

**B.Tech. (Computer Science And Engineering)**

**Submitted to**

**LOVELY PROFESSIONAL UNIVERSITY**

**PHAGWARA, PUNJAB**



**From June 4, 2025 to July15, 2025**

**SUBMITTED BY**

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**Registration Number: 12325947**

```
jamiya@koorkonjania: ~
(base) jamiya@koorkonjania:~$ nano auto_recover.sh
(base) jamiya@koorkonjania:~$ chmod +x auto_recover.sh
(base) jamiya@koorkonjania:~$ ./auto_recover.sh
./auto_recover.sh: line 6: koorkon: command not found
mkdir: cannot create directory '/var/log/auto_recover': Permission denied
touch: cannot touch '/var/log/auto_recover.log': Permission denied
tee: /var/log/auto_recover.log: Permission denied
2025-11-10 05:27:51 [] ERROR: Cannot write to /var/log/auto_recover/auto_recover_20251110_052751.log. Check permissions.
(base) jamiya@koorkonjania:~$ nano auto_recover.sh
(base) jamiya@koorkonjania:~$ ./auto_recover.sh
./auto_recover.sh: line 4: koorkon: command not found
mkdir: cannot create directory '/var/log/auto_recover': Permission denied
touch: cannot touch '/var/log/auto_recover.log': Permission denied
tee: /var/log/auto_recover.log: Permission denied
2025-11-10 05:28:38 [] ERROR: Cannot write to /var/log/auto_recover/auto_recover_20251110_052838.log. Check permissions.
(base) jamiya@koorkonjania:~$ nano auto_recover.sh
(base) jamiya@koorkonjania:~$ ./auto_recover.sh
```

22°C Sunny 11:00 20251110

```
jamiya@koorkonjamia:~  
root@koorkonjamia:~# sudo tee /usr/local/bin/auto_recover.sh > /dev/null <<'EOF'  
> #!/usr/bin/env bash  
#  
# auto_recover.sh  
# Monitors CPU/MEM, kills offending processes, restarts critical services, logs actions and sends alerts.  
#  
# Install path suggestion: /usr/local/bin/auto_recover.sh  
# Ensure executable: chmod 750 /usr/local/bin/auto_recover.sh  
#  
set -o pipefail  
IFS=$'\n\t'  
  
### CONFIGURATION (edit as needed) ###  
LOG_DIR="/var/log/auto_recover"  
LOG_FILE="${LOG_DIR}/auto_recover.log"  
LOCKFILE="/var/run/auto_recover.lock"  
CPU_THRESHOLD=80      # percent CPU per-process threshold  
MEM_THRESHOLD=80      # percent MEM per-process threshold  
TOP_COUNT=5          # top N processes to log  
ADMIN_EMAIL="admins@example.com" # change to real admin email  
WEBHOOK_URL=""        # if using webhook (Slack/Discord), set URL e.g. "https://hooks.slack.com/services/..."  
# Services to attempt restart when we kill user-space processes (space-separated)  
SERVICES_TO_RESTART=(nginx apache2)  
  
# Exclude list: user names or process names that must not be killed  
EXCLUDE_USERS=("root" "syslog" "mysql" "postgres")  
EXCLUDE_NAMES=("sshd" "systemd" "kthreadd" "kworker" "rcu_sched" "init" "Docker")  
# Minimum safe PID (avoid killing very low PIDs)  
MIN_SAFE_PID=100  
  
# Mail program preference: "mail" (mailutils/mailx) or "curl" to webhook  
MAIL_CMD="mail" # "mail" or "webhook"  
#####  
  
timestamp() { date +%Y-%m-%d %H:%M:%S %z; }  
host() { hostname -f 2>/dev/null || hostname; }  
  
# Ensure running as root (needed to inspect and kill other users' processes and restart services)  
if [[ $EUID -ne 0 ]]; then  
    echo "${timestamp} [ERROR] Script must be run as root (or with sudo)" >&2  
    main "$@"NFO auto_recover run completed" $(host) at $(timestamp)" | sed -n '1,  
> EOF  
root@koorkonjamia:~# ls -l /usr/local/bin/auto_recover.sh
```

```
jamiya@koorkonjamia:~  
root@koorkonjamia:~# ls -l /usr/local/bin/auto_recover.sh  
-rw-r--r-- 1 root root 9869 Nov 10 05:51 /usr/local/bin/auto_recover.sh  
root@koorkonjamia:~# su ubuntu  
su: user ubuntu does not exist or the user entry does not contain all the required fields  
root@koorkonjamia:~# sudo chmod 750 /usr/local/bin/auto_recover.sh  
root@koorkonjamia:~# sudo chown root:root /usr/local/bin/auto_recover.sh  
root@koorkonjamia:~# sudo apt update  
sudo apt install -y mailutils curl  
Hit:1 https://download.docker.com/linux/ubuntu noble InRelease  
Hit:2 http://security.ubuntu.com/ubuntu noble-security InRelease  
Hit:3 http://archive.ubuntu.com/ubuntu noble InRelease  
Hit:4 http://mirror.math.princeton.edu/pub/ubuntu noble InRelease  
Hit:5 http://archive.ubuntu.com/ubuntu noble-updates InRelease  
Hit:6 http://archive.ubuntu.com/ubuntu noble-backports InRelease  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
117 packages can be upgraded. Run 'apt list --upgradable' to see them.  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
mailutils is already the newest version (1:3.17-1.1build3).  
curl is already the newest version (8.5.0-2ubuntu10.6).  
0 upgraded, 0 newly installed, 0 to remove and 117 not upgraded.  
root@koorkonjamia:~# sudo yum install -y mailx curl  
sudo: yum: command not found  
root@koorkonjamia:~# sudo crontab -e  
crontab: installing new crontab  
root@koorkonjamia:~# sudo crontab -l  
# Edit this file to introduce tasks to be run by cron.  
#  
# Each task to run has to be defined through a single line  
# indicating with different fields when the task will be run  
# and what command to run for the task  
#  
# To define the time you can provide concrete values for  
# minute (m), hour (h), day of month (dom), month (mon),  
# and day of week (dow) or use '*' in these fields (for 'any').  
#  
# Notice that tasks will be started based on the cron's system  
# daemon's notion of time and timezones.  
#  
# Output of the crontab jobs (including errors) is sent through  
# email to the user the crontab file belongs to (unless redirected).  
#
```

```
Select jamiya@koorkonjama: ~
# m h dom mon dow    command
#* * * * * /home/jamiya/task1_live.sh >> /var/log/ufw_cron.log 2>&1\
*/5 * * * * /usr/local/bin/auto_recover.sh >> /var/log/auto_recover/auto_recover.log 2>&1

root@koorkonjama:~# sudo tail -n 30 /var/log/auto_recover/auto_recover.log
tail: cannot open '/var/log/auto_recover/auto_recover.log' for reading: No such file or directory
root@koorkonjama:~# sudo tee /usr/local/bin/auto_recover.sh > /dev/null <<'EOF'
#!/usr/bin/env bash
clear
sudo tee /usr/local/bin/auto_recover.sh > /dev/null <<'EOF'
#!/usr/bin/env bash
ls -l /usr/local/bin/auto_recover.sh
sudo tee /usr/local/bin/auto_recover.sh > /dev/null <<'EOF'
#!/usr/bin/env bash
clear
sudo tee /usr/local/bin/auto_recover.sh > /dev/null <<'EOF'
#!/usr/bin/env bash
ls -l /usr/local/bin/auto_recover.sh
sudo tail -n 30 /var/log/auto_recover/auto_recover.log^C
root@koorkonjama:~# cd ~
root@koorkonjama:~# exit
logout
(base) jamiya@koorkonjama:~$ sudo tail -n 30 /var/log/auto_recover/auto_recover.log
2025-11-10 05:55:03 +0000 [INFO] auto_recover run started
2025-11-10 05:55:03 +0000 [INFO] auto_recover run started
2025-11-10 05:55:03 +0000 [INFO] Snapshot written to /var/log/auto_recover/snapshot_20251110_055503.log
2025-11-10 05:55:03 +0000 [INFO] No offending processes found (threshold CPU>=80% or MEM>=80%)
2025-11-10 05:55:03 +0000 [INFO] No offending processes found (threshold CPU>=80% or MEM>=80%)
2025-11-10 05:55:03 +0000 [INFO] auto_recover run completed
2025-11-10 05:55:03 +0000 [INFO] auto_recover run completed
(base) jamiya@koorkonjama:~$ sudo grep CRON /var/log/syslog | tail -n 10
2025-11-10T04:43:28.361632+00:00 koorkonjama cron[316]: (CRON) INFO (pidfile fd = 3)
2025-11-10T04:43:28.361637+00:00 koorkonjama cron[316]: (CRON) INFO (Running @reboot jobs)
2025-11-10T05:17:01.143910+00:00 koorkonjama CRON[4040]: (root) CMD (cd / && run-parts --report /etc/cron.hourly)
2025-11-10T05:32:48.390793+00:00 koorkonjama cron[181]: (CRON) INFO (pidfile fd = 3)
2025-11-10T05:32:48.390797+00:00 koorkonjama cron[181]: (CRON) INFO (Running @reboot jobs)
2025-11-10T05:55:02.997107+00:00 koorkonjama CRON[2340]: (root) CMD (/usr/local/bin/auto_recover.sh >> /var/log/auto_recover/auto_recover.log 2>&1)
(base) jamiya@koorkonjama:~$ sudo chmod +x /usr/local/bin/auto_recover.sh
(base) jamiya@koorkonjama:~$ ls -l /usr/local/bin/auto_recover.sh
-rwxr-xr-x 1 root root 9609 Nov 10 05:51 /usr/local/bin/auto_recover.sh
(base) jamiya@koorkonjama:~$ sudo mkdir -p /var/log/auto_recover
(base) jamiya@koorkonjama:~$ sudo chown $USER:$USER /var/log/auto_recover
(base) jamiya@koorkonjama:~$ sudo /usr/local/bin/auto_recover.sh
2025-11-10 05:57:28 +0000 [INFO] auto_recover run started
2025-11-10 05:57:28 +0000 [INFO] No offending processes found (threshold CPU>=80% or MEM>=80%)
2025-11-10 05:57:28 +0000 [INFO] auto_recover run completed
(base) jamiya@koorkonjama:~$ ls /var/log/auto_recover/
auto_recover.log snapshot_20251110_055503.log snapshot_20251110_055728.log
(base) jamiya@koorkonjama:~$ cat /var/log/auto_recover/auto_recover_*.log
```

```
Select jamiya@koorkonjama: ~
2025-11-10 05:57:28 +0000 [INFO] auto_recover run started
2025-11-10 05:57:28 +0000 [INFO] No offending processes found (threshold CPU>=80% or MEM>=80%)
2025-11-10 05:57:28 +0000 [INFO] auto_recover run completed
(base) jamiya@koorkonjama:~$ ls /var/log/auto_recover/
auto_recover.log snapshot_20251110_055503.log snapshot_20251110_055728.log
(base) jamiya@koorkonjama:~$ cat /var/log/auto_recover/auto_recover_*.log
cat: '/var/log/auto_recover/auto_recover_*.log': No such file or directory
(base) jamiya@koorkonjama:~$ echo "Test alert from auto_recover.sh" | mail -s "Test Alert" baatarjama@gmail.com
(base) jamiya@koorkonjama:~$ nano auto_recover.sh
(base) jamiya@koorkonjama:~$ yes > /dev/null &
[1] 2776
(base) jamiya@koorkonjama:~$ sudo /usr/local/bin/auto_recover.sh
2025-11-10 06:05:39 +0000 [INFO] auto_recover run started
2025-11-10 06:05:39 +0000 [INFO] No offending processes found (threshold CPU>=80% or MEM>=80%)
2025-11-10 06:05:39 +0000 [INFO] auto_recover run completed
(base) jamiya@koorkonjama:~$ ps aux | grep yes
jamiya    2776  104  0.0  3128  1036 pts/0    R   06:05   0:24 yes
jamiya    2825   0.0  0.0  4092  2016 pts/0    S+  06:05   0:00 grep --color=auto yes
(base) jamiya@koorkonjama:~$ cat /var/log/auto_recover/auto_recover.log
cat: /var/log/auto_recover/auto_recover.log: Permission denied
(base) jamiya@koorkonjama:~$ cat /var/log/auto_recover/auto_recover_*.log
cat: '/var/log/auto_recover/auto_recover_*.log': No such file or directory
(base) jamiya@koorkonjama:~$ sudo systemctl status nginx | head -n 5
● nginx.service - A high performance web server and a reverse proxy server
   Loaded: loaded (/usr/lib/systemd/system/nginx.service; enabled; preset: enabled)
   Active: active (running) since Mon 2025-11-10 05:32:48 UTC; 33min ago
     Docs: man:nginx(8)
   Process: 191 ExecStartPre=/usr/sbin/nginx -t -q -g daemon on; master_process on; (code=exited, status=0/SUCCESS)
(base) jamiya@koorkonjama:~$ cat /var/log/auto_recover.log | tail -n 20
cat: /var/log/auto_recover.log: No such file or directory
(base) jamiya@koorkonjama:~$ sudo /usr/local/bin/auto_recover.sh
2025-11-10 06:12:36 +0000 [INFO] auto_recover run started
2025-11-10 06:12:37 +0000 [INFO] No offending processes found (threshold CPU>=80% or MEM>=80%)
2025-11-10 06:12:37 +0000 [INFO] auto_recover run completed
(base) jamiya@koorkonjama:~$ ls -l /var/log/auto_recover/
total 32
-rw-r--r-- 1 root root 3071 Nov 10 06:12 auto_recover.log
-rw-r--r-- 1 root root 1597 Nov 10 05:55 snapshot_20251110_055503.log
-rw-r--r-- 1 root root 1594 Nov 10 05:57 snapshot_20251110_055728.log
-rw-r--r-- 1 root root 1602 Nov 10 06:00 snapshot_20251110_060001.log
-rw-r--r-- 1 root root 1602 Nov 10 06:05 snapshot_20251110_060504.log
-rw-r--r-- 1 root root 1600 Nov 10 06:05 snapshot_20251110_060539.log
-rw-r--r-- 1 root root 1600 Nov 10 06:10 snapshot_20251110_061005.log
-rw-r--r-- 1 root root 1600 Nov 10 06:12 snapshot_20251110_061236.log
(base) jamiya@koorkonjama:~$ sudo /usr/local/bin/auto_recover.sh
```



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