Q1. use systemctl to View the status of sshd services
By default it enabled when i create VM

```
[tshawky@localhost ~]$ systemctl status sshd
● sshd.service - OpenSSH server daemon
     Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; preset: enabled)
     Active: active (running) since Tue 2025-03-25 22:57:56 EET; 4min 57s ago
       Docs: man:sshd(8)
             man:sshd_config(5)
   Main PID: 965 (sshd)
      Tasks: 1 (limit: 10728)
     Memory: 2.2M
        CPU: 30ms
     CGroup: /system.slice/sshd.service
             └─965 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"
[tshawky@localhost ~]$
```

Q2. use systemctl to view the status of all the system services

```
[tshawky@localhost ~]$ systemctl list-units --all --type=service
  UNIT                          LOAD      ACTIVE   SUB     DESCRIPTION                        >
  accounts-daemon.service       loaded    active   running Accounts Service
  alsa-restore.service          loaded    inactive dead    Save/Restore Sound Card State
  alsa-state.service            loaded    active   running Manage Sound Card State (restore >
  atd.service                   loaded    active   running Deferred execution scheduler
  auditd.service                loaded    active   running Security Auditing Service
● auto-cpufreq.service          not-found inactive dead    auto-cpufreq.service
● autofs.service                not-found inactive dead    autofs.service
  avahi-daemon.service          loaded    active   running Avahi mDNS/DNS-SD Stack
  blk-availability.service      loaded    inactive dead    Availability of block devices
```

Q3.

a- Send mail to the root user and Verify that you have received this mail

b- Use systemctl utility to stop postfix/sendmail service

c- Send mail again to the root user and Verify that you have received this mail

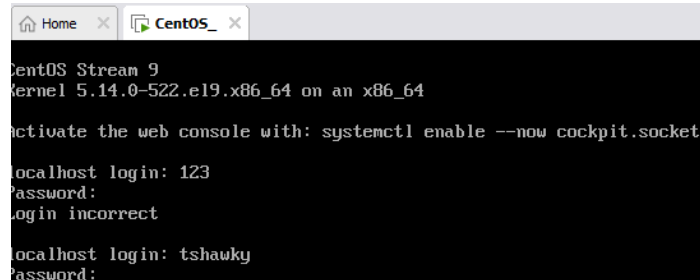d- Use systemctl utility to start postfix/sendmail service

e- Verify that you have received this mail

```
[root@localhost ~]# echo "Test email" | mail -s "Test" root
[root@localhost ~]# mail
s-nail version v14.9.22.  Type `?' for help
/var/spool/mail/root: 1 message 1 new
▸N  1 root                     2025-03-25 23:21   15/501   "Test
& Interrupt
& ^D
Held 1 message in /var/spool/mail/root
You have mail in /var/spool/mail/root
[root@localhost ~]# sudo systemctl stop postfix.service
[root@localhost ~]# echo "Test after stop" | mail -s "Test2" root
[root@localhost ~]# mail
s-nail version v14.9.22.  Type `?' for help
/var/spool/mail/root: 1 message 1 unread
▸U  1 root                     2025-03-25 23:21   16/511   "Test
& ^D
Held 1 message in /var/spool/mail/root
[root@localhost ~]# sudo systemctl start postfix.service
[root@localhost ~]# mail
s-nail version v14.9.22.  Type `?' for help
/var/spool/mail/root: 2 messages 1 new 2 unread
 U  1 root                     2025-03-25 23:21   16/511   "Test
▸N  2 root                     2025-03-25 23:24   15/507   "Test2
& ^D
Held 2 messages in /var/spool/mail/root
```

Q4. switch to the multi-user target manually without rebooting

```
[tshawky@localhost ~]$ sudo systemctl isolate multi-user.target
```

```
Home  ×   CentOS_  ×

CentOS Stream 9
Kernel 5.14.0-522.el9.x86_64 on an x86_64

Activate the web console with: systemctl enable --now cockpit.socket

localhost login: 123
Password:
Login incorrect

localhost login: tshawky
Password:
```

Q5. display default target

```
[tshawky@localhost ~]$ systemctl get-default
graphical.target
```

Q6. change the default target back to multi-user.target and reboot

```
[root@localhost ~]# sudo systemctl set-default multi-user.target
Removed "/etc/systemd/system/default.target".
Created symlink /etc/systemd/system/default.target → /usr/lib/systemd/system/mul
ti-user.target.
[root@localhost ~]# reboot
```

Q7. set the default systemd target back to graphical.target

```
[root@localhost ~]# sudo systemctl set-default graphical.target
Removed "/etc/systemd/system/default.target".
Created symlink /etc/systemd/system/default.target → /usr/lib/systemd/system/gra
phical.target.
[root@localhost ~]#
```

-- -

Q8.Display the status of sshd service, note the PID of the daemon.

```
[root@localhost ~]# sudo systemctl status sshd.service
● sshd.service - OpenSSH server daemon
     Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; preset: ena>
     Active: active (running) since Tue 2025-03-25 23:30:42 EET; 4min 23s ago
       Docs: man:sshd(8)
             man:sshd_config(5)
   Main PID: 960 (sshd)
      Tasks: 1 (limit: 10728)
     Memory: 2.5M
        CPU: 64ms
     CGroup: /system.slice/sshd.service
             └─960 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"
```

Q9. Restart the sshd service and view the status, The PID of the daemon has changed

```
[root@localhost ~]# sudo systemctl restart sshd.service
[root@localhost ~]# sudo systemctl status sshd.service
● sshd.service - OpenSSH server daemon
     Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; preset: enabled)
     Active: active (running) since Tue 2025-03-25 23:36:13 EET; 5s ago
       Docs: man:sshd(8)
             man:sshd_config(5)
   Main PID: 3191 (sshd)
      Tasks: 1 (limit: 10728)
     Memory: 1.5M
        CPU: 20ms
     CGroup: /system.slice/sshd.service
             └─3191 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

Mar 25 23:36:13 localhost.localdomain systemd[1]: Starting OpenSSH server daemon...
Mar 25 23:36:13 localhost.localdomain sshd[3191]: Server listening on 0.0.0.0 port 22.
Mar 25 23:36:13 localhost.localdomain sshd[3191]: Server listening on :: port 22.
Mar 25 23:36:13 localhost.localdomain systemd[1]: Started OpenSSH server daemon.
```

Q10. Reload the sshd service and view the status, The PID of the daemon has not changed and connection has not be interrupted

```
[root@localhost ~]# sudo systemctl status sshd.service
● sshd.service - OpenSSH server daemon
     Loaded: loaded (/usr/lib/systemd/system/sshd.service; enabled; preset: enabled)
     Active: active (running) since Tue 2025-03-25 23:36:13 EET; 47s ago
       Docs: man:sshd(8)
             man:sshd_config(5)
    Process: 3202 ExecReload=/bin/kill -HUP $MAINPID (code=exited, status=0/SUCCESS)
   Main PID: 3191 (sshd)
      Tasks: 1 (limit: 10728)
     Memory: 1.5M
        CPU: 55ms
     CGroup: /system.slice/sshd.service
             └─3191 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

Mar 25 23:36:13 localhost.localdomain systemd[1]: Starting OpenSSH server daemon...
Mar 25 23:36:13 localhost.localdomain sshd[3191]: Server listening on 0.0.0.0 port 22.
```

Q11. Verify that the chronyd service is running

```
[root@localhost ~]# sudo systemctl status chronyd.service
● chronyd.service - NTP client/server
     Loaded: loaded (/usr/lib/systemd/system/chronyd.service; enabled; preset: enabled)
     Active: active (running) since Tue 2025-03-25 23:30:39 EET; 6min ago
       Docs: man:chronyd(8)
             man:chrony.conf(5)
   Main PID: 803 (chronyd)
      Tasks: 1 (limit: 10728)
     Memory: 3.7M
        CPU: 170ms
     CGroup: /system.slice/chronyd.service
             └─803 /usr/sbin/chronyd -F 2

Mar 25 23:30:38 localhost systemd[1]: Starting NTP client/server...
Mar 25 23:30:39 localhost chronyd[803]: chronyd version 4.6.1 starting (+CMDMON +NTP +REFCLOCK +RTC +PRIVDROP +SCFILT
Mar 25 23:30:39 localhost chronyd[803]: Loaded 0 symmetric keys
```

Q12.

a- Determine if the chronyd service is enabled to start at the system boot: enabled

b- Reboot the system, then view the status of the chronyd service

```
● chronyd.service - NTP client/server
     Loaded: loaded (/usr/lib/systemd/system/chronyd.service; enabled; preset: enabled)
     Active: active (running) since Tue 2025-03-25 23:39:22 EET; 1min 13s ago
       Docs: man:chronyd(8)
             man:chrony.conf(5)
    Process: 764 ExecStart=/usr/sbin/chronyd $OPTIONS (code=exited, status=0/SUCCESS)
   Main PID: 793 (chronyd)
      Tasks: 1 (limit: 10728)
     Memory: 4.2M
        CPU: 142ms
     CGroup: /system.slice/chronyd.service
             └─793 /usr/sbin/chronyd -F 2

Mar 25 23:39:22 localhost systemd[1]: Starting NTP client/server...
Mar 25 23:39:22 localhost chronyd[793]: chronyd version 4.6.1 starting (+CMDMON +NTP +REFCLOCK +
```

Q13.

a- Disable the chronyd service so that it doesn't start at system boot, then view the status of
the service

```
[root@localhost ~]# sudo systemctl disable chronyd.service
[root@localhost ~]# sudo systemctl status chronyd.service
● chronyd.service - NTP client/server
     Loaded: loaded (/usr/lib/systemd/system/chronyd.service; disabled; preset: enabled)
     Active: active (running) since Tue 2025-03-25 23:39:22 EET; 2min 31s ago
       Docs: man:chronyd(8)
             man:chrony.conf(5)
   Main PID: 793 (chronyd)
      Tasks: 1 (limit: 10728)
     Memory: 3.6M
        CPU: 146ms
     CGroup: /system.slice/chronyd.service
             └─793 /usr/sbin/chronyd -F 2
```

b- Reboot the system, then view the status of the chronyd service

```
[root@localhost ~]# sudo systemctl status chronyd.service
○ chronyd.service - NTP client/server
     Loaded: loaded (/usr/lib/systemd/system/chronyd.service; disabled; preset: enabled)
     Active: inactive (dead)
       Docs: man:chronyd(8)
             man:chrony.conf(5)
[root@localhost ~]#
```

Q14. disblay all Static Sevices

```
[root@localhost ~]# sudo systemctl list-unit-files | grep static
proc-sys-fs-binfmt_misc.automount          static         -
dev-hugepages.mount                        static         -
dev-mqueue.mount                           static         -
sys-fs-fuse-connections.mount              static         -
sys-kernel-config.mount                    static         -
sys-kernel-debug.mount                     static         -
sys-kernel-tracing.mount                   static         -
systemd-ask-password-console.path          static         -
systemd-ask-password-plymouth.path         static         -
systemd-ask-password-wall.path             static         -
alsa-restore.service                       static         -
alsa-state.service                         static         -
bolt.service                               static         -
cockpit-issue.service                      static         -
cockpit-motd.service                       static         -
cockpit-session-socket-user.service        static         -
cockpit-session@.service                   static         -
```

-- --

Q15. What difference Between enable,disable,static,mask Service

Enable: Service starts automatically at boot.

Disable: Service does not start automatically.

Static: Service cannot be enabled or disabled, depends on another service.

Mask: Completely prevents service from running.

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Q16. Display all logs from the current boot

```
[root@localhost ~]# journalctl -b
Mar 25 23:43:53 localhost kernel: Linux version 5.14.0-522.el9.x86_64 (mockbuild@x86-05.stream.rdu2.redhat.com) (gcc (
Mar 25 23:43:53 localhost kernel: The list of certified hardware and cloud instances for Red Hat Enterprise Linux 9 ca
Mar 25 23:43:53 localhost kernel: Command line: BOOT_IMAGE=(hd0,msdos1)/vmlinuz-5.14.0-522.el9.x86_64 root=/dev/mapper
Mar 25 23:43:53 localhost kernel: Disabled fast string operations
Mar 25 23:43:53 localhost kernel: BIOS-provided physical RAM map:
Mar 25 23:43:53 localhost kernel: BIOS-e820: [mem 0x0000000000000000-0x0000000000098bff] usable
Mar 25 23:43:53 localhost kernel: BIOS-e820: [mem 0x0000000000098c00-0x000000000009ffff] reserved
Mar 25 23:43:53 localhost kernel: BIOS-e820: [mem 0x00000000000dc000-0x00000000000fffff] reserved
Mar 25 23:43:53 localhost kernel: BIOS-e820: [mem 0x0000000000100000-0x000000007fedffff] usable
Mar 25 23:43:53 localhost kernel: BIOS-e820: [mem 0x000000007fee0000-0x000000007fefefff] ACPI data
Mar 25 23:43:53 localhost kernel: BIOS-e820: [mem 0x000000007feff000-0x000000007fefffff] ACPI NVS
Mar 25 23:43:53 localhost kernel: BIOS-e820: [mem 0x000000007ff00000-0x000000007fffffff] usable
```

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Q17. View logs for the sshd service

```
[root@localhost ~]# journalctl -u sshd.service
Mar 25 23:44:09 localhost.localdomain systemd[1]: Starting OpenSSH server daemon...
Mar 25 23:44:10 localhost.localdomain sshd[952]: Server listening on 0.0.0.0 port 22.
Mar 25 23:44:10 localhost.localdomain sshd[952]: Server listening on :: port 22.
Mar 25 23:44:10 localhost.localdomain systemd[1]: Started OpenSSH server daemon.
[root@localhost ~]#
```

--- --

Q18. Follow (live-tail) new log entries

```
[root@localhost ~]# journalctl -f
Mar 25 23:46:48 localhost.localdomain sudo[3099]: pam_unix(sudo:session): session opened for user root(uid=0) by tshaw
0)
Mar 25 23:46:48 localhost.localdomain sudo[3099]: pam_unix(sudo:session): session closed for user root
Mar 25 23:46:58 localhost.localdomain systemd[1]: fprintd.service: Deactivated successfully.
Mar 25 23:47:05 localhost.localdomain systemd[1]: systemd-hostnamed.service: Deactivated successfully.
Mar 25 23:47:27 localhost.localdomain sudo[3108]:     root : TTY=pts/0 ; PWD=/root ; USER=root ; COMMAND=/bin/systemct
unit-files
Mar 25 23:47:27 localhost.localdomain sudo[3108]: pam_unix(sudo:session): session opened for user root(uid=0) by tshaw
0)
Mar 25 23:47:30 localhost.localdomain sudo[3108]: pam_unix(sudo:session): session closed for user root
Mar 25 23:49:17 localhost.localdomain kernel: sched: RT throttling activated
```

--- --

Q19. Show logs from the last 30 minutes

```
[root@localhost ~]# journalctl --since "30 minutes ago"
Mar 25 23:43:53 localhost kernel: Linux version 5.14.0-522.el9.x86_64 (mockbuild@x86-05.stream.rdu2.redhat.com) (gcc
Mar 25 23:43:53 localhost kernel: The list of certified hardware and cloud instances for Red Hat Enterprise Linux 9 c
Mar 25 23:43:53 localhost kernel: Command line: BOOT_IMAGE=(hd0,msdos1)/vmlinuz-5.14.0-522.el9.x86_64 root=/dev/mappe
Mar 25 23:43:53 localhost kernel: Disabled fast string operations
Mar 25 23:43:53 localhost kernel: BIOS-provided physical RAM map:
Mar 25 23:43:53 localhost kernel: BIOS-e820: [mem 0x0000000000000000-0x0000000000098bff] usable
Mar 25 23:43:53 localhost kernel: BIOS-e820: [mem 0x0000000000098c00-0x000000000009ffff] reserved
Mar 25 23:43:53 localhost kernel: BIOS-e820: [mem 0x00000000000dc000-0x00000000000fffff] reserved
Mar 25 23:43:53 localhost kernel: BIOS-e820: [mem 0x0000000000100000-0x000000007fedffff] usable
Mar 25 23:43:53 localhost kernel: BIOS-e820: [mem 0x000000007fee0000-0x000000007fefefff] ACPI data
```

Q20. List all running services

```
[root@localhost ~]# sudo systemctl list-units --type=service --state=running
  UNIT                      LOAD   ACTIVE SUB     DESCRIPTION
  accounts-daemon.service   loaded active running Accounts Service
  alsa-state.service        loaded active running Manage Sound Card State (restore and store)
  atd.service               loaded active running Deferred execution scheduler
  auditd.service            loaded active running Security Auditing Service
  avahi-daemon.service      loaded active running Avahi mDNS/DNS-SD Stack
  bluetooth.service         loaded active running Bluetooth service
  colord.service            loaded active running Manage, Install and Generate Color Profiles
  crond.service             loaded active running Command Scheduler
  cups.service              loaded active running CUPS Scheduler
  dbus-broker.service       loaded active running D-Bus System Message Bus
  firewalld.service         loaded active running firewalld - dynamic firewall daemon
  fwupd.service             loaded active running Firmware update daemon
  gdm.service               loaded active running GNOME Display Manager
  irqbalance.service        loaded active running irqbalance daemon
  libstoragemgmt.service    loaded active running libstoragemgmt plug-in server daemon
  mcelog.service            loaded active running Machine Check Exception Logging Daemon
```