

Q3.

Node Info:

# scontrol show nodes

```
root@slurm:~# scontrol show nodes
NodeName=slurm.master Arch=x86_64 CoresPerSocket=1
CPUAlloc=0 CPUSum=1 CPUload=0.47
AvailableFeatures=(null)
ActiveFeatures=(null)
GRES=(null)
NodeAddr=slurm.master NodeHostName=slurm.master Version=21.08.8
OS=Linux 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=3962 Sockets=1 Boards=1
State=IDLE ThreadsPerCore=1 TmpDisk=0 Weight=1 Owner=N/A MCS_label=N/A
Partitions=mansi,dhananjay,shruti
BootTime=2024-01-22T16:33:31 SlurmdStartTime=2024-01-22T16:33:43
LastBusyTime=2024-01-22T16:33:43
CfgTRES=cpu=1,mem=1M,billing=1
AllocTRES=
CapWatts=n/a
CurrentWatts=0 AveWatts=0
ExtSensorsJoules=n/s ExtSensorsWatts=0 ExtSensorsTemp=n/s

NodeName=slurm.node1 CoresPerSocket=1
CPUAlloc=0 CPUSum=1 CPUload=0.98
AvailableFeatures=(null)
ActiveFeatures=(null)
GRES=(null)
NodeAddr=slurm.node1 NodeHostName=slurm.node1
RealMemory=1 AllocMem=0 FreeMem=2023 Sockets=1 Boards=1
State=IDLE ThreadsPerCore=1 TmpDisk=0 Weight=1 Owner=N/A MCS_label=N/A
Partitions=mansi,dhananjay,shruti
BootTime=None SlurmdStartTime=None
LastBusyTime=2024-01-22T16:37:06
CfgTRES=cpu=1,mem=1M,billing=1
AllocTRES=
CapWatts=n/a
CurrentWatts=0 AveWatts=0
ExtSensorsJoules=n/s ExtSensorsWatts=0 ExtSensorsTemp=n/s

NodeName=slurm.node2 CoresPerSocket=1
CPUAlloc=0 CPUSum=1 CPUload=0.87
AvailableFeatures=(null)
ActiveFeatures=(null)
GRES=(null)
NodeAddr=slurm.node2 NodeHostName=slurm.node2
RealMemory=1 AllocMem=0 FreeMem=1999 Sockets=1 Boards=1
State=IDLE ThreadsPerCore=1 TmpDisk=0 Weight=1 Owner=N/A MCS_label=N/A
Partitions=mansi,dhananjay,shruti
BootTime=None SlurmdStartTime=None
LastBusyTime=2024-01-22T16:37:06
CfgTRES=cpu=1,mem=1M,billing=1
AllocTRES=
CapWatts=n/a
CurrentWatts=0 AveWatts=0
ExtSensorsJoules=n/s ExtSensorsWatts=0 ExtSensorsTemp=n/s
```

Partition Info:

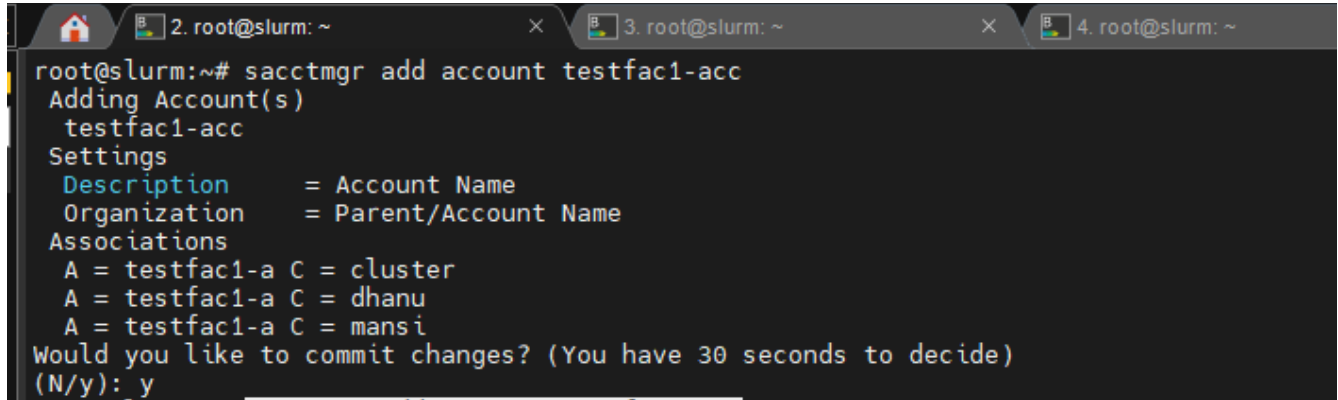
# scontrol show partition <partition name>

```
root@slurm:~# scontrol show partition shruti
PartitionName=shruti
AllowGroups=ALL AllowAccounts=ALL AllowQos=ALL
AllocNodes=ALL Default=YES QoS=N/A
DefaultTime=None DisableRootJobs=NO ExclusiveUser=NO GraceTime=0 Hidden=NO
MaxNodes=1 MaxTime=UNLIMITED MinNodes=0 LLN=NO MaxCPUsPerNode=UNLIMITED
Nodes=slurm.master,slurm.node[1-2]
PriorityJobFactor=1 PriorityTier=1 RootOnly=NO ReqResv=NO OverSubscribe=NO
OverTimeLimit=None PreemptMode=OFF
State=UP TotalCPUs=3 TotalNodes=3 SelectTypeParameters=None
JobDefaults=(null)
DefMemPerNode=UNLIMITED MaxMemPerNode=UNLIMITED
```

Q4.

Create Account:

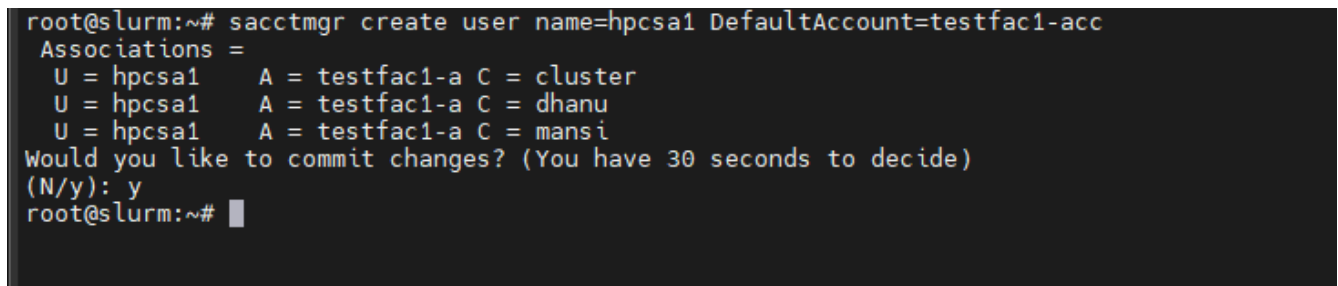
```
# sacctmgr add account testfac1-acc
```



```
root@slurm:~# 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 = dhanu
  A = testfac1-a C = mansi
Would you like to commit changes? (You have 30 seconds to decide)
(N/y): y
```

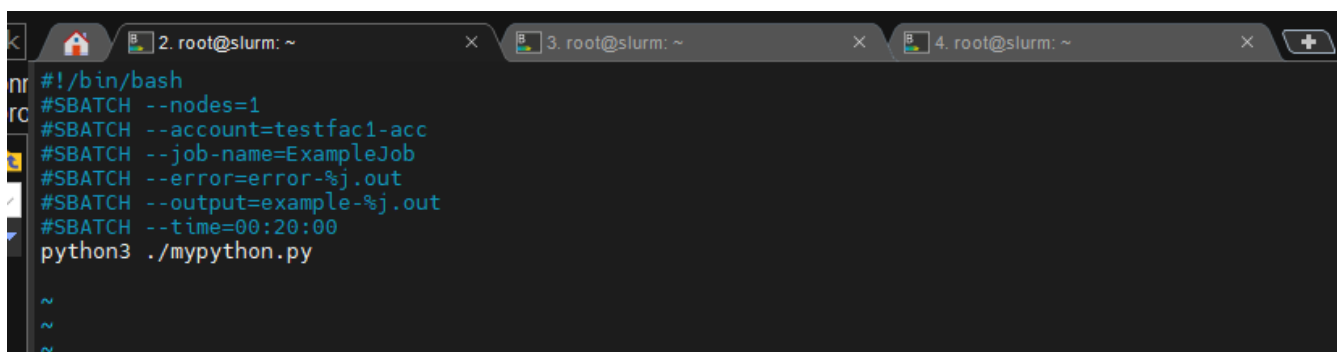
Create User:

```
# sacctmgr create user name=hpcsai DefaultAccount=testfac1-acc
```



```
root@slurm:~# sacctmgr create user name=hpcsai DefaultAccount=testfac1-acc
Associations =
  U = hpcsai      A = testfac1-a C = cluster
  U = hpcsai      A = testfac1-a C = dhanu
  U = hpcsai      A = testfac1-a C = mansi
Would you like to commit changes? (You have 30 seconds to decide)
(N/y): y
root@slurm:~#
```

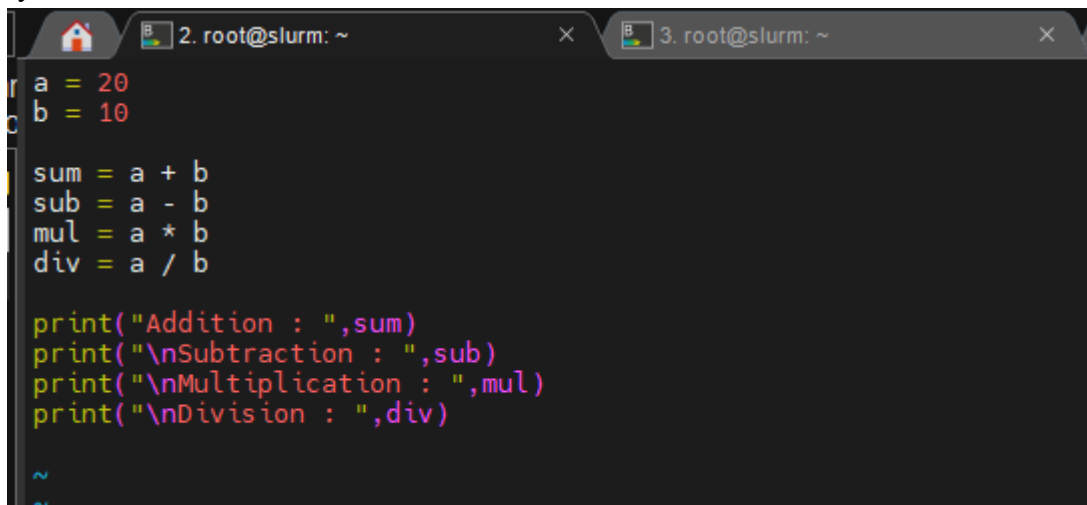
BATCH Script:



```
#!/bin/bash
#SBATCH --nodes=1
#SBATCH --account=testfac1-acc
#SBATCH --job-name=ExampleJob
#SBATCH --error=error-%j.out
#SBATCH --output=example-%j.out
#SBATCH --time=00:20:00
python3 ./mypython.py

~
~
~
```

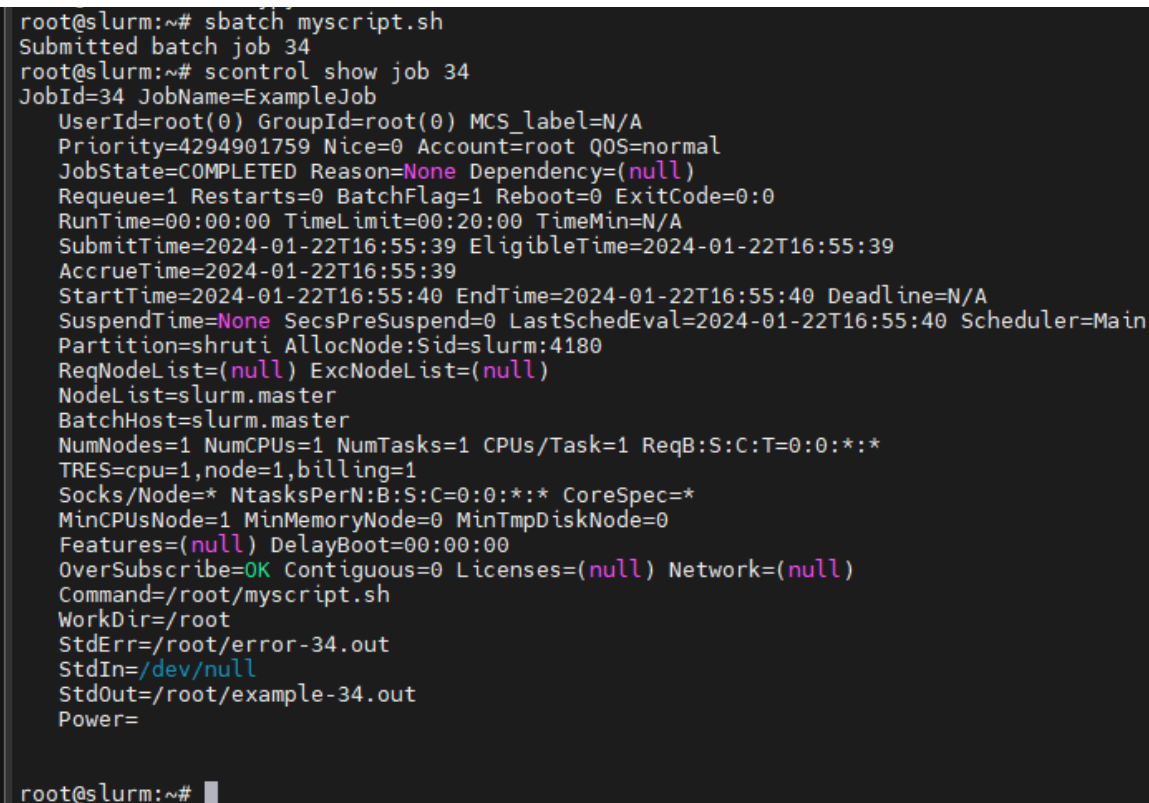
Python Code:



```
2. root@slurm: ~  
3. root@slurm: ~  
a = 20  
b = 10  
  
sum = a + b  
sub = a - b  
mul = a * b  
div = a / b  
  
print("Addition : ",sum)  
print("\nSubtraction : ",sub)  
print("\nMultiplication : ",mul)  
print("\nDivision : ",div)  
  
~  
~
```

Batch Job run :

```
# sbatch < batch script >  
# scontrol show job <job-id >
```



```
root@slurm:~# sbatch myscript.sh  
Submitted batch job 34  
root@slurm:~# scontrol show job 34  
JobId=34 JobName=ExampleJob  
  UserId=root(0) GroupId=root(0) MCS_label=N/A  
  Priority=4294901759 Nice=0 Account=root QOS=normal  
  JobState=COMPLETED Reason=None Dependency=(null)  
  Requeue=1 Restarts=0 BatchFlag=1 Reboot=0 ExitCode=0:0  
  RunTime=00:00:00 TimeLimit=00:20:00 TimeMin=N/A  
  SubmitTime=2024-01-22T16:55:39 EligibleTime=2024-01-22T16:55:39  
  AccrueTime=2024-01-22T16:55:39  
  StartTime=2024-01-22T16:55:40 EndTime=2024-01-22T16:55:40 Deadline=N/A  
  SuspendTime=None SecsPreSuspend=0 LastSchedEval=2024-01-22T16:55:40 Scheduler=Main  
  Partition=shruti AllocNode:Sid=slurm:4180  
  ReqNodeList=(null) ExcNodeList=(null)  
  NodeList=slurm.master  
  BatchHost=slurm.master  
  NumNodes=1 NumCPUs=1 NumTasks=1 CPUs/Task=1 ReqB:S:C:T=0:0:*:*  
  TRES=cpu=1,node=1,billing=1  
  Socks/Node=* NtasksPerN:B:S:C=0:0:*:* CoreSpec=*  
  MinCPUsNode=1 MinMemoryNode=0 MinTmpDiskNode=0  
  Features=(null) DelayBoot=00:00:00  
  OverSubscribe=OK Contiguous=0 Licenses=(null) Network=(null)  
  Command=/root/myscript.sh  
  WorkDir=/root  
  StdErr=/root/error-34.out  
  StdIn=/dev/null  
  StdOut=/root/example-34.out  
  Power=  
  
root@slurm:~#
```

Output of JOB:

```
root@slurm:~# cat example-34.out
Addition : 30

Subtraction : 10

Multiplication : 200

Division : 2.0
root@slurm:~#
```

Show Association:

# sacctmgr show associations

Cluster	Account	User	Partition	Share	Priority	GrpJobs	GrpTRES	GrpSubmit	GrpWall	GrpTRESMin	MaxJobs	MaxTRES	MaxTRESPerNode	MaxSubmit	MaxWall	MaxTRESMin	QOS	Def	QOS	Gr
cluster	root			1													normal			
cluster	root	root		1													normal			
cluster	rmalab-99			1													normal			
cluster	rmalab-99	hpcsa99		1			node=1										normal			
cluster	rmalab-acc			1													normal			
cluster	rmalab-hp+			1													normal			
cluster	rmalab-hp+	hpcsa100		1													normal			
cluster	testfac1+			1													normal			
cluster	testfac1+	hpcsa1		1													normal			
dhanu	root	root		1													normal			
dhanu	root	root		1													normal			
dhanu	rmalab-99			1													normal			
dhanu	rmalab-99	hpcsa99		1			node=1										normal			
dhanu	rmalab-acc			1						cpu=1200000							normal			
dhanu	rmalab-hp+			1													normal			
dhanu	rmalab-hp+	hpcsa100		1													normal			
dhanu	testfac1+			1													normal			
dhanu	testfac1+	hpcsa1		1													normal			
mansi	root	root		1						cpu=60000							normal			
mansi	root	root		1													normal			
mansi	rmalab-99			1													normal			
mansi	rmalab-99	hpcsa99		1			node=1										normal			
mansi	rmalab-acc			1						cpu=60000							normal			
mansi	rmalab-acc	hpcsa1		1			node=1							10000			normal			
mansi	rmalab-hp+			1													normal			
mansi	rmalab-hp+	hpcsa100		1													normal			
mansi	testfac1+			1													normal			

Q1.

Slurm Partition:

```
# PartitionName=scavenger Nodes=slurm.master Default=YES MaxTime=31-00:00:00  
DefaultTime=01:00:00 DisableRootJobs=YES State=UP
```

Slurm.conf File:

```
# COMPUTE NODES  
NodeName=slurm.master,slurm.node1,slurm.node2 CPUs=1 State=UNKNOWN  
PartitionName=mansi Nodes=ALL Default=NO MaxTime=INFINITE State=UP  
PartitionName=dhananjay Nodes=ALL Default=NO MaxTime=INFINITE State=UP  
PartitionName=shruti Nodes=ALL Default=NO MaxTime=INFINITE State=UP MaxNodes=1  
PartitionName=scavenger Nodes=slurm.master Default=YES MaxTime=31-00:00:00 DefaultTime=01:00:00 DisableRootJobs=YES State=UP
```

Sinfo:

# sinfo

```
root@slurm:~# sinfo  
PARTITION AVAIL TIMELIMIT NODES STATE NODELIST  
mansi      up    infinite      3  idle slurm.master,slurm.node[1-2]  
dhananjay  up    infinite      3  idle slurm.master,slurm.node[1-2]  
shruti     up    infinite      3  idle slurm.master,slurm.node[1-2]  
scavenger* up  31-00:00:00    1  idle slurm.master  
root@slurm:~#
```

Scontrol

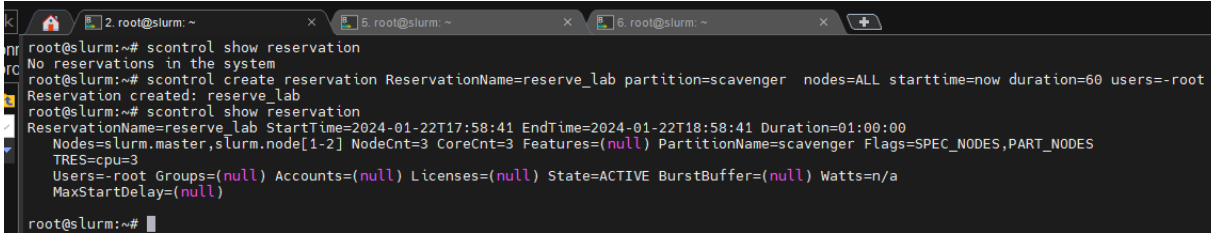
# scontrol show partition

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

Q2.

## Reservation

```
# scontrol create reservation ReservationName=reserve_lab partition=scavenger nodes=ALL  
starttime=now duration=60 users=-root
```



```
root@slurm:~# scontrol show reservation  
No reservations in the system  
root@slurm:~# scontrol create reservation ReservationName=reserve_lab partition=scavenger nodes=ALL starttime=now duration=60 users=-root  
Reservation created: reserve_lab  
root@slurm:~# scontrol show reservation  
ReservationName=reserve_lab StartTime=2024-01-22T17:58:41 EndTime=2024-01-22T18:58:41 Duration=01:00:00  
Nodes=slurm.master,slurm.node[1-2] NodeCnt=3 CoreCnt=3 Features=(null) PartitionName=scavenger Flags=SPEC_NODES,PART_NODES  
TRES=cpu=3  
Users=-root Groups=(null) Accounts=(null) Licenses=(null) State=ACTIVE BurstBuffer=(null) Watts=n/a  
MaxStartDelay=(null)  
  
root@slurm:~#
```