LINUX PROGRAMMING:

ASSIGNMENT-8

1.What is a user-defined function in shell scripting? Explain with an example.

A user-defined function in shell scripting is a block of code created by the user to perform a specific task, e.g., `greet() { echo "Hello, $1"; }; greet Alice`.

2. Write a bash script with a function that multiply two integer numbers. (CO4)

```
#!/bin/bash
multiply() {
  echo $(($1 * $2))
}
multiply 5 3
```

3.Explain how arrays (1D, 2D, and 3D) are declared in bash scripting

- **1D array:** arr=(1 2 3) or arr[0]=1; arr[1]=2
- **2D array (simulated):** arr2d[0,0]=1; arr2d[0,1]=2 (access via ${arr2d[0,1]})
- **3D array (simulated):** arr3d[0,0,0]=1; arr3d[0,0,1]=2 (access via ${arr3d[0,0,1]})

4. Write a shell script to display elements of an array.

```
#!/bin/bash

# Declare an array

arr=(10 20 30 40 50)

# Display all elements

echo "Array elements are: ${arr[@]}"

# Display elements one by one

for element in "${arr[@]}"; do

echo "$element"

done
```

5. What is the purpose of cron in Linux?

The purpose of **cron** in Linux is to schedule and automate tasks to run at specified times or intervals.

6. Write a cron job to run a backup script every day at midnight.

0 0 * * * /path/to/backup.sh

7. How do you schedule a one-time job using at command?

echo "/path/to/script.sh" | at 14:30

8.Write a script to display disk usage using df and du.

#!/bin/bash

Display overall disk usage

echo "Disk usage summary (df):"

df -h

echo ""

Display disk usage of current directory and subdirectories

echo "Disk usage by directory (du):"

du -h --max-depth=1

9.How can you log the output of a script using the tee command?

Command:./script.sh | tee logfile.txt

10.Explain with an example how shell scripting can automate system administration tasks.

Example: A script to back up a directory daily:

#!/bin/bash

Backup /home/user/data to /backup/data

tar -czf /backup/data_$(date +%F).tar.gz /home/user/data

echo "Backup completed on $(date)" >> /var/log/backup.log