Bansilal Ramnath Agarwal Charitable Trust's

VISHWAKARMA INSTITUTE OF INFORMATION TECHNOLOGY,

PUNE-48 Department of Information Technology

ITUA32202: CLOUD COMPUTING
Assignment-2

Shreyas Shripad Kulkarni
C2 Batch
Roll No. 333030
PRN: 22010443

AIM: To study what is Shell & its different types.

Write a shell script to check user is root user or not

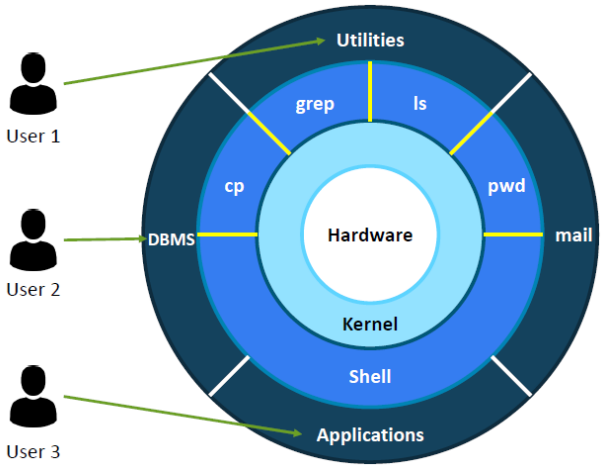
Write a shell script to install any particular software (ex: java or python)

Write a shell script to check disk usage of the system and if disk usage is more than 90% it should send an email to system admin. This script should run every day at 8:00 AM.

write a shell script to take MySQL database server backup. This script should run weekly on every Sunday at 11:00 PM.

THEORY:

An operating system can be described as an interface among the computer hardware and the user of any computer.



Linux kernel architecture diagram

In Linux architecture we have two entities – **shell** and the **kernel**. Both shell and kernel are programs which are running on the operating system.
Kernel: The kernel tries to communicate with the hardware shell is the interface between the kernel and the user.

Shell: A Shell interprets the commands that we have entered using a keyboard and sends it to the OS to perform them. Shell interprets and understand what these commands are trying to say and it translates and sends it to the operating system or the kernel to be precise.

Different Types of Shell
In Unix, there are two major types of shells −
● **Bourne shell** − If you are using a Bourne-type shell, the $ character is the default prompt.

● **C shell** − If you are using a C-type shell, the % character is the default prompt.

The Bourne Shell has the following subcategories −
Bourne shell (sh)
Korn shell (ksh)
Bourne Again shell (bash)
POSIX shell (sh)

The different C-type shells follows −
● **C shell (csh)**

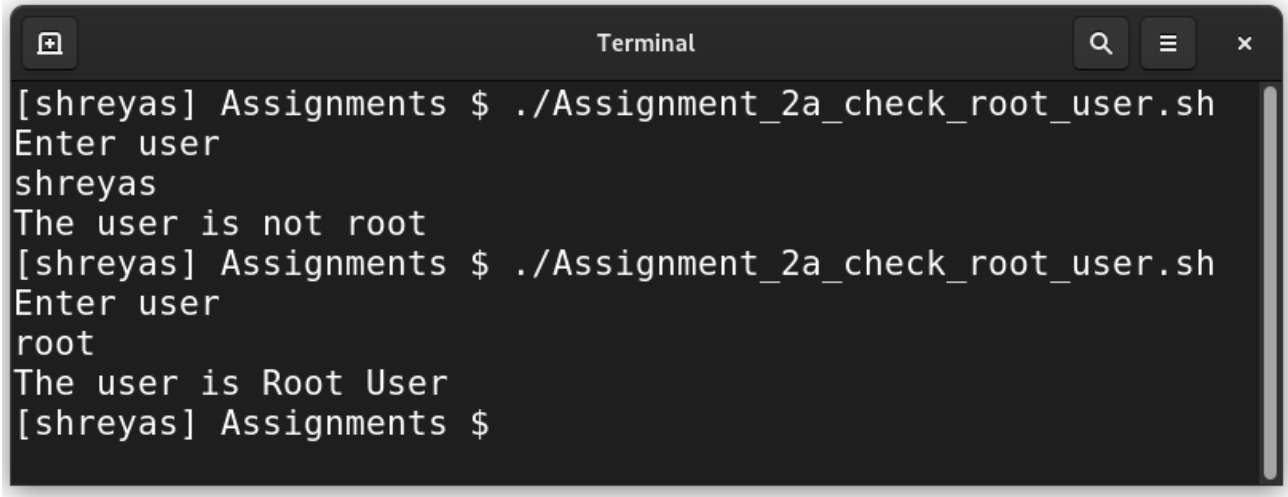
● **TENEX/TOPS C shell (tcsh)**

The original Unix shell was written in the mid-1970s by Stephen R. Bourne while he was at the AT&T Bell Labs in New Jersey.

Shell script to check user is root user or not

Assignment_2a_check_root_user.sh
~/SEMESTER_6/Cloud_and_DevOps/Assignments

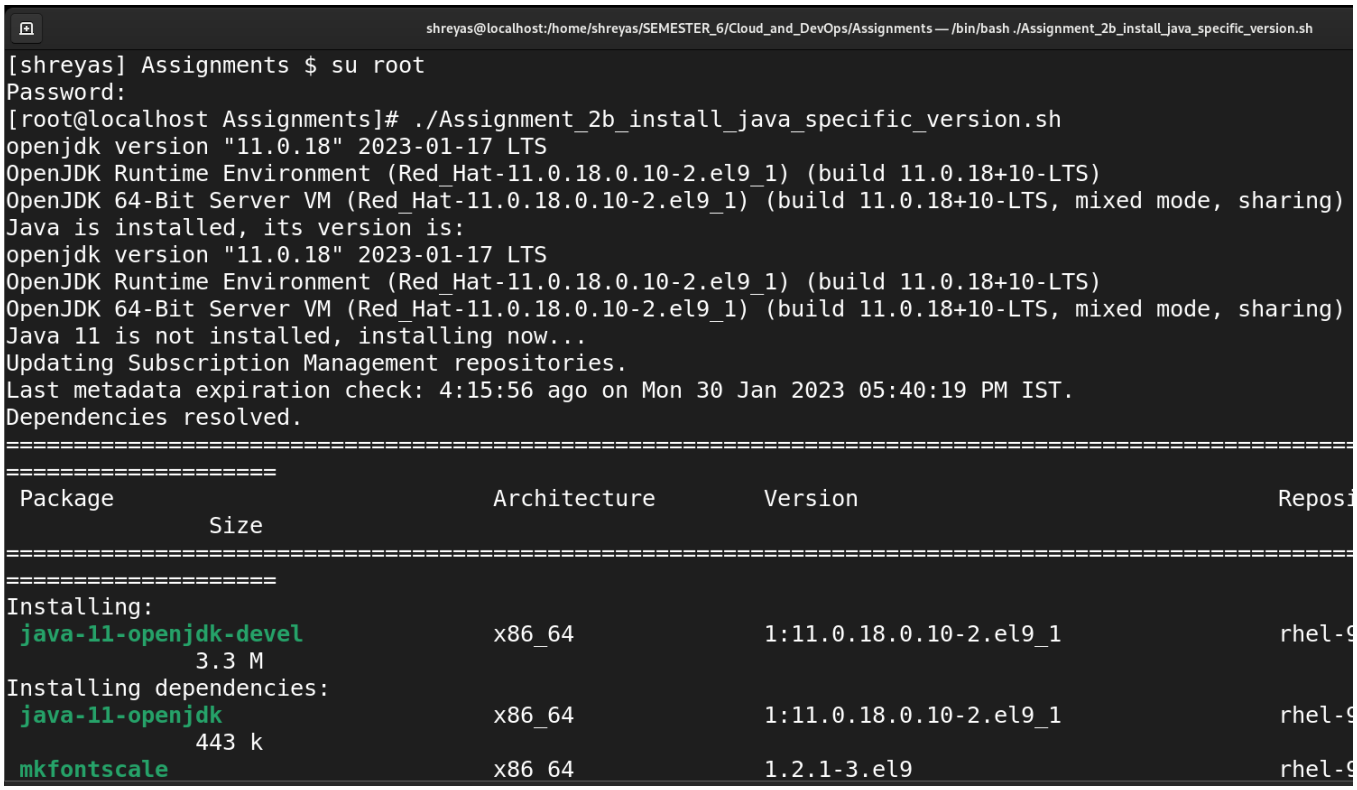
```
#!/bin/sh
#This script was written to check if the user is a root user or not
#Author: Shreyas Shripad Kulkarni
#Date: 29 Jan 2023
echo "Enter user"
read name
if [ `id -u $name` -eq 0 ]
  then
    echo "The user is Root User"
else
  echo "The user is not root"
fi

```

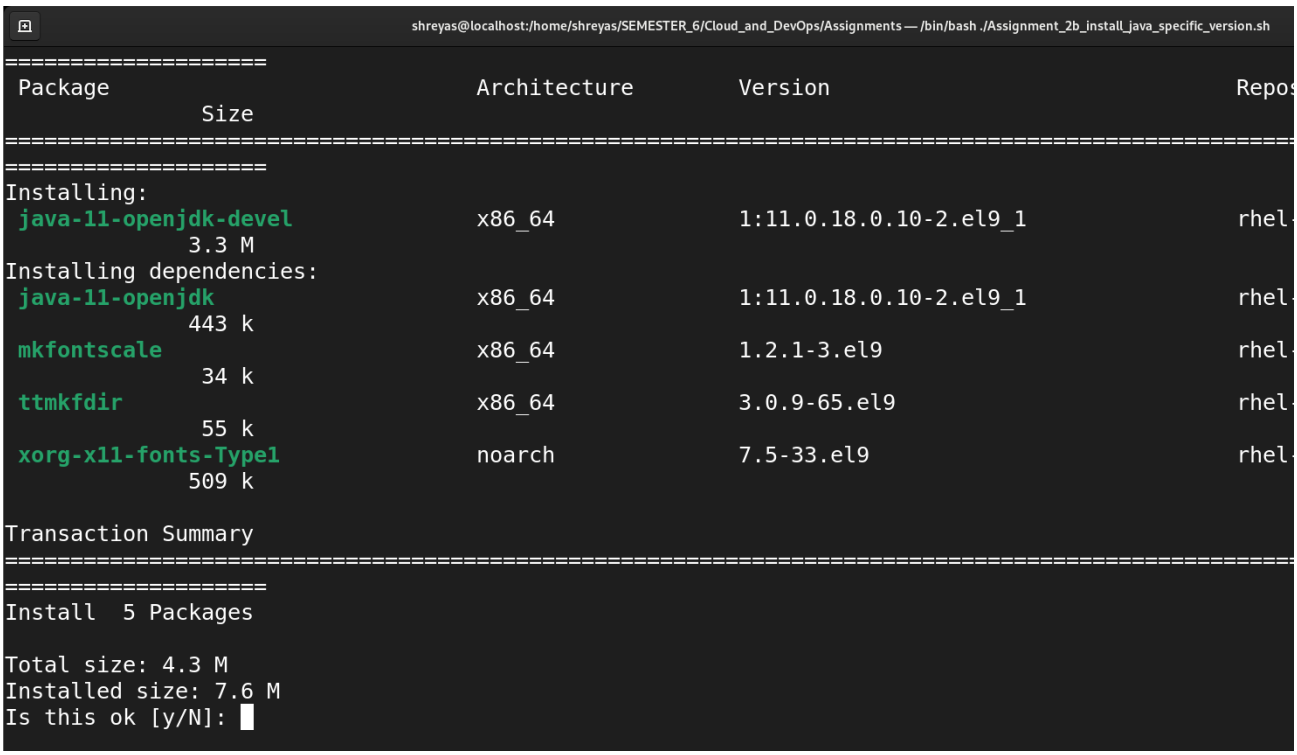


Shell script to install any particular software(Java 11)

Assignment_2b_install_java_specific_version.sh
~/SEMESTER_6/Cloud_and_DevOps/Assignments

```
#!/bin/bash
#This script was written to check if a specific java version was installed
#If the version is not installed then the version will get installed on the system
#Author: Shreyas Shripad Kulkarni
#Date: 29 Jan 2023

#Check the currently installed Java version
java -version

#Capture the exit status
status=$?

#Check the exit status
if [ $status -eq 0 ]; then

  echo "Java is installed, its version is:"
  java -version | grep -i 'java version "11'
  if [ $? -ne 0 ]; then
    echo "Java 11 is not installed, installing now..."
    yum install java-11-openjdk-devel
    fi
else
  echo "Java is not installed, installing Java 14"
  yum install java-11-openjdk-devel
fi

```


shreyas@localhost:/home/shreyas/SEMESTER_6/Cloud_and_DevOps/Assignments — /bin/bash ./Assignment_2b_install_java_specific_version.sh
[shreyas] Assignments $ su root
Password:
[root@localhost Assignments]# ./Assignment_2b_install_java_specific_version.sh
openjdk version "11.0.18" 2023-01-17 LTS
OpenJDK Runtime Environment (Red_Hat-11.0.18.0.10-2.el9_1) (build 11.0.18+10-LTS)
OpenJDK 64-Bit Server VM (Red_Hat-11.0.18.0.10-2.el9_1) (build 11.0.18+10-LTS, mixed mode, sharing)
Java is installed, its version is:
openjdk version "11.0.18" 2023-01-17 LTS
OpenJDK Runtime Environment (Red_Hat-11.0.18.0.10-2.el9_1) (build 11.0.18+10-LTS)
OpenJDK 64-Bit Server VM (Red_Hat-11.0.18.0.10-2.el9_1) (build 11.0.18+10-LTS, mixed mode, sharing)
Java 11 is not installed, installing now...
Updating Subscription Management repositories.
Last metadata expiration check: 4:15:56 ago on Mon 30 Jan 2023 05:40:19 PM IST.
Dependencies resolved.
Package Architecture Version Reposi
Size
Installing:
java-11-openjdk-devel x86_64 1:11.0.18.0.10-2.el9_1 rhel-9
3.3 M
Installing dependencies:
java-11-openjdk x86_64 1:11.0.18.0.10-2.el9_1 rhel-9
443 k
mkfontscale x86_64 1.2.1-3.el9 rhel-9


shreyas@localhost:/home/shreyas/SEMESTER_6/Cloud_and_DevOps/Assignments — /bin/bash ./Assignment_2b_install_java_specific_version.sh
Package Architecture Version Repos
Size
Installing:
java-11-openjdk-devel x86_64 1:11.0.18.0.10-2.el9_1 rhel-
3.3 M
Installing dependencies:
java-11-openjdk x86_64 1:11.0.18.0.10-2.el9_1 rhel-
443 k
mkfontscale x86_64 1.2.1-3.el9 rhel-
34 k
ttmkfdir x86_64 3.0.9-65.el9 rhel-
55 k
xorg-x11-fonts-Type1 noarch 7.5-33.el9 rhel-
509 k
Transaction Summary
Install 5 Packages
Total size: 4.3 M
Installed size: 7.6 M
Is this ok [y/N]:

Shell script to check disk usage of the system and if disk usage is more than 90%

Open

Assignment_2c_check_storage_space.sh
~/SEMESTER_6/Cloud_and_DevOps/Assignments

```
#!/bin/bash

#This script was written to check storage/disk space usage
#We will use the crontab command to run this script every day at 8:00 AM
#crontab command used : 0 8 * * * /path
#Author: Shreyas Shripad Kulkarni
#Date: 29 Jan 2023

use_percent=$(df / | awk '{print $5}' | tail -1 | cut -d'%' -f1)
use_percent=$((use_percent + 0))
echo "Disk Usage $use_percent"
if [ $use_percent -gt 90 ];
  then echo "Disk usage exceeds 90 Percent !!"
else
  echo "Disk usage doesn't exceed 90% "
fi

```

shreyas@localhost:/home/shreyas/SEMESTER_6/Cloud_and_DevOps/Assignments

```
[root@localhost Assignments]# crontab -e
crontab: installing new crontab
[root@localhost Assignments]# crontab -l
0       8       *       *       *       /home/shreyas/SEMESTER_6/Cloud_and_DevOps/Assignments/Assignment_
2c_check_storage_space.sh
[root@localhost Assignments]#
```

Shell script to take MYSQL database server backup. This script should run weekly on every Sunday at 11:00 PM.

Open — Assignment_2d_mysql_db_backup.sh
~/SEMESTER_6/Cloud_and_DevOps/Assignments

```
#!/bin/bash

#This script was written to take backup of all the MYSQL databases in the system
#We will use the crontab command to run this script every day at 11:00 PM
#crontab command used : 0 11  * * 0 /path
#Author: Shreyas Shripad Kulkarni
#Date: 29 Jan 2023

BACKUP_DIR="/home/shreyas/SEMESTER_6/Cloud_and_DevOps/Assignments/backup_db"
DATE=$(date +"%Y-%m-%d_%H-%M-%S")
BACKUP_FILE="mysql-$DATE.gz"

# Use mysqldump to export MySQL databases
mysqldump -u root -p 22010443 --all-databases |gzip > "$BACKUP_DIR/$BACKUP_FILE"

# Check if backup was successful
if [ $? = 0 ]; then
  echo "MySQL Database backup successfully !"
else
  echo "MySQL backup failed"
fi

```

shreyas@localhost:/home/shreyas/SEMESTER_6/Cloud_and_DevOps/Assignments

```
[root@localhost Assignments]# crontab -e
crontab: installing new crontab
[root@localhost Assignments]# crontab -l
0       8       *       *       *       /home/shreyas/SEMESTER_6/Cloud_and_DevOps/Assignments/Assignment_
2c_check_storage_space.sh
0       23      *       *       0       home/shreyas/SEMESTER_6/Cloud_and_DevOps/Assignments/Assignment_2
d_mysql_db_backup.sh
[root@localhost Assignments]#
```

Home | SEMESTER_6 | Cloud_and_DevOps | Assignments | backup_db

Terminal

```
[shreyas] Assignments $ ./Assignment_2d_mysql_db_backup.sh
MySQL Database backup successfully !
[shreyas] Assignments $
```

Conclusion: We have learnt and understood the conditional statements and the CRONTAB commands in Shell.