CAPSTONE PROJECT REPORT (LinuxOS and LSP)

1. PROJECT TITLE

Bash Scripting Suite – System Maintenance Project

Objective: **Write a suite of Bash scripts to automate system maintenance tasks such as backup, system updates, and log monitoring.**

2. CODES

menu.sh

```bash
#!/bin/bash
while true
do
 clear
 echo "=== SYSTEM MAINTENANCE MENU ==="
 echo "1. Backup Folder"
 echo "2. System Update & Cleanup"
 echo "3. Scan Logs"
 echo "4. Exit"
 echo "Enter choice:"
 read ch
 case $ch in
  1) bash backup.sh ;;
  2) bash update_clean.sh ;;
  3) bash log_watch.sh ;;
  4) exit ;;
  *) echo "Invalid option!" ;;
 esac
 echo "Press ENTER to continue..."
 read
done
```

backup.sh

```bash
cat > backup.sh << 'EOF'
#!/bin/bash
set -euo pipefail
now() { date '+%Y-%m-%d %H:%M:%S'; }
echo "Enter folder path to backup:"
read folder
if [ -z "${folder:-}" ] || [ ! -d "$folder" ]; then
  echo "[ERROR] $(now) Invalid folder: '$folder'"
  exit 1
fi
mkdir -p backups logs
base="$(basename "$folder")"
stamp="$(date +'%Y-%m-%d-%H-%M-%S')"
archive="backups/${base}-${stamp}.tar.gz"
proj="$(basename "$PWD")"

echo "--------------------------------------"
echo "[START]   $(now)"
echo "[SOURCE]  $folder"
echo "[ARCHIVE] $archive"
echo "--------------------------------------"
tar -czf "$archive" --exclude="$folder/$proj" "$folder"
echo "[DONE]    $(now)"
echo "[SAVED]   $archive"
echo "--------------------------------------"
{
  echo "$(now) [OK] $folder -> $archive"
} >> logs/backup.log
EOF
```

update_clean.sh

```bash
#!/bin/bash
echo "Checking for system update tool..."
if command -v apt >/dev/null 2>&1; then
  echo "APT found. Running system update..."
  sudo apt update
  sudo apt upgrade -y
  sudo apt autoremove -y
else
  echo "APT not found (Windows Git Bash). Skipping update. This is normal on Windows."
fi
```

log_watch.sh

```bash
#!/bin/bash
log_file="update_clean.sh"
echo "Scanning log file for errors..."
if grep -Ei "ERROR|FAILED" "$log_file" >/dev/null 2>&1; then
  echo "Errors found:"
  grep -Ei "ERROR|FAILED" "$log_file"
else
  echo "No errors found!"
fi
```

3. FULL SCREENSHOTS


```
MINGW64:/c/Users/shkus/OneDrive/Desktop/capstone-bash-suite
=== SYSTEM MAINTENANCE MENU ===
1. Backup Folder
2. System Update & Cleanup
3. Scan Logs
4. Exit
Enter choice:
1
Enter folder path to backup:
/c/Users/shkus/OneDrive/Desktop/capstone-bash-suite
----------------------------------------
[START]    2025-11-09 00:49:38
[SOURCE]   /c/Users/shkus/OneDrive/Desktop/capstone-bash-suite
[ARCHIVE] backups/capstone-bash-suite-2025-11-09-00-49-38.tar.gz
----------------------------------------
tar: Removing leading `/' from member names
[DONE]     2025-11-09 00:49:38
[SAVED]    backups/capstone-bash-suite-2025-11-09-00-49-38.tar.gz
----------------------------------------
Press ENTER to continue...
```



```
MINGW64:/c/Users/shkus/OneDrive/Desktop/capstone-bash-suite
=== SYSTEM MAINTENANCE MENU ===
1. Backup Folder
2. System Update & Cleanup
3. Scan Logs
4. Exit
Enter choice:
2
Checking for system update tool...
APT not found (Windows Git Bash). Skipping update. This is normal on Windows.
Press ENTER to continue...
```

```
=== SYSTEM MAINTENANCE MENU ===
1. Backup Folder
2. System Update & Cleanup
3. Scan Logs
4. Exit
Enter choice:
3
Scanning log file for errors...
No errors found!
Press ENTER to continue...
```

```
=== SYSTEM MAINTENANCE MENU ===
1. Backup Folder
2. System Update & Cleanup
3. Scan Logs
4. Exit
Enter choice:
4

shubham@STARK MINGW64 ~/OneDrive/Desktop/capstone-bash-suite (master)
$
```