Part2:

1- Go to tmp directroy

cd tmp

2- Open crontab to write the cronjob I need

crontab –e

```
*/11 * * * * /tmp/myscript.sh
30 1 * * * /tmp/filescript.sh
0 * * * * /tmp/systemPerformance.sh
10 * * * * /tmp/calc_avgs.sh
0 * * * * /var/www/html/gen.sh


~
~
```

0 * * * * /tmp/systemPerformance.sh

0 * * * * /var/www/html/gen.sh

: means run this script every hour

10 * * * * /tmp/calc_avgs.sh: means run this script every 10 minute

3- create systePerformance.sh script to collect data for disk, memory and CPU

tmp# touch systemPerformance.sh

4- Open and write on systemPerformance.sh file

Note: this file used to collect disk used and free, memory used and free and cpu utilization data and store each data in the file assigned to it

tmp# vi systemPerformens.sh

```
#!/bin/bash
#get value of data and save it in timesTamp value to use it in file name
timesTamp=$(date +%Y%m%d%H%M%S)
time=$(date)
echo "$time" > "/root/times.txt"

#collect disk used and free
df -h >> "/root/diskUse_${timesTamp}.txt"


#collect memo used and free
free -m >> "/root/memUse_${timesTamp}.txt"


#we used this way because when do top | grep "Cpu" command because the time period between one reading and the next reading 3-4 second so it can't catch up with adding data to "/root/cpuUse_${timesTamp}.txt
step=5
# Loop to collect CPU utilization data
for ((i = 1; i <= $step; i++)); do
  # Run the top command and append the CPU utilization line to the file.txt
  top -bn1 | grep "Cpu" >> "file.txt"

  # Sleep for the specified delay
  sleep 4
done
cat "file.txt" >> "/root/cpuUse_${timesTamp}.txt"
```

5- Change mode of script file to allowing you to run it as a script by executing

tmp# chmod +x systemPerformance.sh

6- Create calc_avgs.sh script to calculate average for disk, memory and CPU

   tmp# touch calc_avgs.sh

7- Open and write on systemPerformance.sh file

   Note: this file used to calculate average of all data collected by the first cronjob and store them in files

   tmp# vi calc_avgs.sh

```
#!/bin/bash

#calculate avg of used disk
#sum += $5 add all values in column 5 (use% column)
#avg = sum / NR calculate the avg of used disk, NR => number of rows in the file
awk '{sum += $5} END{if (NR > 0) print sum / (NR-1)}' /root/diskUse_*.txt > /root/diskAvg.txt

#calculate avg of used memory
#sum += $3 add all values in column 3(free column)
#avg= sum /NR calc the avg of used memory , NR => number of row in the file
awk '{sum += $3} END {if (NR > 0 ) print sum / (NR-1)}' /root/memUse_*.txt > /root/memAvg.txt

#calculate avg of CPU utilization
#sum += $2 add all values in column 2(cpu column)
#avg= sum /NR calc the avg of used CPU utilization, NR => number of row in the file
awk '{sum += $2} END {if (NR > 0 ) print sum / (NR-1)}' /root/cpuUse_*.txt > /root/cpuAvg.txt
```

8- Change mode of script file to allowing you to run it as a script by executing

   tmp# chmod +x calc_avgs.sh

9- Install the apache server, started and enabled it
   a. # yum install httpd
   b. # sudo systemctl start httpd
   c. # sudo systemctl enable httpd

10- For HTML pages we need to go to html directory

cd /var/www/html

11- create index.html file to add a list with three links:

   ○ CPU Usage

   ○ Memory Usage

   ○ Disk Usage

```
<!DOCTYPE html>
<html>
<head>
    <title>System Performance</title>
</head>
<body>
    <h1> System Performance </h1>
    <ul>
        <li><a href="/cpuUse.html">CPU Usage</a></li>
        <li><a href="/memUse.html">Memory Usage</a></li>
        <li><a href="/diskUse.html">Disk Usage</a></li>
    </ul>
</body>
</html>
```

Each link should direct to a page that displays the average and a list of all the collected item data along with the timestamp

a. html # touch diskUse.html
b. html# touch memUse.html
c. html# touch cpuUse.html

12- Create the gen.sh script to read data from the text files in root directory and add it in html pages to display it (read data from cpuUse.txt file and display it in cpuUse.html file, etc …)

```
#!/bin/bash

# Read the time was the files(disk,mem,cpu) created on,from the times.txt file
timesTamp=$(cat /root/times.txt)

# Read the data from the diskUse.txt file
dataDisk=$(cat /root/diskUse_*.txt)
avgDisk=$(cat /root/diskAvg.txt)


# Read the data from the memUse.txt file
datamem=$(cat /root/memUse_*.txt)
avgmem=$(cat /root/memAvg.txt)


# Read the data from the cpuUse.txt file
datacpu=$(cat /root/cpuUse_*.txt)
avgcpu=$(cat /root/cpuAvg.txt)


# Generate the HTML file
cat << EOF > diskUse.html
<!DOCTYPE html>
<html>
<head>
<title>Disk Usage</title>
</head>
<body>
<h3>$timesTamp</h3>
<h2>Disk Usage</h2>
<pre>$dataDisk</pre>
<h2>Disk Usage Average</h2>
<pre>$avgDisk</pre>
</body>
</html>
EOF



# Generate the memUse HTML file
cat << EOF > memUse.html
<!DOCTYPE html>
<html>
<head>
<title>Memory Usage</title>
</head>
<body>
<h3>$timesTamp</h3>
<h2>Memory Usage</h2>
<pre>$datamem</pre>
<h2>Memory Usage Average</h2>
<pre>$avgmem</pre>
</body>
</html>
EOF
```

```
# Generate the cpuUse  HTML file
cat << EOF > cpuUse.html
<!DOCTYPE html>
<html>
<head>
<title>CPU Usage</title>
</head>
<body>
<h3>$timesTamp</h3>
<h2>CPU Usage</h2>
<pre>$datacpu</pre>
<h2>CPU Usage Average</h2>
<pre>$avgcpu</pre>
</body>
</html>
EOF
```

13- Change mode of script file to allowing you to run it as a script by executing

html# chmod +x gen.sh

14- Finally, we need to rum the script files

a. Go to tmp directory

1. cd tmp
2. Run the systemPerformance.sh script file

   tmp# ./systemPerformance.sh

3. Run the calc_avgs.sh script file

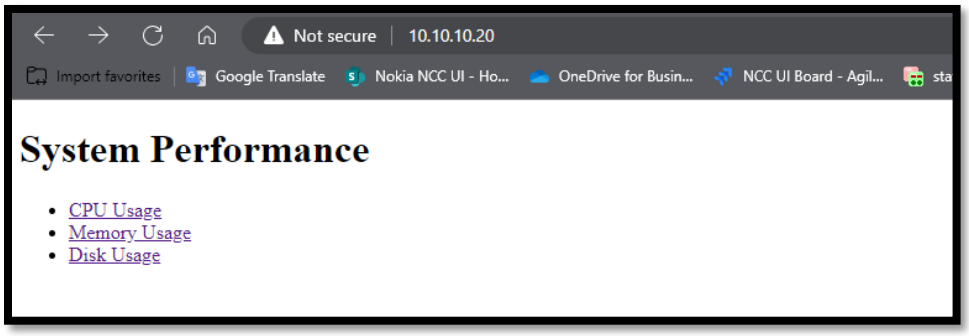
   tmp# ./calc_avgs.sh

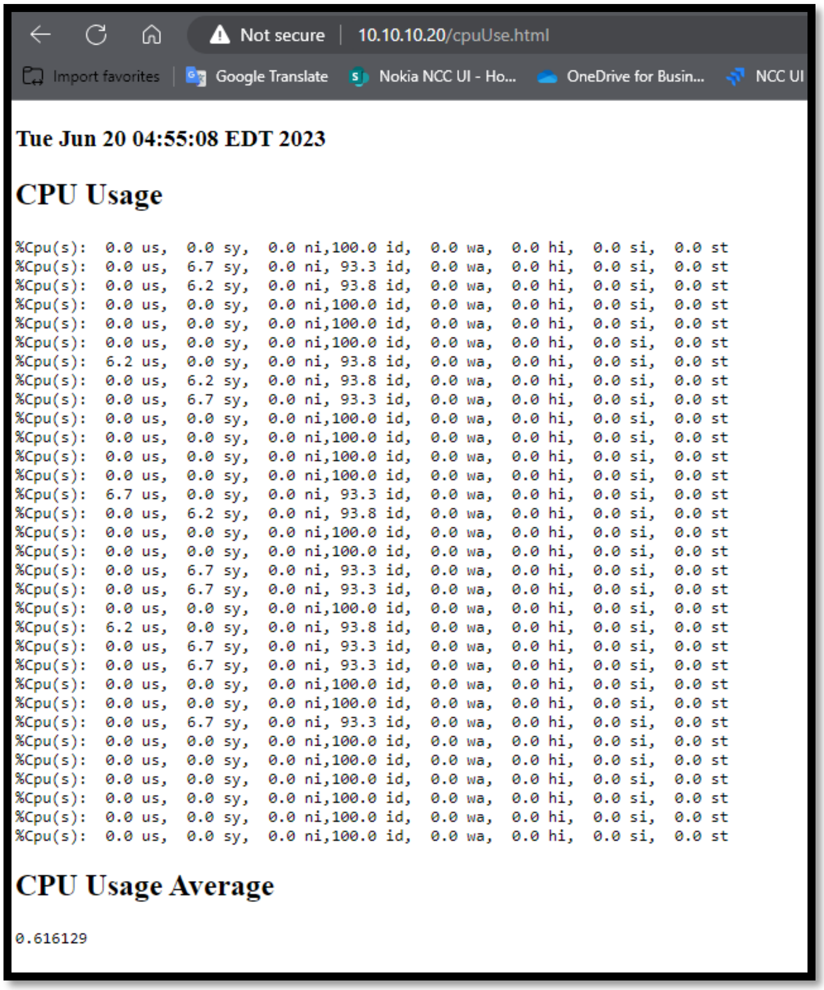
b. Go to html directory

1. Run the gen.sh script file

   html# ./gen.sh

==========





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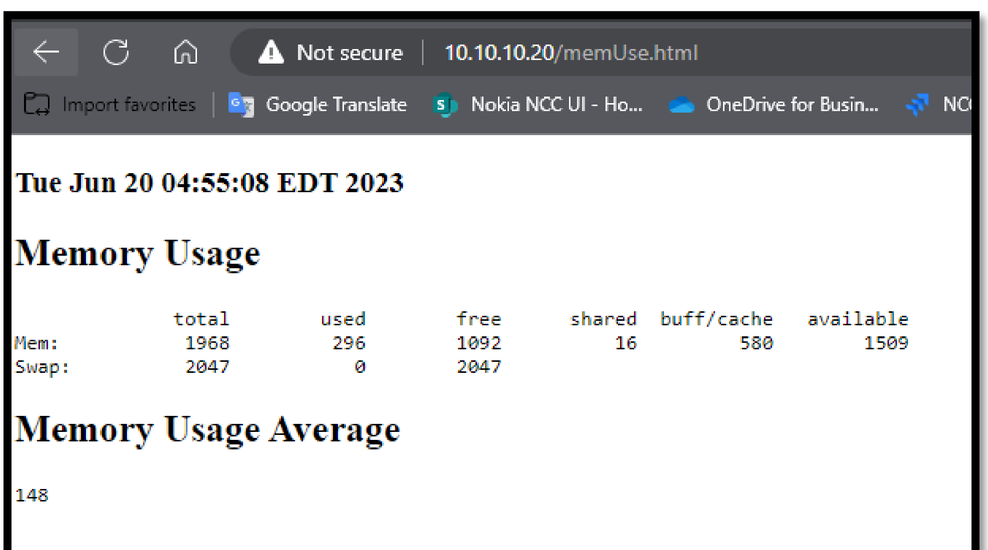
CPU Usage

```
%Cpu(s):  0.0 us,  0.0 sy,  0.0 ni,100.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  6.7 sy,  0.0 ni, 93.3 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  6.2 sy,  0.0 ni, 93.8 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  0.0 sy,  0.0 ni,100.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  0.0 sy,  0.0 ni,100.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  0.0 sy,  0.0 ni,100.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  6.2 us,  0.0 sy,  0.0 ni, 93.8 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  6.2 sy,  0.0 ni, 93.8 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  6.7 sy,  0.0 ni, 93.3 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  0.0 sy,  0.0 ni,100.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  0.0 sy,  0.0 ni,100.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  0.0 sy,  0.0 ni,100.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  0.0 sy,  0.0 ni,100.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  6.7 us,  0.0 sy,  0.0 ni, 93.3 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  6.2 sy,  0.0 ni, 93.8 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  0.0 sy,  0.0 ni,100.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  0.0 sy,  0.0 ni,100.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  6.7 sy,  0.0 ni, 93.3 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  6.7 sy,  0.0 ni, 93.3 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  0.0 sy,  0.0 ni,100.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  6.2 us,  0.0 sy,  0.0 ni, 93.8 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  6.7 sy,  0.0 ni, 93.3 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  6.7 sy,  0.0 ni, 93.3 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  0.0 sy,  0.0 ni,100.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  0.0 sy,  0.0 ni,100.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  6.7 sy,  0.0 ni, 93.3 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  0.0 sy,  0.0 ni,100.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  0.0 sy,  0.0 ni,100.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  0.0 sy,  0.0 ni,100.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  0.0 sy,  0.0 ni,100.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  0.0 sy,  0.0 ni,100.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
%Cpu(s):  0.0 us,  0.0 sy,  0.0 ni,100.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
```

CPU Usage Average

```
0.616129
```



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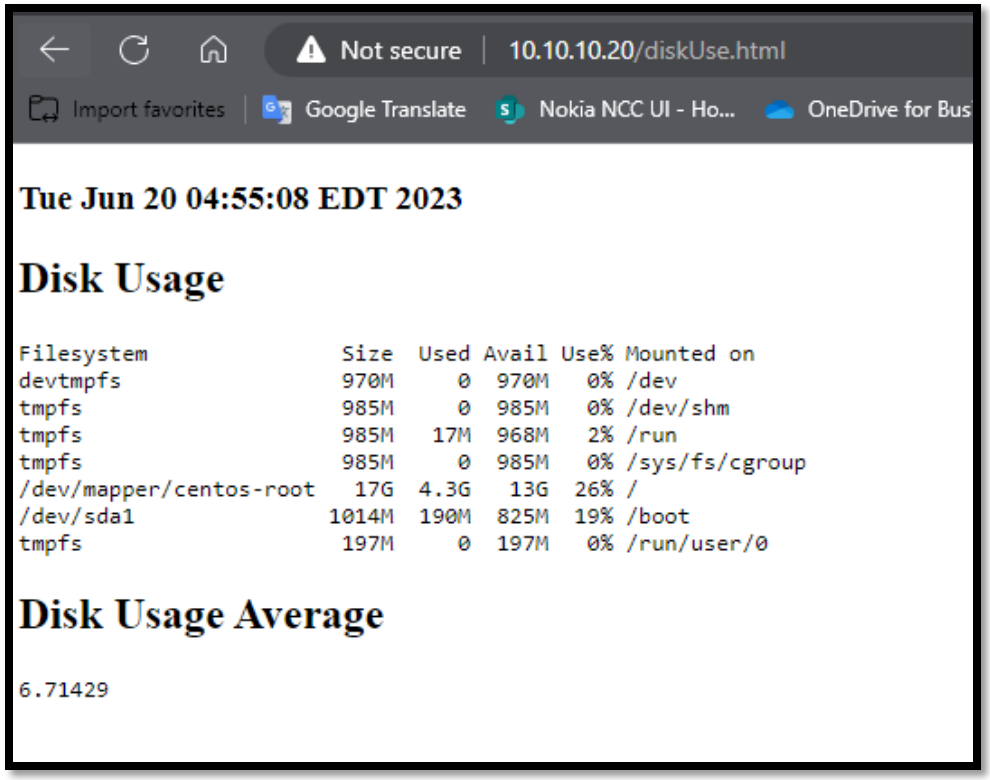
Memory Usage

```
              total        used        free      shared  buff/cache   available
Mem:           1968         296        1092          16         580        1509
Swap:          2047           0        2047
```

Memory Usage Average

```
148
```


Not secure
10.10.10.20/diskUse.html
Import favorites
Google Translate
Nokia NCC UI - Ho...
OneDrive for Bus
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Disk Usage
Filesystem Size Used Avail Use% Mounted on
devtmpfs 970M 0 970M 0% /dev
tmpfs 985M 0 985M 0% /dev/shm
tmpfs 985M 17M 968M 2% /run
tmpfs 985M 0 985M 0% /sys/fs/cgroup
/dev/mapper/centos-root 17G 4.3G 13G 26% /
/dev/sda1 1014M 190M 825M 19% /boot
tmpfs 197M 0 197M 0% /run/user/0
Disk Usage Average
6.71429