

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"
df -h | awk 'NR>1 {print $1}' > diskList.txt

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

#collect CPU utilization
mpstat -P ALL >> "/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 / numRows calculate the avg of used disk, numRows => 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)
awk '
{
    # convert the value of third column to number
    value = $3 + 0;
    unit = substr($3, length($3));

    # to convert the value from G to MB
    if (unit == "G") {
        value *= 1024;
    }
    sum += value;
}

END {
    if (NR > 0) {
        avg = sum / (NR-1);

        # used it to make the avg value readable
        if (average >= 1024) {
            avg /= 1024;
            unit = "G";
        } else {
            unit = "M";
        }
        print avg unit
    }
}
' /root/memUse_*.txt > /root/memAvg.txt

#calculate avg of CPU utilization
awk 'NR>4 {sum += ($4)} END { print sum / (NR - 4)}' /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

- # yum install httpd
- # sudo systemctl start httpd
- # 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:

- o CPU Usage
- o Memory Usage
- o Disk Usage

html# touch index.html

html# vi index.html

```
<!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=$(cat /root/diskUse_*.txt)
listDisk=$(cat /root/tmp/diskList.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>${timesTamp}</h3>
<h2>Disk List</h2>
<pre>${listDisk}</pre>
<h2>Disk Usage</h2>
<pre>${dataDisk}</pre>
<h2>Disk Usage Average</h2>
<pre>Usage Avg= ${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>Usage Avg= $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>Usage Avg= $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 run 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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System Performance

- [CPU Usage](#)
- [Memory Usage](#)
- [Disk Usage](#)

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CPU Usage

Linux 5.15.80-200.el7.x86_64 (localhost.localdomain) 06/25/2023 _x86_64_ (1 CPU)

12:40:14 PM	CPU	%usr	%nice	%sys	%iowait	%irq	%soft	%steal	%guest	%gnice	%idle
12:40:14 PM	all	0.03	0.00	0.07	0.05	2.04	1.67	0.00	0.00	0.00	96.13
12:40:14 PM	0	0.03	0.00	0.07	0.05	2.04	1.67	0.00	0.00	0.00	96.13

CPU Usage Average

Usage Avg= 0.03%

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Memory Usage

	total	used	free	shared	buff/cache	available
Mem:	1.9G	303M	834M	8.8M	830M	1.5G
Swap:	2.0G	0B	2.0G			

Memory Usage Average

Usage Avg= 151.5M

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Disk List

devtmpfs
tmpfs
tmpfs
tmpfs
/dev/mapper/centos-root
/dev/sda1
tmpfs

Disk Usage

Filesystem	Size	Used	Avail	Use%	Mounted on
devtmpfs	970M	0	970M	0%	/dev
tmpfs	985M	0	985M	0%	/dev/shm
tmpfs	985M	8.8M	976M	1%	/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

Usage Avg= 6.57143%