ANSWERS

1. a) The files in system logs located in `/var/log` are as below:
    - `/var/log/messages : General system messages`
    - `/var/log/secure OR /var/log/auth.log : Authentication/Security related`
    - `/var/log/kern.log : Kernel log`
    - `/var/log/boot.log : System boot log`
    - `/var/log/cron OR /var/log/cron.log : Cronjob logs`
    - `/var/log/maillog : Mail server log`
    - `/var/log/syslog : Rsyslog log`

2. b) Use command: `# grep -i 'segfault | segmentation' /var/log/messages`

3. c) Increase the verbosity of the logs by changing the parameters in `/etc/rsyslog.conf`

    ```
    *.debug;mail.none;authpriv.none;cron.none          /var/log/messages
    ```

    Restart the rsyslogd service using:

    ```
    # systemctl restart rsyslog
    ```

4. `# grep -i 'segfault | segmentation' /var/log/messages | tail -30`

5. There are several ways:
    a. Clear cache of the browser that is currently used
    b. Turn on private browsing mode/safe mode to
    c. Use a different browser
    d. Check the proxy server that is being used
    e. Check the settings in the host computer i.e. firewall, DNS settings, IPv4 settings
    f. Checking the router that is connected to the host computer

6. I will politely refuse citing the importance of the task that I am currently handling. I will also offer an alternative such as I will assist once I have some downtime in between the Ubuntu installations of PCs. I will report the incident to my direct supervisor and seek his advise if the other supervisor is adamant with his request.

7. You can install `tmux` in your server.
    a. Install: `# apt install tmux OR dnf install tmux`
    b. Create new session: `# tmux new -s <Session_Name>`
    c. Detached from session: In the tux session execute `Ctrl+B+D`
    d. To list all active session: `# tmux ls`
    e. Re-attach desired session: `# tmux attach -t <Session_Name>`

8. `# command1; command2; command3`

9. `# ls -larht Drake/`

10. `# mv /Oven/Pretzel.txt /Plate`

11. `# mv Wheat.txt "Wheat Flour.txt"`

12. Example File and Location: `/root/app1.tar.gz`
    a. Move file to /opt: `# mv /root/app1.tar.gz /opt`
    b. Go to folder: `# cd /opt`

c. Decompress the tar file: # `tar xzvf app1.tar.gz`
d. Change directory into the decompress folder: `# cd app1`
e. Configure the application with the needed parameters:

```
# ./configure –help | less -> To check for the needed parameters
# ./configure \
  --parameter1=<Value 1> \
  --parameter2=<Value 2>
```

f. After successful configuration, execute make command: `# make`
g. After successful make, execute make install command to install: `# make install`

13. Tools for checking the CPU and memory usage are as shown below:
    a. `# top`
    b. `# iostat`
    c. `# vmstat`
    d. `# mpstat`
    e. `# sar`

14. You can check the current processes running by executing the commands below:
    a. `# ps -aux`
    b. `# ps -aux | less`
    c. `# top`

15. The question is a repetition of question number 5. Please refer to answer no. 5.

16. We can achieve the result by 2 ways:
    a. Install the different version of the application to a different directory outside of the usual directory tree that package management uses. Preferably the installation is done using the tarball (tar.gz) installation files.
    b. We can use containerization of the application needed using containerization tools such as Docker and Kubernetes.

17. Edit the file /etc/hosts using any editor of your liking:
    a. Add the line below the last line in the file
    `192.167.100.111 pcA.localdomain`

18. Steps to create a new partition on `/dev/sdb` and mounting it on `/backup_disk` are as follows:
    a. List all available disk: `# fdisk -l`
    b. Select disk: `# fdisk /dev/sdb`
    c. In the command prompt of `fdisk`, type n for new.
    d. When prompted for partition number, Leave the entry blank when prompted for default value for the partition number and press Enter.
    e. Leave the entry blank when prompted for default value for the starting sector and press Enter.
    f. When prompted afterwards, enter the needed size for the partition. For example: +2GB for a 2 GB partition.
    g. To write the changes to the disk, type w in the fdisk command prompt to write to disk.
    h. To verify if the partition has been written: `# fdisk -l`
    i. To format the partition: `# mkfs -t ext4 /dev/sdXX`
    j. To mount it on `/backup_disk`, create the needed mountpoint if it does not exist: `# mkdir /backup_disk`
    k. Mount it by executing the command: `# mount -t auto /dev/sdb1 /backup_disk`
    l. Verify by executing the command: `df -hT`
    m. To make the mount persistent, edit /etc/fstab file and add the line shown below the last line: `/dev/sdb1 /backup_disk ext4 defaults 0 0`

19. Steps that can be taken are as follows:
    a. Check the CPU information using commands `lscpu` and `cat /proc/cpuinfo`.
       We can expect slower performance from older CPU types.
    b. Check the services started at boot by using commands `service --status-all` and `initctl list`.
       Disable some services that are not required at start time to conserve the compute resources.
    c. Check the CPU and memory load on the machine using the `top` command.
       You can choose to the choice to stop or kill the processes that are not required.
       You can also install preload to enable loading a section of commonly used applications into memory to ensure faster load of several applications.
    d. Check the memory resource usage using commands such as `free` or `vmstat`.
       To enable better performance, it is suggested that the RAM size be upgraded.
       It advised to replace more memory intensive applications to less memory intensive applications to conserver more memory resources.
    e. Check the input-output status of the disks to check if the disks are being overworked by using command `iotop`.
       From the information found you can zero in the application is hogging the disk IO resource and do the needful.

20. To change the settings, the steps are:
    a. In the search bar type run, and press Enter.
    b. When the run window pops up, type `gpedit.msc` and press Enter.
    c. When the Group Policy Editor window appear, go to `User Configuration > Administrative Templates > Control Panel`.
    d. Select `Prohibit access to Control Panel and PC settings` policy by double clicking it.
    e. Select the `Enabled radio-button` option.
    f. Click `Apply`.
    g. Click `OK`.