$ cat ~/.ssh/id_lab7.pub
ssh-ed25519 AAAAC3NzaC1lZDI1NTE5AAIAIL8sYY0+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 AAAAC3NzaC1lZDI1NTE5AAIAIL8sYY0+LCLZS18
B2YNewjhmTqT6bLK09qbDzduYuQGV lab_key" >> ~/.ssh/authorized_keys
ubuntu027@ubuntu:/tmp$ chmod 600 ~/.ssh/authorized_keys
ubuntu027@ubuntu:/tmp$ cat ~/.ssh/authorized_keys
ssh-ed25519 AAAAC3NzaC1lZDI1NTE5AAIAIL8sYY0+LCLZS18B2YNewjhmTqT6bLK09qbDzduYuQGV
lab_key
ubuntu027@ubuntu:/tmp$ |
```