1. Use systemctl to view the status of all the system services.

```
[Eng.mahmoud@localhost ~]$ systemctl list-units --type=service
UNIT                          LOAD    ACTIVE SUB      DESCRIPTION
accounts-daemon.service       loaded active running Accounts S>
accounts-daemon.service       loaded active running Accounts S>
alsa-state.service            loaded active running Manage Sou>
atd.service                   loaded active running Job spooli>
auditd.service                loaded active running Security A>
avahi-daemon.service          loaded active running Avahi mDNS>
```

2. Change the default run level back to multi-user.target and reboot.

```
[Eng.mahmoud@localhost ~]$ systemctl set-default multi-user.target
Removed /etc/systemd/system/default.target.
Created symlink /etc/systemd/system/default.target → /usr/lib/systemd/sys
tem/multi-user.target.
[Eng.mahmoud@localhost ~]$
```

3. Send mail to the root user.
4. Verify that you have received this mail.

3&4

```
[Eng.mahmoud@localhost ~]$ echo "this is joke" |mailx -s"hello" root
[Eng.mahmoud@localhost ~]$ su -
Password:
Wed Dec  7 14:19:08 EET 2022
[root@localhost ~]# mailx
Heirloom Mail version 12.5 7/5/10.  Type ? for help.
"/var/spool/mail/root": 1 message 1 new
>N  1 mahmoud hassan        Wed Dec  7 14:19  18/646    "hello"
&
```

```
Dec 07 14:27:04 localhost.localdomain systemd[1]: Stopped Postfix Mail Transport Agent.
~
```

5. Use systemctl utility to stop postfix service

```
[Eng.mahmoud@localhost lab1]$ systemctl stop postfix
```

6. Send mail again to the root user.
7. Verify that you have received this mail.

6&7

```
[Eng.mahmoud@localhost lab1]$ echo "hello agian root" |mailx root -s"wla ya rootiii"
[Eng.mahmoud@localhost lab1]$ su -
Password:
su: Authentication failure
[Eng.mahmoud@localhost lab1]$ su -
Password:
Wed Dec  7 14:40:32 EET 2022
[root@localhost ~]# mailx
Heirloom Mail version 12.5 7/5/10.  Type ? for help.
"/var/spool/mail/root": 1 message
>   1 mahmoud hassan        Wed Dec  7 14:19  19/657    "hello"
```

8. Use systemctl utility to start postfix service

```
[Eng.mahmoud@localhost ~]$ systemctl start postfix
[Eng.mahmoud@localhost ~]$
```

9. Verify that you have received this mail.

```
[Eng.mahmoud@localhost ~]$ su -
Password:
Wed Dec  7 14:51:45 EET 2022
[root@localhost ~]# mail
Heirloom Mail version 12.5 7/5/10.  Type ? for help.
"/var/spool/mail/root": 2 messages 1 new
    1 mahmoud hassan          Wed Dec  7 14:19  19/657    "hello"
>N  2 mahmoud hassan          Wed Dec  7 14:45  18/722
```

10. Edit in the GRUB2 configuration file and change the timeout variable equal 20 seconds.

```
GRUB_TIMEOUT=20
GRUB_DISTRIBUTOR="$(sed 's, release .*
ease)"
```

11. Edit in the GRUB2 configuration file and change your default operating system

```
GRUB_DEFAULT=0
```

12. Install a new printer called "tty12" using web utility. Have the printer queue be "/dev/tty12" and specify a "Text Only Printer" for its model type.
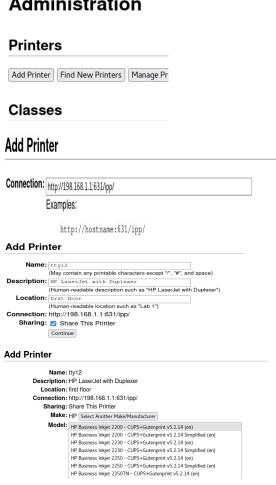
CUPS for Administrators

Adding Printers and Classes

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Administration

Printers

[Add Printer] [Find New Printers] [Manage Pr

Classes

Add Printer

Connection: http://198.168.1.1:631/ipp/

Examples:

http://hostname:631/ipp/

Add Printer

Name: tty12
(May contain any printable characters except "/", "#", and space)
Description: HP LaserJet with Duplexer
(Human-readable description such as "HP LaserJet with Duplexer")
Location: first floor
(Human-readable location such as "Lab 1")
Connection: http://198.168.1.1:631/ipp/
Sharing: ☑ Share This Printer
[Continue]

Add Printer

Name: tty12
Description: HP LaserJet with Duplexer
Location: first floor
Connection: http://198.168.1.1:631/ipp/
Sharing: Share This Printer
Make: HP [Select Another Make/Manufacturer]
Model: HP Business Inkjet 2200 - CUPS+Gutenprint v5.2.14 (en)
HP Business Inkjet 2200 - CUPS+Gutenprint v5.2.14 Simplified (en)
HP Business Inkjet 2230 - CUPS+Gutenprint v5.2.14 (en)
HP Business Inkjet 2230 - CUPS+Gutenprint v5.2.14 Simplified (en)
HP Business Inkjet 2250 - CUPS+Gutenprint v5.2.14 (en)
HP Business Inkjet 2250 - CUPS+Gutenprint v5.2.14 Simplified (en)
HP Business Inkjet 2250TN - CUPS+Gutenprint v5.2.14 (en)

General

Media Size:	A4 ▾
Color Model:	RGB Color ▾
Color Precision:	Normal ▾
Media Type:	Plain ▾
Print Quality:	Standard ▾
Resolution:	Automatic ▾
2-Sided Printing:	Off ▾
Shrink Page If Necessary to Fit Borders:	Shrink (print the whole page) ▾

[Set Default Options]

tty12 (Idle, Accepting Jobs, Not Shared)

[Maintenance ▾] [Administration ▾]

Description: HP LaserJet with Duplexer
Location: first floor
Driver: HP Business Inkjet 2200 - CUPS+Gutenprint v5.2.14 (color, 2-sided printing)
Connection: http://198.168.1.1:631/ipp/
Defaults: job-sheets=none, none media=iso_a4_210x297mm sides=one-sided

Jobs

```
[Eng.mahmoud@localhost ~]$ lpc status
tty12:
        printer is on device 'http' speed -1
        queuing is enabled
        printing is enabled
        no entries
        daemon present
```

13. Print the file /etc/hosts to the printer and view the /dev/tty12 console to ensure that the print job went to the "printer".

```
[Eng.mahmoud@localhost ~]$ lpq
tty12 is ready
no entries
[Eng.mahmoud@localhost ~]$ lp /etc/hosts
request id is tty12-1 (1 file(s))
[Eng.mahmoud@localhost ~]$ lpq
tty12 is ready and printing
Rank    Owner   Job     File(s)                 Total Size
active  Eng.mah 1       hosts                   1024 bytes
[Eng.mahmoud@localhost ~]$ 
```

14. Prevent jobs from leaving the tty12 printer queue to the printer. Do not prevent users from sending jobs to the tty12 printer queue.

```
[Eng.mahmoud@localhost ~]$ cupsdisable tty12
[Eng.mahmoud@localhost ~]$ lpstat -p
printer tty12 disabled since Thu 08 Dec 2022 07:01:21 AM EET -
        Paused
```

15. Print three files (/etc/hosts, /etc/xinetd.conf, and /etc/hosts.allow) to the tty12 printer
16. View the print queue.

15&16

```
[Eng.mahmoud@localhost ~]$ sudo lp /etc/hosts ;lp file1; lp file2
[sudo] password for Eng.mahmoud:
Eng.mahmoud is not in the sudoers file.  This incident will be reported.
request id is tty12-27 (1 file(s))
request id is tty12-28 (1 file(s))
[Eng.mahmoud@localhost ~]$ lp /etc/hosts
request id is tty12-29 (1 file(s))
[Eng.mahmoud@localhost ~]$ lpq
tty12 is not ready
Rank    Owner   Job    File(s)                          Total Size
1st     Eng.mah 1      hosts                            1024 bytes
2nd     Eng.mah 27     file1                            1024 bytes
3rd     Eng.mah 28     file2                            1024 bytes
4th     Eng.mah 29     hosts                            1024 bytes
[Eng.mahmoud@localhost ~]$
```

17. Remove the second print job from the tty12 printer queue, and then allow the print jobs from the queue to be printed

```
[Eng.mahmoud@localhost ~]$ lpq
tty12 is not ready
Rank    Owner   Job    File(s)                          Total Size
1st     Eng.mah 1      hosts                            1024 bytes
2nd     Eng.mah 27     file1                            1024 bytes
3rd     Eng.mah 28     file2                            1024 bytes
4th     Eng.mah 29     hosts                            1024 bytes
[Eng.mahmoud@localhost ~]$ lprm 27
[Eng.mahmoud@localhost ~]$ cupsenable tty12
```

18. Prevent print jobs from going to the tty12 printer's print queue.
19. Verify this by trying to print the /etc/hosts file.

```
[Eng.mahmoud@localhost ~]$ reject tty12
[Eng.mahmoud@localhost ~]$ lp /etc/hosts
lp: Destination "tty12" is not accepting jobs.
```

20. Delete the tty12 printer with the lpadmin command.

```
[Eng.mahmoud@localhost ~]$ lpadmin -x tty12
[Eng.mahmoud@localhost ~]$
```