

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:

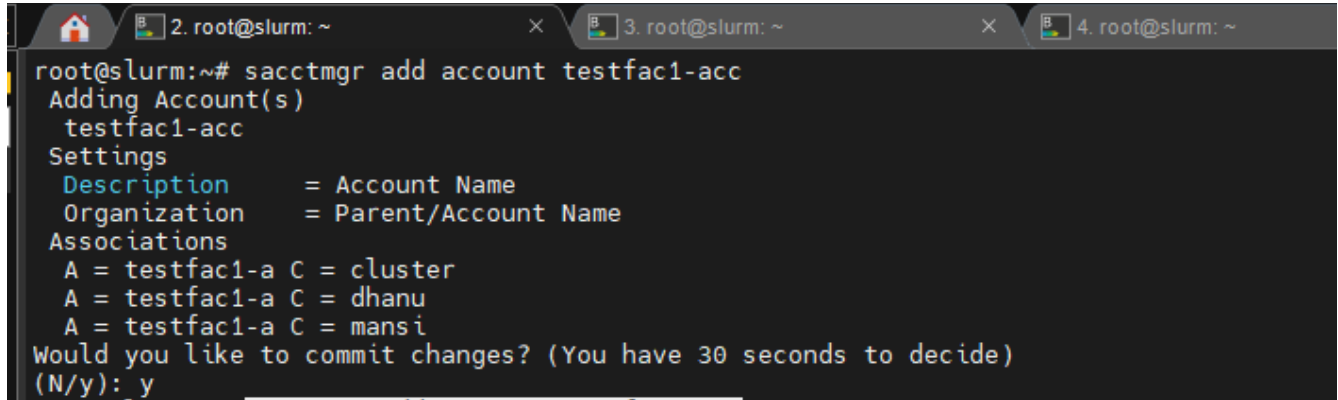
scontrol show partition <partition name>

```
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.

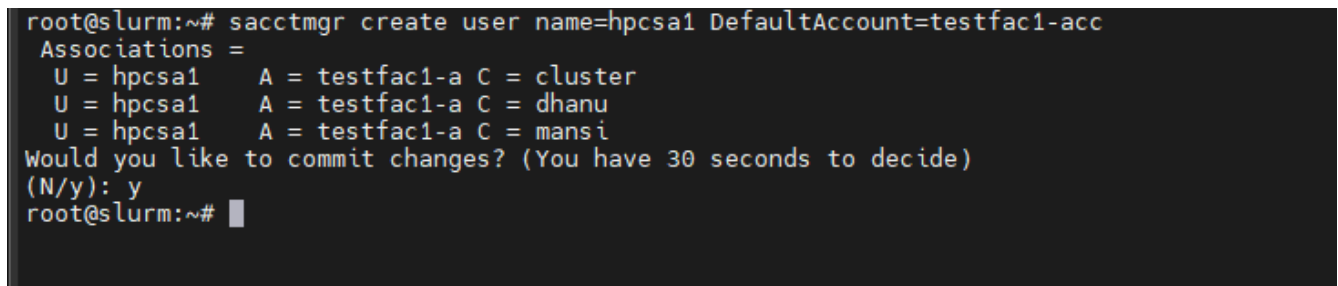
Create Account:

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

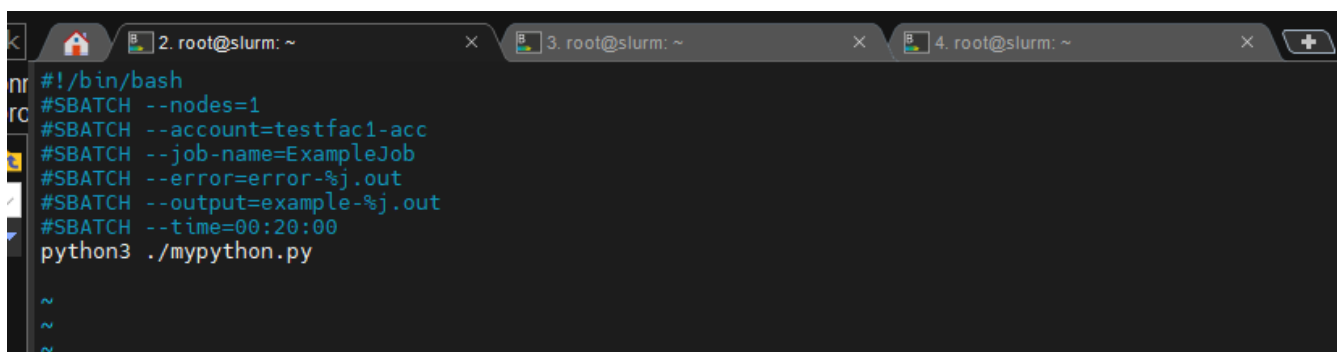
A terminal window with three tabs labeled '2. root@slurm: ~', '3. root@slurm: ~', and '4. root@slurm: ~'. The active tab shows the command 'root@slurm:~# sacctmgr add account testfac1-acc' and its output. The output includes 'Adding Account(s)', 'testfac1-acc', 'Settings' (Description = Account Name, Organization = Parent/Account Name), 'Associations' (A = testfac1-a C = cluster, A = testfac1-a C = dhanu, A = testfac1-a C = mansi), and a prompt 'Would you like to commit changes? (You have 30 seconds to decide) (N/y): y'.

Create User:

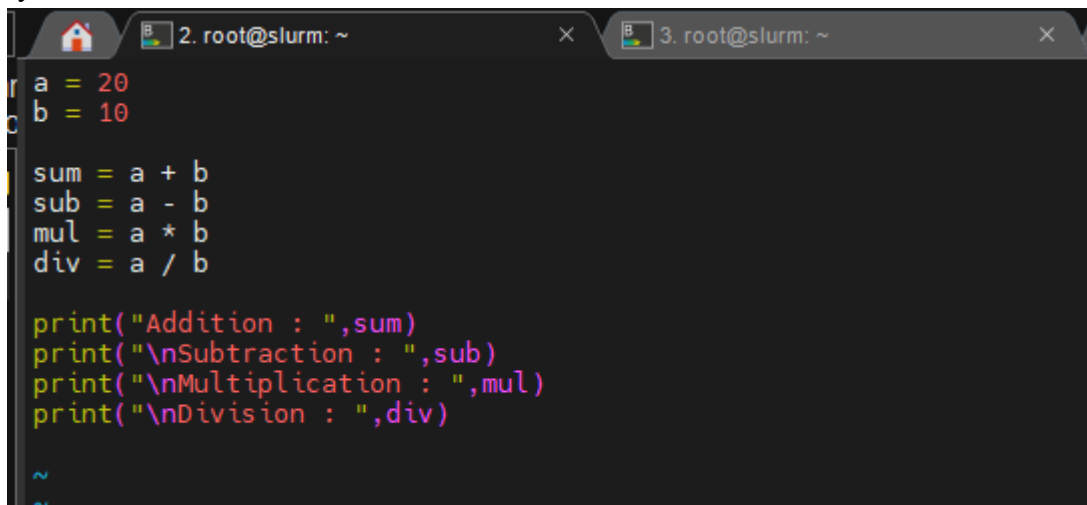
```
# sacctmgr create user name=hpcsai DefaultAccount=testfac1-acc
```

A terminal window with three tabs labeled '2. root@slurm: ~', '3. root@slurm: ~', and '4. root@slurm: ~'. The active tab shows the command 'root@slurm:~# sacctmgr create user name=hpcsai DefaultAccount=testfac1-acc' and its output. The output includes 'Associations =', 'U = hpcsai A = testfac1-a C = cluster', 'U = hpcsai A = testfac1-a C = dhanu', 'U = hpcsai A = testfac1-a C = mansi', and a prompt 'Would you like to commit changes? (You have 30 seconds to decide) (N/y): y'. The prompt is followed by 'root@slurm:~#'.

BATCH Script:

A terminal window with three tabs labeled '2. root@slurm: ~', '3. root@slurm: ~', and '4. root@slurm: ~'. The active tab shows a batch script. The script starts with '#!/bin/bash' and includes several '#SBATCH' directives: '--nodes=1', '--account=testfac1-acc', '--job-name=ExampleJob', '--error=error-%j.out', '--output=example-%j.out', and '--time=00:20:00'. The script ends with 'python3 ./mypython.py'. Below the script, there are three tilde characters '~' on separate lines.

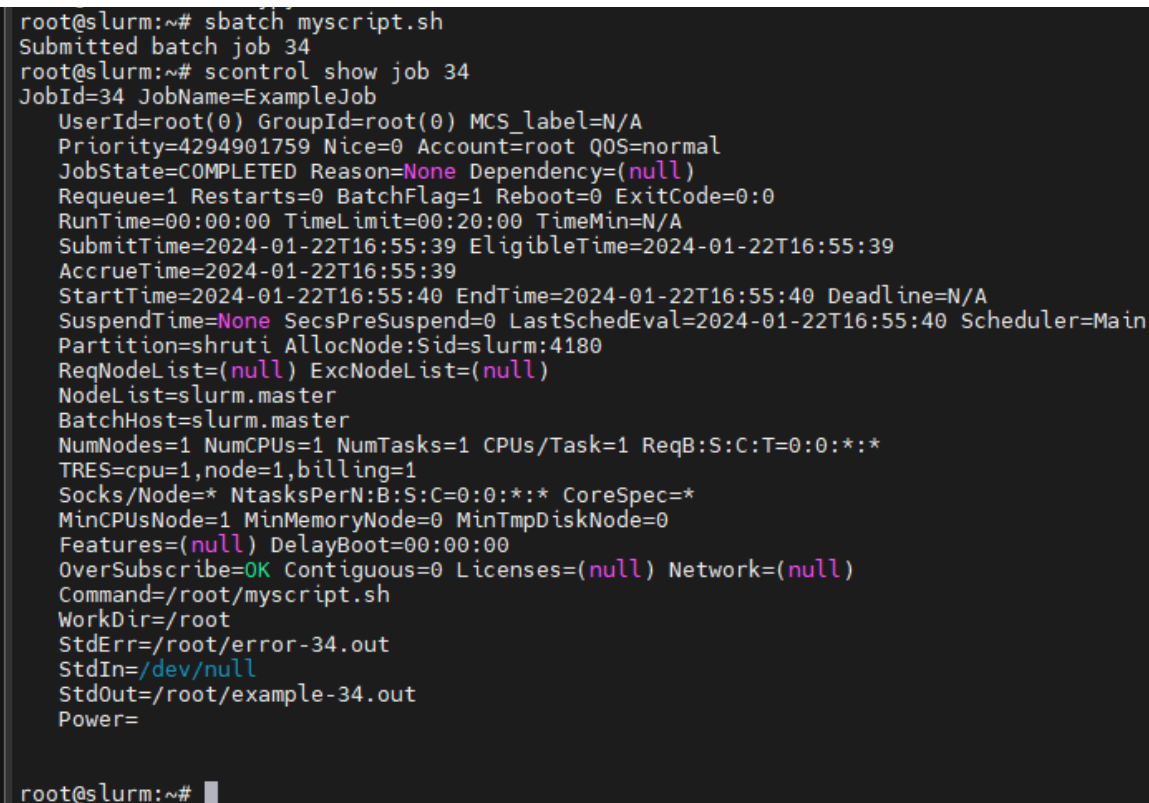
Python Code:



```
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	rmlab-99			1													normal			
cluster	rmlab-99	hpcsa99		1			node=1										normal			
cluster	rmlab-acc			1													normal			
cluster	rmlab-hp+			1													normal			
cluster	rmlab-hp+	hpcsa100		1													normal			
cluster	testfac1+			1													normal			
cluster	testfac1+	hpcsa1		1													normal			
dhanu	root	root		1													normal			
dhanu	root	root		1													normal			
dhanu	rmlab-99			1													normal			
dhanu	rmlab-99	hpcsa99		1			node=1										normal			
dhanu	rmlab-acc			1						cpu=1200000							normal			
dhanu	rmlab-hp+			1													normal			
dhanu	rmlab-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	rmlab-99			1													normal			
mansi	rmlab-99	hpcsa99		1			node=1										normal			
mansi	rmlab-acc			1						cpu=60000							normal			
mansi	rmlab-acc	hpcsa1		1			node=1							10000			normal			
mansi	rmlab-hp+			1													normal			
mansi	rmlab-hp+	hpcsa100		1													normal			
mansi	testfac1+			1													normal			