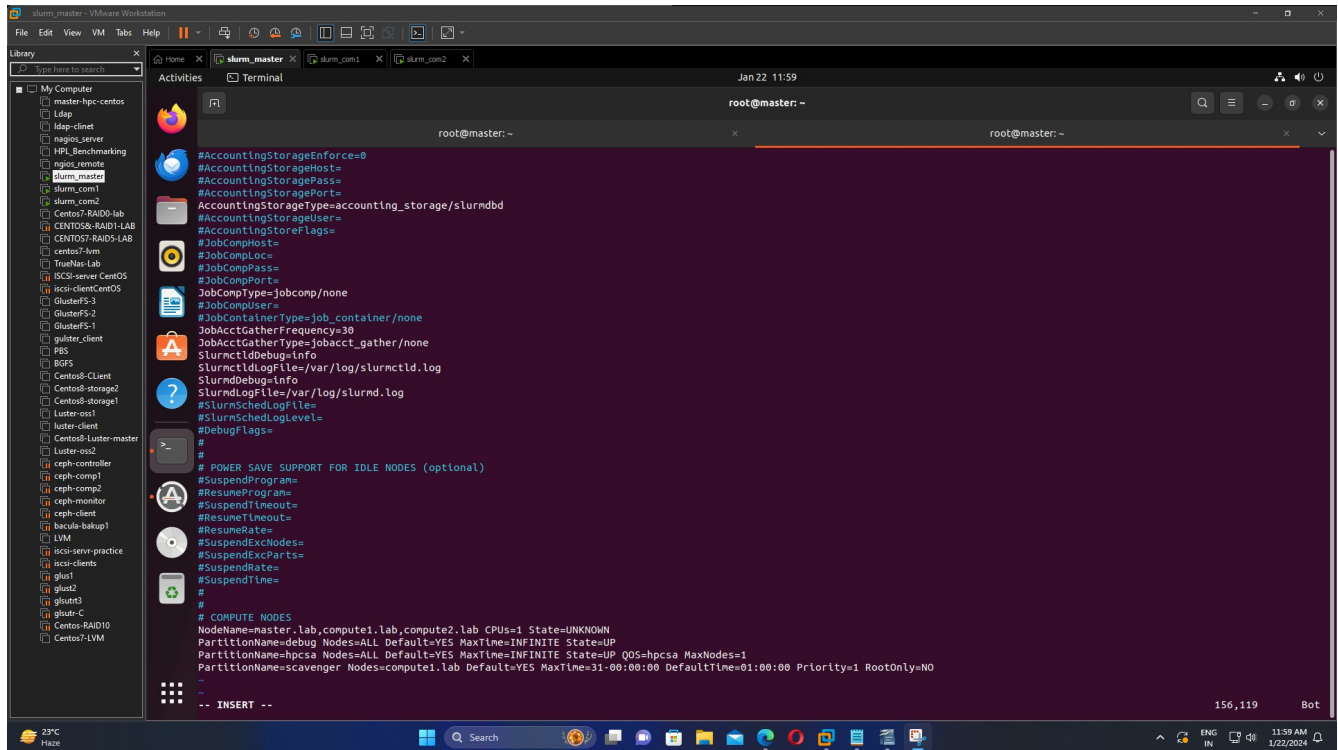


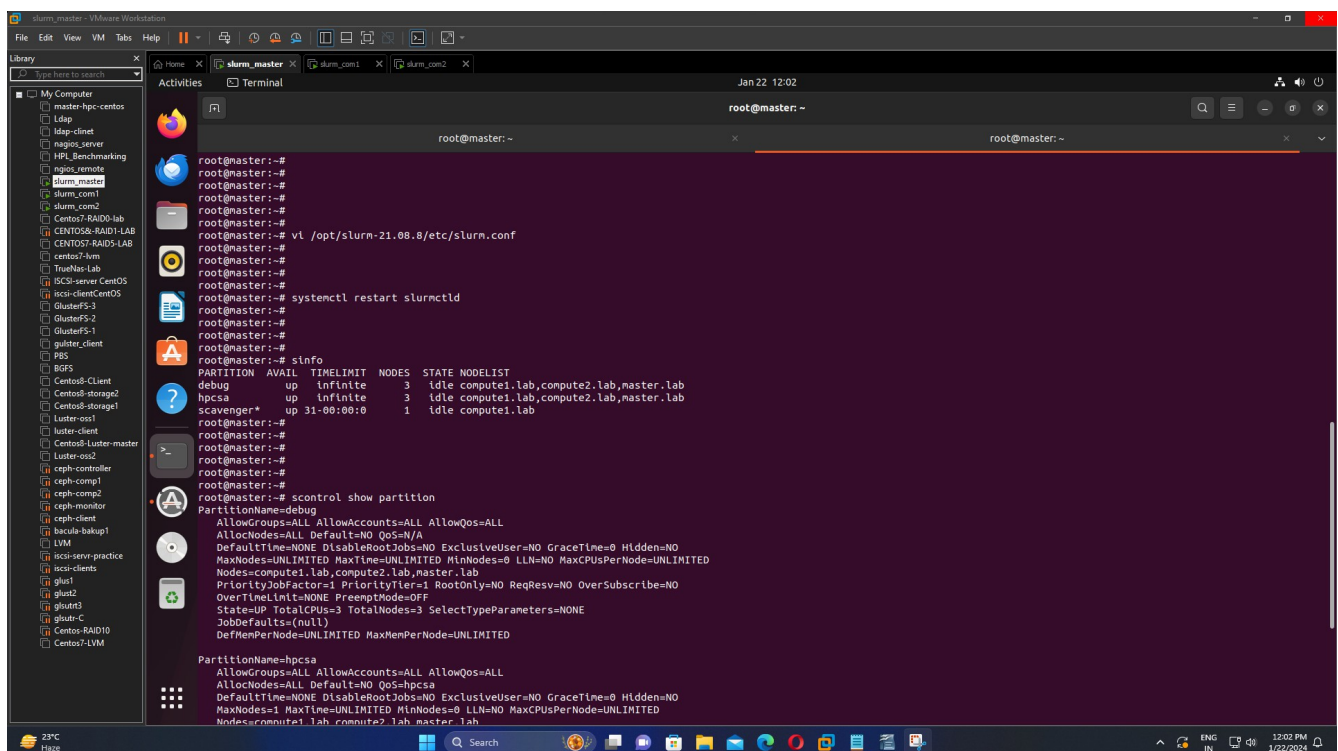
Q1.

- 1) Create the partition scavenger in vi slurm.conf file



The screenshot shows a terminal window with the following configuration for the 'scavenger' partition in slurm.conf:

```
#AccountingStorageEnforce=0
#AccountingStorageHost=
#AccountingStoragePass=
#AccountingStoragePort=
AccountingStorageType=accounting_storage/slurddb
#AccountingStorageUser=
#AccountingStorageFlags=
#JobCompHost=
#JobCompLoc=
#JobCompPass=
#JobCompPort=
#JobCompType=Jobcomp/none
#JobCompUser=
#JobContainerType=job_container/none
JobAcctGatherFrequency=30
JobAcctGatherType=jobacct_gather/none
SlurmctldDebug=info
SlurmctldLogFile=/var/log/slurmctld.log
Slurmdebug=info
SlurmdLogFile=/var/log/slurmd.log
#SlurmschedLogFile=
#SlurmschedLogLevel=
#DebugFlags=
#
# POWER SAVE SUPPORT FOR IDLE NODES (optional)
#SuspendProgram=
#ResumeProgram=
#SuspendTimeout=
#ResumeTimeout=
#ResumeRate=
#SuspendExcNodes=
#SuspendExcParts=
#SuspendRate=
#SuspendTime=
#
# COMPUTE NODES
NodeName=master.lab,compute1.lab,compute2.lab CPUs=1 State=UNKNOWN
PartitionName=debug Nodes=ALL Default=YES MaxTime=INFINITE State=UP
PartitionName=hpcsa Nodes=ALL Default=YES MaxTime=INFINITE State=UP QOS=hpcsa MaxNodes=1
PartitionName=scavenger Nodes=compute1.lab Default=YES MaxTime=31:00:00:00 DefaultTime=01:00:00 Priority=1 RootOnly=NO
-- INSERT --
```



The screenshot shows a terminal window with the following commands and output:

```
root@master:~# vi /opt/slurm-21.08.8/etc/slurm.conf
root@master:~# systemctl restart slurmctld
root@master:~# sinfo
PARTITION AVAIL  TIMELIMIT  NODES  STATE MODELIST
debug      up        infinite    3    idle compute1.lab,compute2.lab,master.lab
hpcsa      up        infinite    3    idle compute1.lab,compute2.lab,master.lab
scavenger* up 31:00:00:00 1    idle compute1.lab
root@master:~# scontrol show partition
PartitionName=debug
  AllowGroups=ALL AllowAccounts=ALL AllowQos=ALL
  AllocNodes=ALL Default=NO Qos=M/A
  DefaultTime=NONE DisableRootJobs=NO ExclusiveUser=NO GraceTime=0 Hidden=NO
  MaxNodes=UNLIMITED MaxTime=UNLIMITED MinNodes=0 LLN=NO MaxCPUSPerNode=UNLIMITED
  Nodes=compute1.lab,compute2.lab,master.lab
  PriorityJobFactor=1 PriorityTier=1 RootOnly=NO ReqResv=NO OverSubscribe=NO
  OverTimeLimit=NONE PreemptNode=OFF
  StateUp TotalCPUS=3 TotalNodes=3 SelectTypeParameters=NONE
  JobDefaults=(null)
  DefMemPerNode=UNLIMITED MaxMemPerNode=UNLIMITED

PartitionName=hpcsa
  AllowGroups=ALL AllowAccounts=ALL AllowQos=ALL
  AllocNodes=ALL Default=NO Qos=hpcsa
  DefaultTime=NONE DisableRootJobs=NO ExclusiveUser=NO GraceTime=0 Hidden=NO
  MaxNodes=1 MaxTime=UNLIMITED MinNodes=0 LLN=NO MaxCPUSPerNode=UNLIMITED
  Nodes=compute1.lab,compute2.lab,master.lab
```

slurm\_master - VMware Workstation

File Edit View VM Tabs Help

Library

Home x slurm\_master x slurm\_com1 x slurm\_com2 x

Jan 22 12:03

Activities Terminal

root@master: ~

root@master: ~

scavenger\* up 31-00:00:0 1 idle compute1.lab

root@master:~#  
root@master:~#  
root@master:~#  
root@master:~#  
root@master:~#  
root@master:~# scontrol show partition

PartitionName=debug  
AllowGroups=ALL AllowAccounts=ALL AllowQos=ALL  
AllocNodes=ALL Default=NO QoS=N/A  
DefaultTime=NONE DisableRootJobs=NO ExclusiveUser=NO GraceTime=0 Hidden=NO  
MaxNodes=UNLIMITED MaxTime=UNLIMITED MinNodes=0 LLN=NO MaxCPUsPerNode=UNLIMITED  
Nodes=compute1.lab,compute2.lab,master.lab  
PriorityJobFactor=1 PriorityTier=1 RootOnly=NO ReqResv=NO OverSubscribe=NO  
OverTimeLimit=NONE PreemptNode=OFF  
State=UP TotalCPUs=3 TotalNodes=3 SelectTypeParameters=NONE  
JobDefaults=(null)  
DefMemPerNode=UNLIMITED MaxMemPerNode=UNLIMITED

PartitionName=hpcsa  
AllowGroups=ALL AllowAccounts=ALL AllowQos=ALL  
AllocNodes=ALL Default=NO QoS=hpcsa  
DefaultTime=NONE DisableRootJobs=NO ExclusiveUser=NO GraceTime=0 Hidden=NO  
MaxNodes=1 MaxTime=UNLIMITED MinNodes=0 LLN=NO MaxCPUsPerNode=UNLIMITED  
Nodes=compute1.lab,compute2.lab,master.lab  
PriorityJobFactor=1 PriorityTier=1 RootOnly=NO ReqResv=NO OverSubscribe=NO  
OverTimeLimit=NONE PreemptNode=OFF  
State=UP TotalCPUs=3 TotalNodes=3 SelectTypeParameters=NONE  
JobDefaults=(null)  
DefMemPerNode=UNLIMITED MaxMemPerNode=UNLIMITED

PartitionName=scavenger  
AllowGroups=ALL AllowAccounts=ALL AllowQos=ALL  
AllocNodes=ALL Default=YES QoS=N/A  
DefaultTime=01-00:00:00 DisableRootJobs=NO ExclusiveUser=NO GraceTime=0 Hidden=NO  
MaxNodes=UNLIMITED MaxTime=31-00:00:00 MinNodes=0 LLN=NO MaxCPUsPerNode=UNLIMITED  
Nodes=compute1.lab  
PriorityJobFactor=1 PriorityTier=1 RootOnly=NO ReqResv=NO OverSubscribe=NO  
OverTimeLimit=NONE PreemptNode=OFF  
State=UP TotalCPUs=1 TotalNodes=1 SelectTypeParameters=NONE  
JobDefaults=(null)  
DefMemPerNode=UNLIMITED MaxMemPerNode=UNLIMITED

root@master:~#

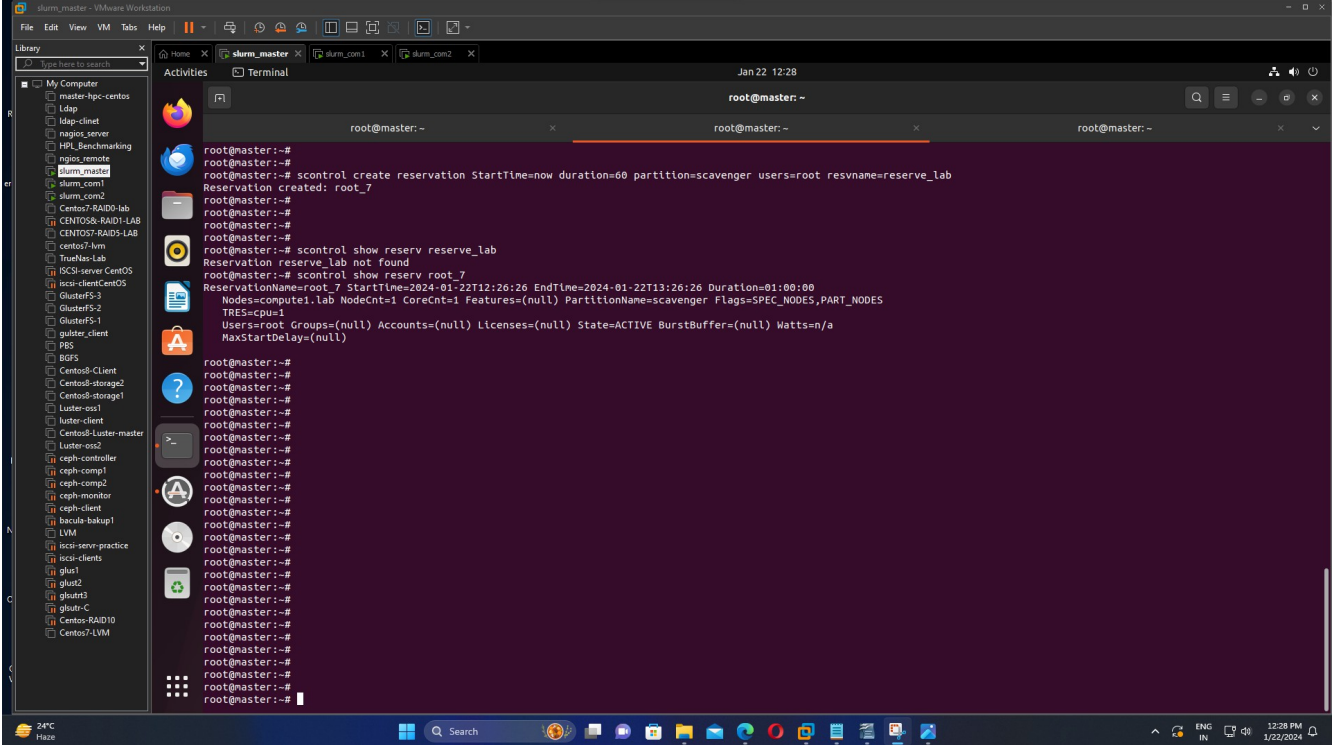
23°C  
Haze

Search

ENG  
IN

12:03 PM  
1/22/2024

Q2 create reservation reserve\_lab using partition scavenger  
scontrol create reservation StartTime=now duration=60 partition=scavenger users=root  
resvname=reserve\_lab



The screenshot shows a VMware Workstation interface with a terminal window open. The terminal is running a series of Slurm commands to create and verify a reservation. The commands and their outputs are as follows:

```
root@master:~# scontrol create reservation StartTime=now duration=60 partition=scavenger users=root resvname=reserve_lab
Reservation created: root_7
root@master:~# scontrol show reserv reserve_lab
Reservation reserve_lab not found
root@master:~# scontrol show reserv root_7
ReservationName=root_7 StartTime=2024-01-22T12:26:26 EndTime=2024-01-22T13:26:26 Duration=01:00:00
Nodes=compute1.lab NodeCnt=1 CoreCnt=1 Features=(null) PartitionName=scavenger Flags=SPEC_NODES,PART_NODES
TRES=cpu=1
Users=root Groups=(null) Accounts=(null) Licenses=(null) State=ACTIVE BurstBuffer=(null) Watts=n/a
MaxStartDelay=(null)
```

The terminal window is titled "root@master:~" and shows the output of the commands. The VMware Workstation interface includes a menu bar (File, Edit, View, VM, Tools, Help), a toolbar, and a sidebar with a library of virtual machines. The bottom status bar shows the system temperature (24°C) and the date (1/22/2024).

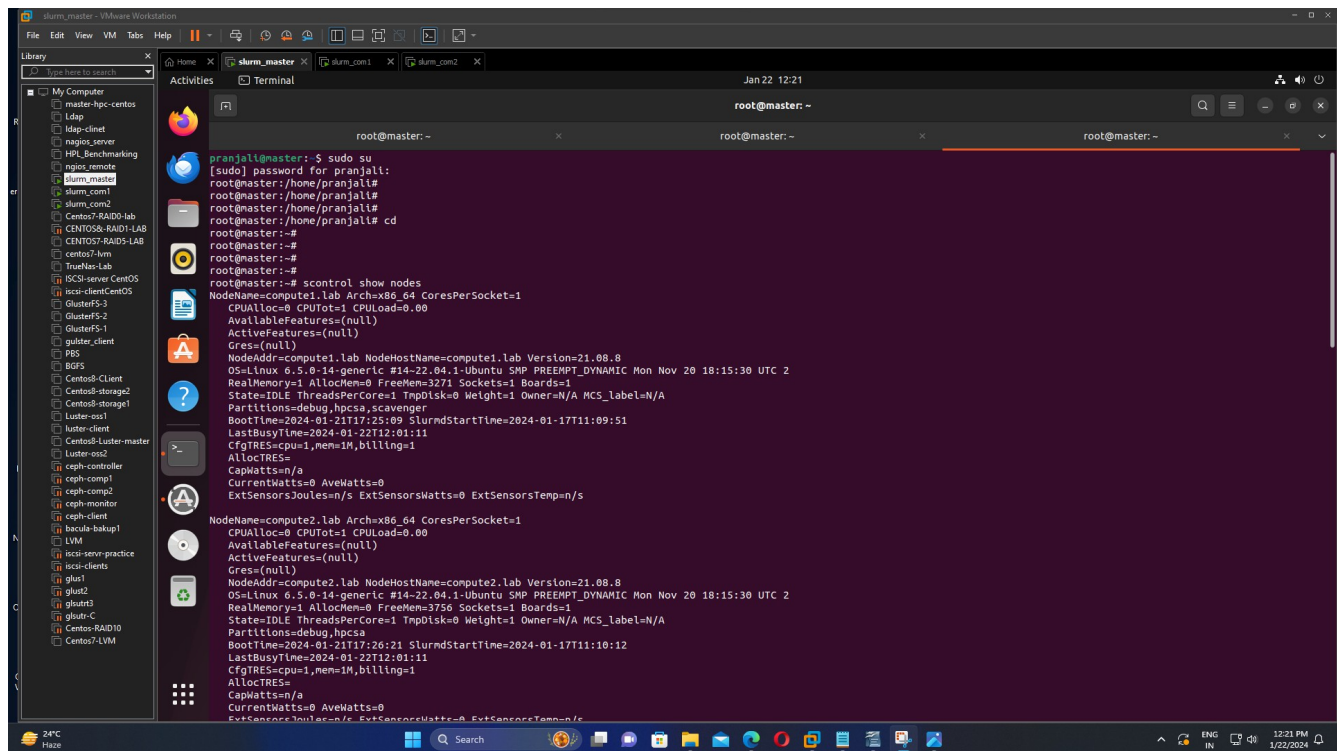
Q3.

Using this command we see the basic node and individual partition summary info

scontrol show partitions

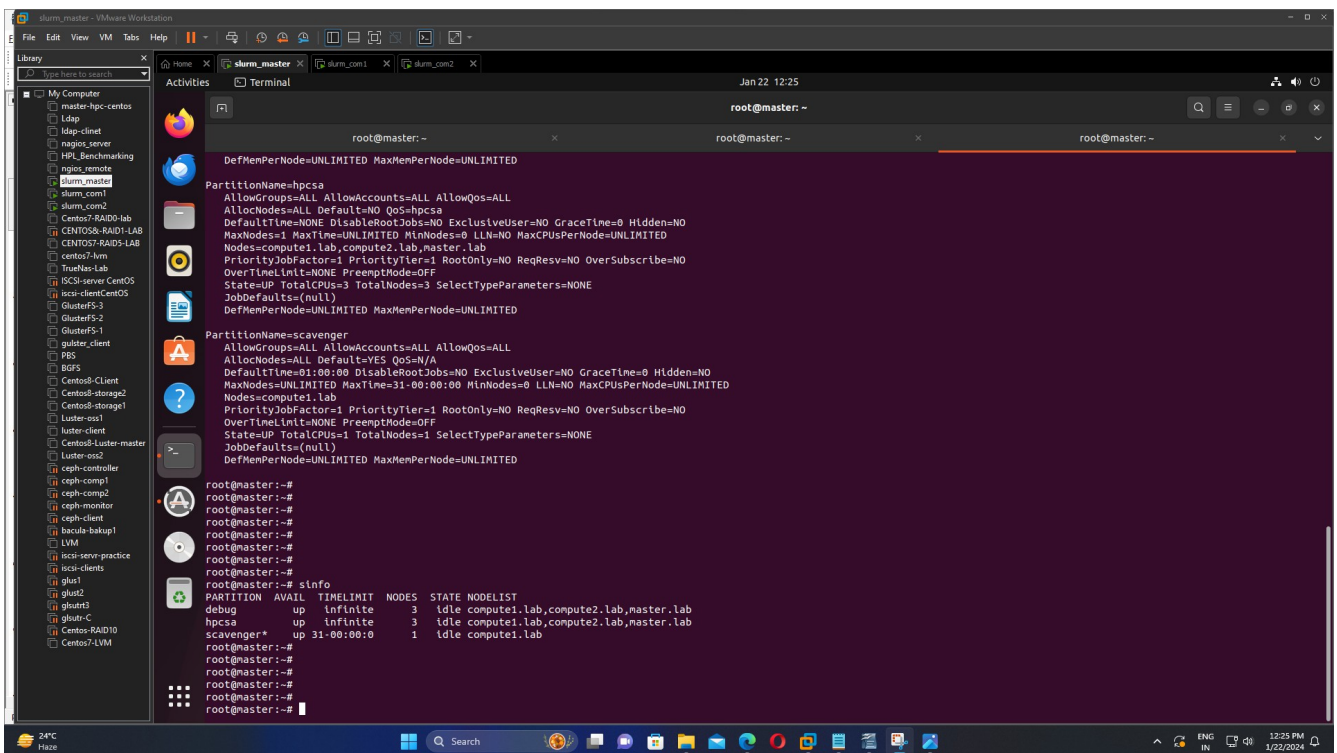
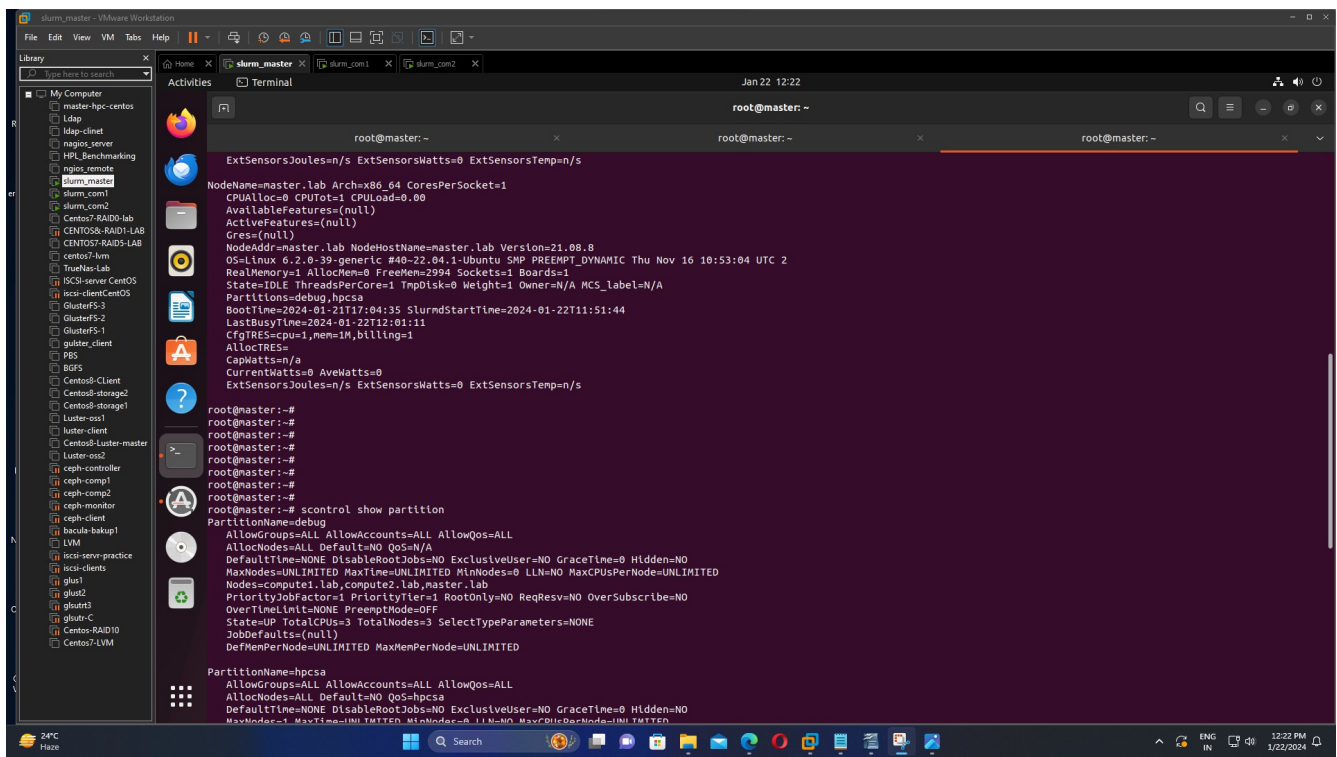
scontrol show nodes

Sinfo



```
pranjali@master:~$ sudo su
[sudo] password for pranjali:
root@master:/home/pranjali#
root@master:/home/pranjali#
root@master:/home/pranjali# cd
root@master:~#
root@master:~#
root@master:~# scontrol show nodes
NodeName=compute1.lab Arch=x86_64 CoresPerSocket=1
CPUAlloc=0 CPURtot=1 CPUload=0.00
AvailableFeatures=(null)
ActiveFeatures=(null)
Gres=(null)
NodeAddr=compute1.lab NodeHostName=compute1.lab Version=21.08.8
OSlinux 6.5.0-14-generic #14-22.04.1-Ubuntu SMP PREEMPT_DYNAMIC Mon Nov 20 18:15:30 UTC 2
RealMemory=1 AllocMem=0 FreeMem=3271 Sockets=1 Boards=1
State=IDLE ThreadsPerCore=1 TmpDisk=0 Weight=1 Owner=N/A MCS_Label=N/A
Partitions=debug,hpcsa,scavenger
BootTime=2024-01-21T17:25:09 SlurndStartTime=2024-01-17T11:09:51
LastBusyTime=2024-01-22T12:01:11
CfgTRES=cpu=1,mem=1M,billing=1
AllocTRES=
CapWatts=n/a
CurrentWatts=0 AveWatts=0
ExtSensorsJoules=n/s ExtSensorsWatts=0 ExtSensorsTemp=n/s

NodeName=compute2.lab Arch=x86_64 CoresPerSocket=1
CPUAlloc=0 CPURtot=1 CPUload=0.00
AvailableFeatures=(null)
ActiveFeatures=(null)
Gres=(null)
NodeAddr=compute2.lab NodeHostName=compute2.lab Version=21.08.8
OSlinux 6.5.0-14-generic #14-22.04.1-Ubuntu SMP PREEMPT_DYNAMIC Mon Nov 20 18:15:30 UTC 2
RealMemory=1 AllocMem=0 FreeMem=3756 Sockets=1 Boards=1
State=IDLE ThreadsPerCore=1 TmpDisk=0 Weight=1 Owner=N/A MCS_Label=N/A
Partitions=debug,hpcsa
BootTime=2024-01-21T17:26:21 SlurndStartTime=2024-01-17T11:10:12
LastBusyTime=2024-01-22T12:01:11
CfgTRES=cpu=1,mem=1M,billing=1
AllocTRES=
CapWatts=n/a
CurrentWatts=0 AveWatts=0
ExtSensorsJoules=n/s ExtSensorsWatts=0 ExtSensorsTemp=n/s
```





Q4.

slurm-accname= tstfac1-acc

user hpcsa1

add this user to account

and create the batch script

```
#!/bin/bash
```

```
#SBATCH --job=name=my_job1
```

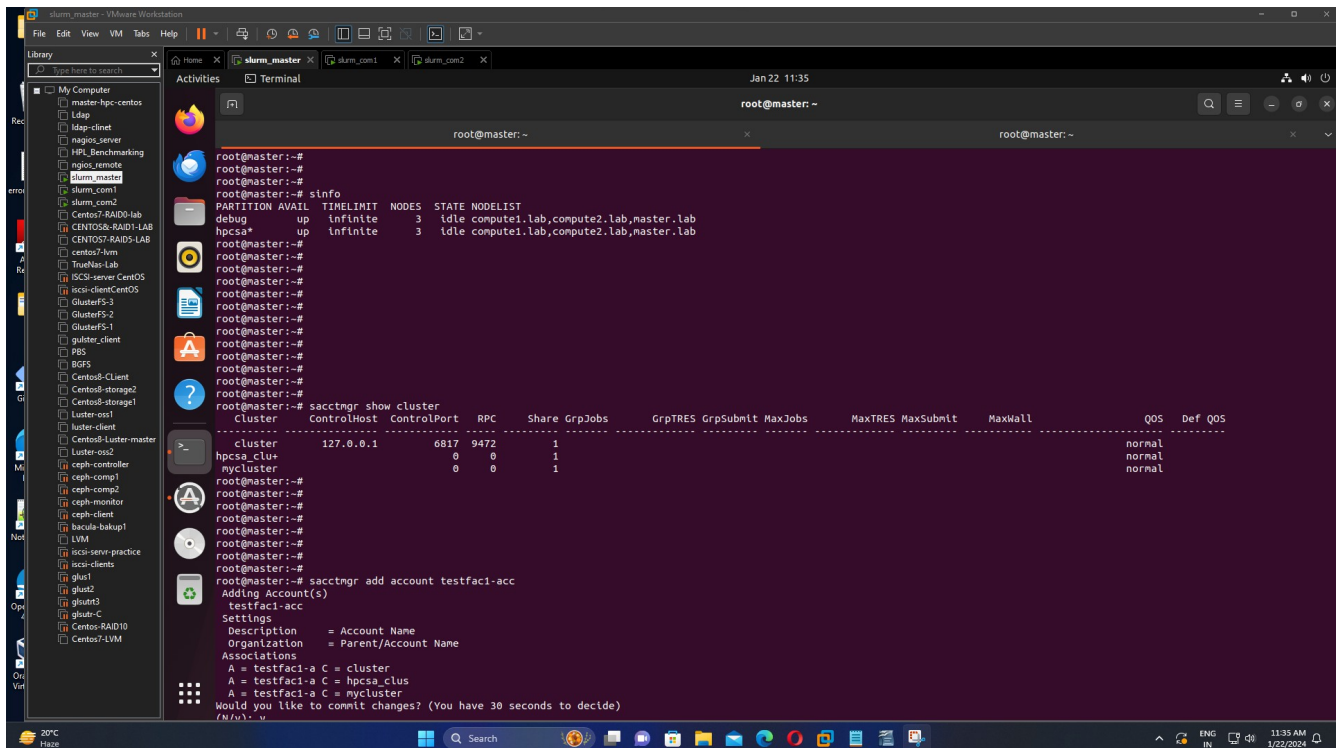
```
#SBATCH --account=testfac1-acc
```

```
#SBATCH --nodes=1
```

```
#SBATCH --error=job.%J.err
```

```
#SBATCH --output=job.%J.out
```

```
echo "done"
```



The screenshot shows a terminal window in a VMware Workstation environment. The terminal is running on a host named 'slurm\_master'. The user is root. The terminal output shows the following commands and their results:

```
root@master:~# sinfo
PARTITION AVAIL  TIMELIMIT  NODES  STATE NODELIST
debug      up        infinite   3    idle compute1.lab,compute2.lab,master.lab
hpcsa*     up        infinite   3    idle compute1.lab,compute2.lab,master.lab

root@master:~# sacctmgr show cluster
Cluster      ControlHost  ControlPort  RPC    Share  GrpJobs  GrpTRES  GrpSubmit  MaxJobs  MaxTRES  MaxSubmit  MaxWall  QOS  Def  QOS
-----
cluster      127.0.0.1    6817        9472   1       1        0        0          1        0        0          0        normal
hpcsa.clus   0            0           0      1       1        0        0          1        0        0          0        normal
mycluster    0            0           0      1       1        0        0          1        0        0          0        normal

root@master:~# sacctmgr add account testfac1-acc
Adding Account(s)
testfac1-acc
Settings
  Description = Account Name
  Organization = Parent/Account Name
Associations
  A = testfac1-a C = cluster
  A = testfac1-a C = hpcsa.clus
  A = testfac1-a C = mycluster
Would you like to commit changes? (You have 30 seconds to decide)
(Y/N): y
```



```
slurm_master - VMware Workstation
File Edit View VM Tabs Help
Library
Type here to search
My Computer
master-hpc-centos
ldap
ldap-client
nagios_server
HPL_Benchmarking
ngiois_remote
slurm_master
slurm_com1
slurm_com2
Centos7-RAID0-lab
CENTOS8-RAID1-LAB
CENTOS8-RAID5-LAB
centos7-hvm
TrueNAS-Lab
iscsi-server CentOS
iscsi-client CentOS
glusterFS-3
glusterFS-2
glusterFS-1
gluster_client
PBS
BGF5
Centos8-Client
Centos8-storage2
Centos8-storage1
Luster-oss1
Luster-client
Centos8-Luster-master
Luster-oss2
ceph-controller
ceph-comp1
ceph-comp2
ceph-monitor
ceph-client
bacula-backup1
LVM
iscsi-server-practice
iscsi-clients
glu1
glu2
glu3
glu4-C
Centos8-RAID10
Centos7-LVM
Activities
Terminal
Jan 22 12:22
root@master: ~
root@master: ~
root@master: ~
ExtSensorsJoules=n/s ExtSensorsWatts=0 ExtSensorsTemp=n/s
NodeName=master.lab Arch=x86_64 CoresPerSocket=1
CPULoad=0 CPUAlloc=0 CPUReq=1 CPURes=0.00
AvailableFeatures=(null)
ActiveFeatures=(null)
GRES=(null)
NodeAddr=master.lab NodeHostName=master.lab Version=21.08.8
OS=Linux 6.2.0-39-generic #40-22.04.1-Ubuntu SMP PREEMPT_DYNAMIC Thu Nov 16 10:53:04 UTC 2
RealMemory=1 AllocMem=0 FreeMem=2994 Sockets=1 Boards=1
State=IDLE ThreadsPerCore=1 TmpDisk=0 Weight=1 Owner=N/A MCS_label=N/A
Partitions=debug,hpcsa
BootTime=2024-01-21T17:04:35 SlurmStartTime=2024-01-22T11:51:44
LastBusyTime=2024-01-22T12:01:11
CfgTRES=cpu1,mem=1M,billing=1
AllocTRES=
CapWatts=n/a
CurrentWatts=0 AveWatts=0
ExtSensorsJoules=n/s ExtSensorsWatts=0 ExtSensorsTemp=n/s
root@master:~#
root@master:~#
root@master:~#
root@master:~#
root@master:~#
root@master:~#
root@master:~# scontrol show partition
PartitionName=debug
AllowGroups=ALL AllowAccounts=ALL AllowQos=ALL
AllocNodes=ALL Default=NO Qos=N/A
DefaultTime=NONE DisableRootJobs=NO ExclusiveUser=NO GraceTime=0 Hidden=NO
MaxNodes=UNLIMITED MaxTime=UNLIMITED MinNodes=0 LLN=NO MaxCPUSPerNode=UNLIMITED
Nodes=compute1.lab,compute2.lab,master.lab
PriorityJobFactor=1 PriorityTier=1 RootOnly=NO ReqResv=NO OverSubscribe=NO
OverTimeLimit=NONE PreemptMode=OFF
StateUp TotalCPUs=3 TotalNodes=3 SelectTypeParameters=NONE
JobDefaults=(null)
DefMemPerNode=UNLIMITED MaxMemPerNode=UNLIMITED
PartitionName=hpcsa
AllowGroups=ALL AllowAccounts=ALL AllowQos=ALL
AllocNodes=ALL Default=NO Qos=hpcsa
DefaultTime=NONE DisableRootJobs=NO ExclusiveUser=NO GraceTime=0 Hidden=NO
MaxNodes=1 MaxTime=INI TMITEN MinNodes=0 LLN=NO MaxCPUSPerNode=INI TMITEN
root@master:~#
```

```
slurm_master - VMware Workstation
File Edit View VM Tabs Help
Library
Type here to search
My Computer
master-hpc-centos
ldap
ldap-client
nagios_server
HPL_Benchmarking
ngiois_remote
slurm_master
slurm_com1
slurm_com2
Centos7-RAID0-lab
CENTOS8-RAID1-LAB
CENTOS8-RAID5-LAB
centos7-hvm
TrueNAS-Lab
iscsi-server CentOS
iscsi-client CentOS
glusterFS-3
glusterFS-2
glusterFS-1
gluster_client
PBS
BGF5
Centos8-Client
Centos8-storage2
Centos8-storage1
Luster-oss1
Luster-client
Centos8-Luster-master
Luster-oss2
ceph-controller
ceph-comp1
ceph-comp2
ceph-monitor
ceph-client
bacula-backup1
LVM
iscsi-server-practice
iscsi-clients
glu1
glu2
glu3
glu4-C
Centos8-RAID10
Centos7-LVM
Activities
Terminal
Jan 22 12:52
root@master: ~
root@master: ~
root@master: ~
root@master:~#
root@master:~#
root@master:~# sacctmgr show user
User Def Acct Admin
-----
hpcsa1 testfaci+ None
root hpcsa-acc Administ+
set myproject None
where myproject None
root@master:~# sacctmgr create user name=root DefaultAccount=testfaci-acc
Associations =
U = root A = testfaci-a C = cluster
U = root A = testfaci-a C = hpcsa.clus
U = root A = testfaci-a C = mycluster
Would you like to commit changes? (You have 30 seconds to decide)
(N/y): y
root@master:~# sacctmgr -i modify user where name=root set defaultaccount=testi-acc
Can't modify because these users aren't associated with new default account 'testi-acc'...
U = root C = cluster
U = root C = hpcsa_clust
U = root C = mycluster
root@master:~#
root@master:~#
root@master:~# sacctmgr show user
User Def Acct Admin
-----
hpcsa1 testfaci+ None
root testfaci+ Administ+
set myproject None
where myproject None
root@master:~#
root@master:~#
root@master:~#
root@master:~#
root@master:~# sbatch myjob.sh
Submitted batch job 104
root@master:~#
root@master:~#
root@master:~#
```



