

LP - Assignment 8 (Linux Programming)

Submitted By

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

A user-defined function is a block of reusable code declared in the script and invoked by name. Example: myfunc() {
echo "Hello from function"}myfunc

12. Write a bash script with a function that multiply two integer numbers.

Script: #!/bin/bash multiply() { echo \$((\$1 * \$2))}read -p "Enter a: " aread -p "Enter b: " bresult=\$(multiply "\$a" "\$b")echo "Product = \$result"

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

Bash supports indexed arrays (1D). 2D/3D can be simulated using arrays of arrays or using associative arrays with composite keys.
1D: arr=(1 2 3)
Access: \${arr[0]}
2D simulation: row0=(a b c)
row1=(d e f)
access: \${row1[2]}
Associative (requires declare -A M; M["0,1"])=5

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

Script: #!/bin/bash arr=(123 "Abs" -2.3 A 23.56 0)for elem in "\${arr[@]}"; do echo "\$elem" done

15. What is the purpose of cron in Linux?

cron is a time-based job scheduler used to run tasks (jobs) at specified times or intervals (automated recurring tasks).

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

Crontab entry (edit with crontab -e): 0 0 * * * /path/to/backup.sh >> /path/to/backup.log 2>&1

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

Use at with a time specification and provide the command(s) on stdin or via a file. Example: echo "/path/to/script.sh" | at 02:30 2025-10-10
Or: at 02:30 > /path/to/script.sh > <Ctrl-D>

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

Script: #!/bin/bash# Filesystem summary echo "==== df -h ====" df -h echo "\n==== du -sh * ====" du -sh * 2>/dev/null

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

Use tee to write output to both stdout and a file.Example:./myscript.sh | tee -a /var/log/myscript.logInside script:
some_command | tee -a /path/to/logfile

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

Shell scripts can automate backups, user creation, package updates, monitoring, and report generation. Example: daily backup script that compresses /home, rotates logs, and uploads to remote server — all run by cron without manual intervention.