SLL Question Bank Answers for April 2024

MAKE SURE TO DO THIS!!
First super user by typing 'su' then enter password as sll731

1. Configure Apache Web Server.

yum install httpd
y then enter if package not installed

systemctl start httpd

gedit /var/www/html/index.html
Do some basic html coding:

```
<!DOCTYPE html>
<html>
<head>
<title> Page Title</title>
</head>

<body>

<h1> This is H1 Heading</h1>
<p>This is a paragraph</p>

</body>
</html>
```

Make sure to save the file.

Go to terminal and type
ip a
and enter the ip in firefox address bar you got from the command:
It usually starts with **192.168.100.////**

2. a) Create a text file. Infer the file permissions.

touch file.txt
ls -l file.txt

b) Using the Octal mode change the permission on a particular file as rw-rw-r–

chmod 664 file.txt
ls -l file.txt

c) Using the Symbolic mode change the permission on a particular file as rw-rw-r

chmod u=rw,g=rw,o=r file.txt
ls -l file.txt

3. Configure SSH server.

Run the following commands on Server and Client.
(Server is where you will access the files and Client is from where you will connect to the server to access the files)

Server:

yum install openssh-server
systemctl start sshd
systemctl status sshd
systemctl stop firewalld

You can create a file or folder that the client can access in the server using **touch**

Get ip of the server pc by doing **ip a**
It usually starts with **192.168.100.///**

Client:

ssh sfit@IP
sll731

Now you can run various commands and check the directory with **ls** and **cd**

4. a) Create a user by assigning the primary group explicitly.

groupadd mygroup
useradd username
usermod -g groupname username

To check added user
cat /etc/passwd

b) Demonstrate the account status using the password aging settings and infer on the various account status.

passwd -S username

c) Demonstrate locking and unlocking of the user password

passwd -l username
passwd -u username
OR
passwd -u username -f

5. Configure NFS server-client.

Run the following commands on Server and Client.
(Server is where you will access the files and Client is from where you will connect to the server to access the files)

yum install nfs-utils libnfsidmap
systemctl enable rpcbind nfs-server
systemctl start rpcbind rpc-statd nfs-server nfs-idmapd
systemctl stop firewalld

Server:

Create a directory for demonstration:

mkdir foldername
chmod a+rwx foldername
ls

gedit /etc/exports
write following line in file:
foldername client_ip(rw,sync,no_root_squash)
Save the file

exportfs -rv

Client:

mkdir /mnt/directory_name

mount server_ip:/foldername /mnt/directory_name

Make sure to enter the **foldername** same as you created in the server

df -h

To unmount the directory

umount /mnt/directory_name

6. a) Write a shell script to reverse the word order in a list of strings. For example, if the input is Hello World, output should be World Hello.

gedit 6a.sh

```
#!/bin/bash

read -p "Enter a list of strings separated by space: " input_string

reversed_string=""
for word in $input_string; do
   reversed_string="$word $reversed_string"
done

echo "Reversed word order: $reversed_string"
```

bash 6a.sh

b) Write a shell script to convert the user-given temperature in Celsius to Fahrenheit using a bash calculator

gedit 6b.sh

```
#! /bin/bash

read -p "Enter temperature in Celcius: " celsius

farheneit=$(echo "scale=2; ($celsius *9/5) + 32" | bc)

echo "$celsius in Farheneit is $farheneit."
```

bash 6b.sh

7. Establish Telnet communication on port 43897.

Run the following commands on Server and Client.
(Server is where you will access the files and Client is from where you will connect to the server to access the files)

yum install telnet telnet-server
systemctl start telnet.socket
systemctl status telnet.socket
systemctl stop firewalld
semanage port -a -t telnetd_port_t -p tcp 43897 #Incase you get some error run this first

On server side edit the following file
gedit /usr/lib/systemd/system/telnet.socket

Change the ListenStream value to number **43897**
systemctl daemon-reload
systemctl restart telnet.socket

Find **IP** with **ip a**
It usually starts with **192.168.100.///**

On client side:
telnet IP

telnet IP 43897

8. Perform the following operations using yum package manager and interpret the output of command used: a) List all installed packages

yum list installed

b) Describe the info of a package
yum info package_name

c) Find out which package installed a particular file

yum deplist package_name

9. Demonstrate fdisk and df commands and interpret it's output

FDISK:-

1. View all Disk Partitions in Linux

fdisk -l

2. View Specific Disk Partition in Linux

fdisk -l /dev/sda

3. Check all Available fdisk Commands

fdisk /dev/sda

DF:-

1. Display all the file system

df -a

2. Show the file system type

df -T

3. Show the disc space usage in a readable format

df -h

10. Configure Telnet server-client.

Run the following commands on Server and Client.
(Server is where you will access the files and Client is from where you will connect to the server to access the files)

yum install telnet telnet-server
systemctl start telnet.socket
systemctl status telnet.socket
systemctl stop firewalld
semanage port -a -t telnetd_port_t -p tcp 4000 #Incase you get some error run this first
On server side edit the following file
gedit /usr/lib/systemd/system/telnet.socket

Change the ListenStream value to number **4000**
systemctl daemon-reload
systemctl restart telnet.socket

Find **IP** with **ip a**
It usually starts with **192.168.100.///**

On client side:
telnet IP

telnet IP 4000

11. a) Write a shell script that consists of a function that displays the number of files in the present working directory. Name this function "file_count" and call it in your script.

gedit 11a.sh

```
#!/bin/bash

file_count() {
    local count=$(ls -1 | wc -l)
    echo "Number of files in the current directory: $count"
}

file_count
```

bash 11a.sh

b) Write a shell script to terminate the script if invoked by non-root user using function and appropriate exit codes.

gedit 11b.sh

```
#!/bin/bash

check_root() {
    if [ "$(id -u)" != "0" ]; then
        echo "Error: This script must be run as root."
        exit 1
    fi
}

check_root
echo "Script executed successfully by root user."
```

bash 11b.sh

12. Write a shell script to check the system status.

gedit 12.sh

```
#!/bin/bash

machine()
{
        echo -e "\e[29;44m****** HOSTNAME INFORMATION *****\e[0m"
        hostnamectl
        echo " "
      echo -e "\e[29;44m****** FILE SYSTEM DISK SPACE USAGE *****\e[0m"
        df -h
        echo " "
      echo -e "\e[29;44m****** FREE & USED MEMORY *****\e[0m"
        free
        echo " "
      echo -e "\e[1;32m****** SYSTEM UPTIME $ LOAD *****\e[0m"
        uptime
        echo " "
      echo -e "\e[29;44m****** CURRENTLY LOGGED-IN USERS *****\e[0m"
        who
        echo " "
      echo -e "\e[29;44m****** TOP 5 MEMORY-CONSUMING PROCESSES *****\e[0m"
        ps -eo %mem,%cpu,comm --sort=-%mem | head -n 6
        echo " "
        echo -e "\e[1;32Done.\e[0m"
}

machine
```

bash 12.sh

13. Configure FTP server.

yum install vsftpd
systemctl start vsftpd

systemctl status vsftpd

gedit /etc/vsftpd/vsftpd.conf

Make following changes in file:
• Change
anonymous_enable=YES to anonymous_enable=NO
• uncomment
ascii_upload_enable=YES & ascii_Ddownload_enable=YES
• uncomment
Welcome to blah ftp service
• add at the end of file
use_localtime=YES

systemctl start vsftpd
systemctl enable vsftpd
systemctl stop firewalld

To connect to server from client side:

yum install ftp

Find **IP** with **ip a**
It usually starts with **192.168.100.///**

ftp IP

Enter username & password and do the following:
bin (To enter into binary mode)
hash (To see # progress of transfer)
put file_name (upload file from clients home directory)
get file_name (download file)
mget file_1 file_2 (download multiple files)
bye (close connection)

14. Write a shell script to automate the following a) Adding a user b) Changing the group of the user

gedit 14.sh

```
#!/bin/bash

add_user() {
    read -p "Enter username: " username
    read -p : "Enter fullname: " userfullname
    echo ""
    read -p "Enter group name: " groupname

    groupadd $groupname
    useradd -g $groupname -c "$userfullname" $username



    echo "User $username added successfully to group $groupname."
}


change_group() {
    read -p "Enter username: (that already exists!) " username
    read -p "Enter new group name: " new_groupname
    groupadd $new_groupname

    sudo usermod -g $new_groupname $username
    echo "Group of user $username changed to $new_groupname."
}

echo "Select an option:"
echo "1. Add a user"
echo "2. Change group of a user"
read -p "Enter your choice: " choice

case $choice in
    1) add_user ;;
    2) change_group ;;
    *) echo "Invalid choice. Please select 1 or 2." ;;
esac
```

15. Establish SSH communication on port 41101.

Run the following commands on Server and Client.

(Server is where you will access the files and Client is from where you will connect to the server to access the files)

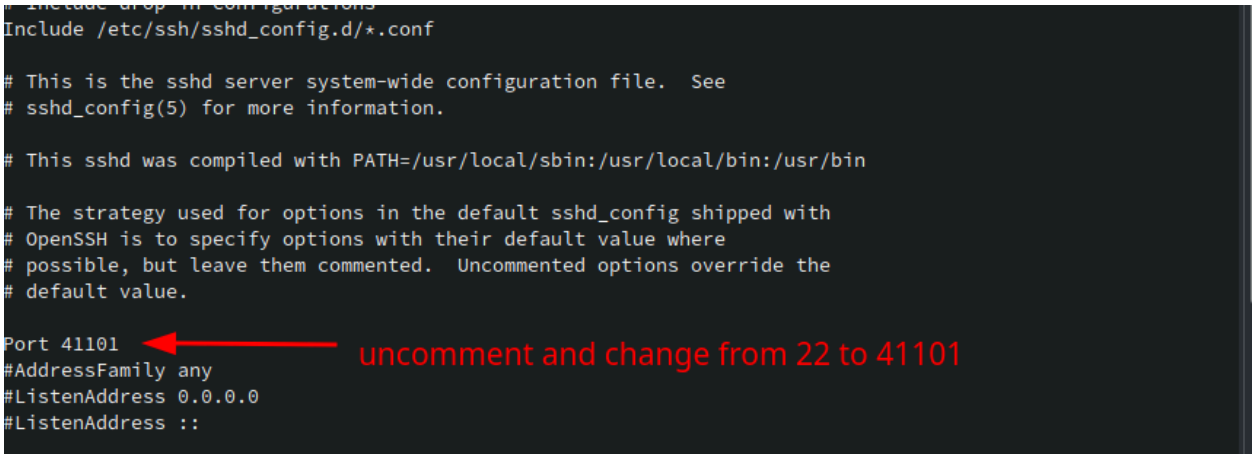
Server:

yum install openssh-server
systemctl start sshd
systemctl status sshd
systemctl stop firewalld

Create a file or folder that the client can access in the server using **touch**
Get ip of the server pc by doing **ip a**
It usually starts with **192.168.100.///**

To configure port to 41101 type
gedit /etc/ssh/sshd_config

And uncomment the Port and type 41101.



systemctl restart sshd

Client:

ssh sfit@IP
sll731
Now you can run various commands and check the directory with **ls** and **cd**

For 41101 port:
ssh sfit@IP -p 41101

16. Write a shell script to automate the following
a. Installing a package using yum
b. Checking package info using yum

gedit 16.sh

```
#!/bin/bash

install_package() {
    read -p "Enter the name of the package to install: " package_name
    sudo yum install $package_name -y
    echo "Package $package_name installed successfully."
}

check_package_info() {
    read -p "Enter the name of the package to check info: " package_name
    sudo yum info $package_name
}

echo "Select an option:"
echo "1. Install a package using yum"
echo "2. Check package info using yum"
read -p "Enter your choice: " choice

case $choice in
    1) install_package ;;
    2) check_package_info ;;
    *) echo "Invalid choice. Please select 1 or 2." ;;
esac
```

bash 16.sh

17. Configure NFS server-client.

Run the following commands on Server and Client.

(Server is where you will access the files and Client is from where you will connect to the server to access the files)

yum install nfs-utils libnfsidmap
systemctl enable rpcbind nfs-server
systemctl start rpcbind rpc-statd nfs-server nfs-idmapd
systemctl stop firewalld

Server:

Create a directory for demonstration:

mkdir foldername
chmod a+rwx foldername
ls

gedit /etc/exports
write following line in file:
/foldername client_ip(rw,sync,no_root_squash)
Save the file

exportfs -rv

Client:

mkdir /mnt/directory_name

mount server_ip:/foldername /mnt/directory_name

Make sure to enter the **foldername** same as you created in the server

df -h

To unmount the directory

umount /mnt/directory_name
18. Write a shell script to check if the user is root.

gedit 18.sh

```
#!/bin/bash

# Check if the user is root
if [ "$(id -u)" = "0" ]; then
    echo "User is root."
else
    echo "User is not root."
fi
```

bash 18.sh