Here are **30 multiple-choice questions (MCQs)** related to **Slurm Installation and Configuration**, **Submitting and Managing Jobs**, and **Writing the Batch Script**:

Slurm Installation and Configuration

1. **Which of the following is the primary configuration file for Slurm?** A) /etc/slurm/slurm.conf
   B) /etc/slurm/slurmdbd.conf
   C) /etc/slurm/sbatch.conf
   D) /etc/slurm/slurmd.conf

   Answer: A
   Explanation: The slurm.conf file is the primary configuration file for Slurm, where settings such as partitions, nodes, and resources are defined.

---

2. **Which command is used to start the Slurm controller (slurmctld)?** A) systemctl start slurmctld
   B) slurm start
   C) scontrol start slurmctld
   D) sbatch start slurmctld

   Answer: A
   Explanation: The command systemctl start slurmctld is used to start the Slurm controller on the system.

---

3. **Which file contains the configuration for the Slurm database daemon (slurmdbd)?** A) slurmdbd.conf
   B) slurm.conf
   C) slurm.cfg
   D) slurmdb.conf

   Answer: A
   Explanation: The slurmdbd.conf file contains the configuration settings for the Slurm database daemon.

4. **What command checks the status of Slurm services (e.g., slurmctld, slurmd)?** A) scontrol status
   B) systemctl status slurm
   C) squeue status
   D) slurmd status

   Answer: B
   Explanation: The systemctl status slurm command checks the status of the Slurm services like slurmctld and slurmd.

---

5. **In Slurm, which file contains the list of nodes and their configuration?** A) slurm.conf
   B) nodes.conf
   C) node.cfg
   D) slurm_node_config

   Answer: A
   Explanation: The slurm.conf file includes information about the configuration of nodes, partitions, and other resources.

---

6. **Which Slurm daemon is responsible for executing job commands on compute nodes?** A) slurmctld
   B) slurmd
   C) slurmdbd
   D) sbatchd

   Answer: B
   Explanation: The slurmd daemon runs on each compute node and is responsible for executing job commands on that node.

---

7. **What command do you use to check if the Slurm controller is running?** A) scontrol status
   B) squeue status
   C) systemctl status slurmctld

D) sinfo status

Answer: C
Explanation: The command systemctl status slurmctld checks if the Slurm controller service is active and running.

---

8. **Which Slurm configuration directive is used to define partitions?** A) Node
   B) Partition
   C) Queue
   D) Resource

   Answer: B
   Explanation: The Partition directive in slurm.conf is used to define partitions in Slurm where jobs are scheduled.

---

9. **What is the purpose of the slurmdbd service in Slurm?** A) To manage node resources
   B) To store job accounting data
   C) To run jobs on compute nodes
   D) To schedule jobs

   Answer: B
   Explanation: The slurmdbd (Slurm Database Daemon) service stores job accounting data and tracks job history.

---

10. **Which of the following directories typically contains the Slurm configuration files?** A) /etc/slurm/
    B) /usr/local/slurm/
    C) /var/slurm/
    D) /home/slurm/

    Answer: A
    Explanation: Slurm configuration files, such as slurm.conf, are typically located in the /etc/slurm/ directory.

Submitting and Managing Jobs

11. **Which Slurm command is used to submit a job?** A) sbatch
    B) srun
    C) scontrol
    D) scancel

    Answer: A
    Explanation: The sbatch command is used to submit batch jobs to the Slurm scheduler.

---

12. **How do you submit an interactive job in Slurm?** A) sbatch --interactive
    B) srun --interactive
    C) sbatch -I
    D) scontrol --interactive

    Answer: B
    Explanation: The srun --interactive command is used to submit interactive jobs in Slurm.

---

13. **What command is used to cancel a job in Slurm?** A) sbatch
    B) scancel
    C) srun
    D) scontrol

    Answer: B
    Explanation: The scancel command is used to cancel a job in Slurm.

---

14. **How do you check the status of jobs in the queue?** A) squeue
    B) sbatch
    C) scancel
    D) scontrol

    Answer: A

Explanation: The squeue command displays information about jobs in the queue, including job status and resource usage.

---

15. **Which command would you use to get more detailed information about a job in Slurm?** A) sinfo
    B) scontrol show job <job_id>
    C) sbatch -v
    D) scancel <job_id>

    Answer: B
    Explanation: The scontrol show job <job_id> command provides detailed information about a specific job.

---

16. **How can you specify a job's priority in Slurm?** A) By setting the --priority directive in the job script
    B) By using the nice parameter
    C) By modifying the slurm.conf file
    D) By submitting jobs with high CPU demands

    Answer: B
    Explanation: Slurm job priority is indirectly controlled by the nice value, which can be set via job parameters.

---

17. **Which Slurm command provides detailed status information about available nodes?** A) squeue
    B) sinfo
    C) sbatch
    D) scontrol

    Answer: B
    Explanation: The sinfo command provides detailed information about the status of nodes, including their availability and partition information.

---

18. **What happens when you exceed the time limit specified in a Slurm batch job?** A) The job is automatically resumed
    B) The job is killed and removed from the queue
    C) The job is suspended
    D) The job is paused for the administrator to decide

    Answer: B
    Explanation: When a job exceeds the time limit, it is automatically terminated by the Slurm scheduler.

---

19. **How do you display job output and error messages in Slurm?** A) By using `--output` and `--error` directives
    B) By using `scontrol show`
    C) By using `sbatch -o`
    D) By running `squeue`

    Answer: A
    Explanation: The `--output` and `--error` directives in a Slurm batch script are used to specify files for standard output and error messages.

---

20. **Which Slurm command is used to view the state of a job in real-time?** A) `squeue`
    B) `scontrol`
    C) `sbatch`
    D) `srun`

    Answer: A
    Explanation: The `squeue` command displays the real-time state of jobs in the queue.

Writing the Batch Script

21. **What is the first line in a Slurm batch script that defines the job?** A) `#!/bin/bash`
    B) `#SBATCH`
    C) `#SBATCH -J job_name`
    D) `#SBATCH --time=02:00:00`

    Answer: A

Explanation: The first line #!/bin/bash is used to specify the shell to run the script in.

---

22. **Which directive is used to set the job name in Slurm?** A) --job-name=job_name
    B) --name=job_name
    C) #SBATCH --job-name=job_name
    D) #SBATCH --name=job_name

    Answer: C
    Explanation: The #SBATCH --job-name=job_name directive sets the name of the job in the batch script.

---

23. **How do you specify the number of tasks required for a job in Slurm?** A) #SBATCH --tasks=4
    B) #SBATCH --ntasks=4
    C) #SBATCH --num-tasks=4
    D) All of the above

    Answer: D
    Explanation: Slurm allows multiple ways to specify the number of tasks using --tasks, --ntasks, or --num-tasks.

---

24. **How do you request a specific amount of memory for a Slurm job?** A) #SBATCH --mem=4GB
    B) #SBATCH --memory=4GB
    C) #SBATCH --mem-per-cpu=4GB
    D) All of the above

    Answer: D
    Explanation: All of these directives can be used to request memory in Slurm: --mem, --memory, and --mem-per-cpu.

---

25. **Which directive in a Slurm batch script specifies the wall time limit for a job?** A) #SBATCH --wall-time
    B) #SBATCH --time

C) #SBATCH --max-time
D) #SBATCH --runtime

Answer: B
Explanation: The #SBATCH --time directive specifies the maximum wall time for a job in Slurm.

---

26. **How can you specify a job should run on a specific partition in Slurm?** A) #SBATCH --partition=partition_name
B) #SBATCH --queue=partition_name
C) #SBATCH --node=partition_name
D) #SBATCH --set-partition

Answer: A
Explanation: The #SBATCH --partition directive is used to specify the partition on which the job should run.

---

27. **How do you execute a command inside a batch script in Slurm?** A) Directly in the script file
B) Using srun
C) Using sbatch
D) Using scontrol

Answer: A
Explanation: Commands are directly written in the batch script after the Slurm directives, or they can be executed using srun inside the script.

---

28. **What is the purpose of the --exclusive directive in a Slurm batch script?** A) To prevent other jobs from running on the same nodes
B) To request a specific node
C) To increase job priority
D) To allocate extra memory for the job

Answer: A
Explanation: The --exclusive directive ensures that no other jobs run on the same

node(s) while your job is running.

---

29. **Which Slurm command is used to write the job's output to a specific file?** A) #SBATCH --output=job.out
    B) #SBATCH --stderr=job.out
    C) #SBATCH --log=job.out
    D) #SBATCH --file-output=job.out

    Answer: A
    Explanation: The #SBATCH --output=job.out directive is used to specify the file where job output will be written.

---

30. **Which Slurm command is used to submit a job in a batch script named example_script.sh?** A) sbatch example_script.sh
    B) submit example_script.sh
    C) srun example_script.sh
    D) squeue example_script.sh

    Answer: A
    Explanation: The command sbatch example_script.sh is used to submit the batch script example_script.sh to Slurm.

These MCQs provide an overview of the installation, configuration, and usage of Slurm, along with how to submit, manage, and write batch scripts for efficient job scheduling.

Here are **30 multiple-choice questions (MCQs)** related to **Managing Nodes** and **Setting Server Scheduling Policies** in the context of Slurm:

Managing Nodes

1. **Which file defines the configuration of nodes in Slurm?** A) slurm.conf
   B) nodes.conf
   C) slurmdbd.conf
   D) node.cfg

   Answer: A
   Explanation: The slurm.conf file defines the configuration of nodes, partitions, and other Slurm settings.

---

2. **Which Slurm command is used to view the status of all available nodes?** A) scontrol
   B) squeue
   C) sinfo
   D) sbatch

   Answer: C
   Explanation: The sinfo command provides status information about available nodes in Slurm, including their state and resources.

---

3. **In Slurm, how do you mark a node as "down"?** A) scontrol update node=<node_name> state=down
   B) scontrol down <node_name>
   C) scontrol disable <node_name>
   D) slurmctl down <node_name>

   Answer: A
   Explanation: The command scontrol update node=<node_name> state=down marks a node as "down" in Slurm.

---

4. **What does the scontrol command do when used with the show node option?** A) Displays the node's configuration
   B) Displays the node's job queue
   C) Displays the node's current status and resource usage
   D) Displays all nodes in the cluster

   Answer: C
   Explanation: The scontrol show node command displays information about a node's status, resource usage, and state.

---

5. **Which Slurm command is used to add a new node to the Slurm configuration?** A) scontrol add node
   B) scontrol update node
   C) scontrol config node
   D) slurmctl add node

   Answer: B
   Explanation: The scontrol update node command can be used to add a new node to the cluster, typically after it has been configured in slurm.conf.

---

6. **Which of the following states can a Slurm node be in?** A) idle, down, drained, alloc
   B) up, down, waiting, alloc
   C) idle, busy, active, drained
   D) active, ready, inactive, unavailable

   Answer: A
   Explanation: Slurm nodes can be in various states such as idle, down, drained, or alloc.

---

7. **What happens when you set a node to the drained state in Slurm?** A) It is removed from the cluster
   B) It is available for new jobs
   C) It is temporarily unavailable for job scheduling but jobs running on it continue
   D) It is shut down immediately

   Answer: C

Explanation: A node in the drained state is unavailable for new jobs but can continue running jobs that are already started.

---

8. **How do you specify the maximum number of jobs a node can handle in Slurm?** A) Using the --max-jobs directive
   B) Using the --jobs-max directive
   C) Setting MaxJobs in the slurm.conf file
   D) Setting MaxTasksPerNode in the slurm.conf file

   Answer: D
   Explanation: The MaxTasksPerNode directive in slurm.conf specifies the maximum number of tasks that a node can handle.

---

9. **What is the default state of a node when it is first added to Slurm?** A) down
   B) idle
   C) alloc
   D) drained

   Answer: B
   Explanation: By default, newly added nodes are in the idle state, ready to be scheduled for jobs.

---

10. **How can you remove a node from Slurm's scheduling without affecting jobs already running on it?** A) scontrol update node=<node_name> state=down
    B) scontrol remove node=<node_name>
    C) scontrol update node=<node_name> state=drained
    D) scontrol suspend node=<node_name>

    Answer: C
    Explanation: Setting a node to drained will remove it from job scheduling without terminating any running jobs.

Setting Server Scheduling Policies

11. **Which directive in slurm.conf is used to configure the default partition?** A) DefaultPartition
    B) PartitionDefault
    C) DefaultQueue
    D) DefaultPartitionName

    Answer: A
    Explanation: The DefaultPartition directive in slurm.conf defines the default partition for job submissions.

---

12. **What scheduling policy does Slurm use by default for job scheduling?** A) Fairshare
    B) First Come First Serve (FCFS)
    C) Priority-based Scheduling
    D) Round-robin

    Answer: B
    Explanation: By default, Slurm uses a First Come, First Serve (FCFS) policy for scheduling jobs.

---

13. **What Slurm directive sets the maximum time a job can run on a node?** A) MaxTime
    B) MaxRunTime
    C) TimeLimit
    D) TimePerNode

    Answer: C
    Explanation: The TimeLimit directive in slurm.conf specifies the maximum time for jobs to run on a node.

---

14. **Which Slurm policy ensures jobs do not run if the node's resources are exhausted?** A) Allocatable
    B) ResourceLimits
    C) EnforceLimits
    D) Strict

    Answer: B
    Explanation: The ResourceLimits policy ensures jobs will not be scheduled on nodes

that cannot meet their resource requirements.

---

15. **Which parameter is used in Slurm to control job prioritization?** A) PriorityWeightAge
    B) JobPriority
    C) MaxPriority
    D) JobWeight

    Answer: A
    Explanation: The PriorityWeightAge parameter is used to give higher priority to older jobs in Slurm.

---

16. **Which Slurm directive determines the number of CPUs a job can access on a node?** A) CPUsPerNode
    B) NumCPUs
    C) --cpus-per-task
    D) CpusPerTask

    Answer: A
    Explanation: The CPUsPerNode directive defines the number of CPUs available on each node in Slurm.

---

17. **Which option in Slurm is used to set the priority for each job based on resource usage?** A) PriorityWeightJobSize
    B) PriorityWeightResource
    C) PriorityWeightPartition
    D) PriorityWeightFairshare

    Answer: A
    Explanation: The PriorityWeightJobSize option adjusts job priority based on the resource size requested for the job.

---

18. **Which option in Slurm allows administrators to control job preemption?** A) Preempt

B) PreemptMode
C) PreemptPriority
D) PreemptTime

Answer: B
Explanation: The PreemptMode option in Slurm allows administrators to control job preemption based on defined policies.

---

19. **What does the JobSubmitPlugins directive allow administrators to configure?** A) Job submission rates
B) Custom plugins for job submission filtering
C) Job preemption
D) Resource allocation filtering

Answer: B
Explanation: The JobSubmitPlugins directive allows administrators to configure custom plugins for job submission filtering.

---

20. **Which Slurm scheduling policy is used to share resources equitably between jobs?** A) Fairshare Scheduling
B) FCFS Scheduling
C) Round-robin Scheduling
D) FIFO Scheduling

Answer: A
Explanation: Fairshare scheduling ensures equitable resource allocation between jobs based on the history of resource usage.

---

21. **Which command can be used to check the current scheduling policies in Slurm?**
A) scontrol show config
B) scontrol show policies
C) sinfo
D) sbatch --policy

Answer: A
Explanation: The scontrol show config command shows the current configuration

settings, including scheduling policies, in Slurm.

---

22. **Which directive in Slurm controls the maximum number of jobs a user can submit?** A) MaxJobsPerUser
    B) MaxUserJobs
    C) UserJobLimit
    D) MaxJobs

    Answer: A
    Explanation: The MaxJobsPerUser directive controls the maximum number of jobs a user can submit to Slurm.

---

23. **Which scheduling policy in Slurm is used to prioritize jobs based on their job size (number of nodes)?** A) PriorityWeightJobSize
    B) JobSizePolicy
    C) NodePriorityScheduling
    D) PriorityByJobSize

    Answer: A
    Explanation: The PriorityWeightJobSize directive in Slurm adjusts job priority based on the job's resource requirements.

---

24. **How does Slurm handle jobs with equal priority?** A) Random scheduling
    B) FCFS (First Come, First Serve)
    C) Preemptive scheduling
    D) By job size

    Answer: B
    Explanation: When jobs have equal priority, Slurm uses FCFS (First Come, First Serve) to schedule them.

---

25. **What does the PriorityWeightFairshare directive control in Slurm?** A) Prioritizing users based on job size
    B) Giving priority to jobs from users with less resource usage history

C) Prioritizing users with higher job history
D) Setting priority based on job completion time

Answer: B
Explanation: The PriorityWeightFairshare directive prioritizes jobs from users with less resource usage history, promoting fairness in scheduling.

---

26. **Which Slurm scheduling algorithm is used when resources are allocated dynamically?** A) Backfilling
B) FIFO
C) Round-robin
D) Static allocation

Answer: A
Explanation: Backfilling is a dynamic scheduling algorithm that aims to utilize idle resources by allowing smaller jobs to be scheduled in gaps.

---

27. **Which Slurm directive sets the maximum wall time allowed for jobs?** A) MaxWallTime
B) MaxTime
C) TimeLimit
D) WallTimeLimit

Answer: C
Explanation: The TimeLimit directive in Slurm sets the maximum allowed run time (wall time) for jobs.

---

28. **How can you prevent a node from being used for scheduling jobs in Slurm?** A) Mark the node as drained
B) Set the node's state to down
C) Use the --no-schedule option
D) Remove the node from slurm.conf

Answer: A
Explanation: Marking a node as drained will prevent it from being used for scheduling

new jobs, while allowing current jobs to finish.

---

29. **What does the PriorityWeightPartition directive do in Slurm?** A) Prioritizes jobs in specific partitions
    B) Assigns priorities based on job partition
    C) Configures partition-related scheduling policies
    D) Controls the job priority within a partition

    Answer: A
    Explanation: The PriorityWeightPartition directive in Slurm prioritizes jobs in specific partitions based on predefined weights.

---

30. **How does the PreemptMode directive affect job scheduling in Slurm?** A) It determines the maximum job size
    B) It sets conditions for job preemption
    C) It restricts job resource allocation
    D) It sets the maximum number of nodes per job

    Answer: B
    Explanation: The PreemptMode directive defines conditions under which jobs can be preempted to make room for higher-priority jobs.

These MCQs provide an overview of node management, scheduling policies, and how they can be configured within Slurm for efficient job scheduling and resource management.

Here are **30 multiple-choice questions (MCQs)** related to **Scheduler Algorithms** in the context of Slurm and general job scheduling:

Scheduler Algorithms in Slurm

1. **Which scheduling algorithm does Slurm use by default?** A) Fairshare
   B) First-Come, First-Served (FCFS)
   C) Round-robin
   D) Backfilling

   Answer: B
   Explanation: Slurm's default scheduling algorithm is First-Come, First-Served (FCFS).

---

2. **What is the primary goal of the Fairshare scheduling algorithm?** A) To allocate jobs based on job size
   B) To prioritize jobs based on the time they were submitted
   C) To ensure fairness by giving higher priority to users with less resource usage history
   D) To allocate jobs in a round-robin manner

   Answer: C
   Explanation: The Fairshare algorithm prioritizes users with less resource usage history to ensure equitable resource allocation.

---

3. **Which Slurm scheduling algorithm allows smaller jobs to fill gaps in the job queue of larger jobs?** A) Backfilling
   B) First-Come, First-Served (FCFS)
   C) Round-robin
   D) Priority-based Scheduling

   Answer: A
   Explanation: Backfilling allows smaller jobs to be scheduled in the gaps left by larger jobs in the queue.

---

4. **In Slurm, what does the backfilling algorithm aim to achieve?** A) Prioritize jobs by submission time
   B) Minimize job wait time
   C) Fill idle resources with smaller jobs while larger jobs wait
   D) Maximize CPU utilization

   Answer: C
   Explanation: Backfilling aims to minimize idle resource time by scheduling smaller jobs in the gaps left by larger jobs in the queue.

---

5. **Which of the following is an example of a job scheduling policy where jobs are scheduled in the order they are submitted?** A) Round-robin
   B) First-Come, First-Served (FCFS)
   C) Fairshare
   D) Backfilling

   Answer: B
   Explanation: First-Come, First-Served (FCFS) schedules jobs in the order they are submitted without prioritization.

---

6. **What is the role of the PriorityWeightFairshare parameter in Slurm?** A) It controls how much weight is given to a job's size
   B) It adjusts the priority of jobs based on resource usage history
   C) It defines the maximum job priority
   D) It gives priority to jobs submitted at specific times

   Answer: B
   Explanation: The PriorityWeightFairshare parameter adjusts the priority of jobs based on the historical resource usage of the user.

---

7. **Which of the following scheduling algorithms involves preempting lower-priority jobs in favor of higher-priority jobs?** A) First-Come, First-Served (FCFS)
   B) Preemptive Scheduling
   C) Backfilling
   D) Round-robin

Answer: B
Explanation: Preemptive scheduling allows higher-priority jobs to interrupt and replace lower-priority jobs.

---

8. **What does the round-robin scheduling algorithm ensure in Slurm?** A) Each job gets an equal share of CPU time in cyclic order
   B) Jobs are prioritized based on fairness
   C) Jobs are scheduled based on submission time
   D) Large jobs are always scheduled before small jobs

   Answer: A
   Explanation: Round-robin scheduling ensures that jobs are executed in a cyclic order, allocating equal time slots to each job.

---

9. **In Slurm, what scheduling strategy allows the system to prioritize jobs with shorter execution times?** A) Backfilling
   B) Shortest Job First (SJF)
   C) Longest Job First (LJF)
   D) First-Come, First-Served (FCFS)

   Answer: B
   Explanation: Shortest Job First (SJF) prioritizes jobs with the shortest estimated execution times to improve overall system performance.

---

10. **Which of the following best describes the PreemptMode setting in Slurm?** A) It allows jobs to share resources equally
    B) It dictates how jobs can be preempted when a higher-priority job requires resources
    C) It defines the number of nodes allocated to each job
    D) It schedules jobs based on their runtime length

    Answer: B
    Explanation: The PreemptMode setting controls how jobs can be preempted to allow higher-priority jobs to run.

---

11. **What does the PriorityWeightJobSize parameter in Slurm influence?** A) It affects the priority of jobs based on their submission time
    B) It adjusts the job priority based on the resources requested
    C) It sets a weight for jobs based on job duration
    D) It influences job scheduling based on the user's resource usage

    Answer: B
    Explanation: The PriorityWeightJobSize parameter adjusts job priority based on the resources requested (such as CPU or memory).

---

12. **Which algorithm is most suitable for clusters where users are allocated resources based on fair usage?** A) Priority-based Scheduling
    B) Fairshare Scheduling
    C) First-Come, First-Served (FCFS)
    D) Round-robin Scheduling

    Answer: B
    Explanation: Fairshare scheduling is designed to allocate resources fairly by taking past usage into account.

---

13. **In Slurm, which algorithm allows a job to be scheduled before a larger job if resources are available?** A) Backfilling
    B) First-Come, First-Served (FCFS)
    C) Priority-based Scheduling
    D) Preemptive Scheduling

    Answer: A
    Explanation: Backfilling allows smaller jobs to be scheduled before larger jobs, filling gaps in resource allocation.

---

14. **Which scheduling policy is used in Slurm to allocate jobs based on their priority and resource needs?** A) Round-robin
    B) Backfilling
    C) Priority-based Scheduling
    D) First-Come, First-Served (FCFS)

Answer: C
Explanation: Priority-based Scheduling assigns jobs based on both their priority and resource needs.

---

15. **Which of the following best describes the Preemption feature in Slurm?** A) Jobs are scheduled by their size
B) Higher-priority jobs interrupt lower-priority jobs
C) Jobs are executed in a strict order based on submission time
D) Jobs are executed based on the user's credit

Answer: B
Explanation: Preemption allows higher-priority jobs to interrupt and replace lower-priority jobs.

---

16. **How does the PriorityWeightPartition parameter affect job scheduling in Slurm?** A) It gives higher priority to jobs in specified partitions
B) It determines the maximum priority a job can receive
C) It influences job backfilling
D) It prioritizes jobs based on submission time

Answer: A
Explanation: The PriorityWeightPartition parameter gives higher priority to jobs submitted to certain partitions based on configuration.

---

17. **In Slurm, what is the main benefit of using the Shortest Job First (SJF) scheduling algorithm?** A) It maximizes resource utilization
B) It minimizes the wait time for small jobs
C) It allows for equitable distribution of resources
D) It prioritizes jobs based on their submission time

Answer: B
Explanation: Shortest Job First (SJF) minimizes the wait time for small jobs by prioritizing them for execution.

---

18. **What does the MaxJobCount directive control in Slurm?** A) The maximum number of jobs a user can submit simultaneously
    B) The maximum priority a job can have
    C) The maximum number of jobs that can be queued in a partition
    D) The maximum runtime for any job

    Answer: A
    Explanation: The MaxJobCount directive limits the number of jobs a user can submit at the same time.

---

19. **Which of the following is a characteristic of the Fairshare scheduling policy?** A) It favors jobs from new users
    B) It allocates resources based on user history
    C) It schedules jobs in the order they were submitted
    D) It uses a priority queue based on job size

    Answer: B
    Explanation: Fairshare scheduling allocates resources based on users' historical resource usage, ensuring fairness.

---

20. **How does the Slurm scheduler determine job priority under the PreemptMode policy?** A) By the job's submission time
    B) By the user's historical resource usage
    C) By the job's requested resources and priority class
    D) By the size of the job

    Answer: C
    Explanation: Under the PreemptMode policy, job priority is determined by the job's requested resources and priority class.

---

21. **In Slurm, how does the PriorityWeightAge parameter influence job scheduling?** A) It assigns priority to jobs based on the submission time
    B) It adjusts job priority based on their age in the queue
    C) It allocates resources based on job size
    D) It prioritizes jobs from users who haven't used resources recently

Answer: B
Explanation: The PriorityWeightAge parameter adjusts job priority based on how long the job has been in the queue.

---

22. **Which of the following strategies in Slurm aims to reduce job wait times by utilizing idle resources?** A) First-Come, First-Served (FCFS)
B) Backfilling
C) Round-robin
D) Preemptive Scheduling

Answer: B
Explanation: Backfilling reduces job wait times by filling idle resources with smaller jobs.

---

23. **Which scheduling policy in Slurm minimizes job starvation by giving jobs a fair share of resources?** A) First-Come, First-Served (FCFS)
B) Round-robin
C) Fairshare Scheduling
D) Backfilling

Answer: C
Explanation: Fairshare Scheduling minimizes job starvation by ensuring that jobs are allocated resources based on fair usage over time.

---

24. **What does the PriorityWeightTime parameter affect in Slurm?** A) The priority of jobs based on their resource requirements
B) The weight of the job's submission time in calculating priority
C) The number of CPUs allocated to a job
D) The maximum job run time

Answer: B
Explanation: The PriorityWeightTime parameter adjusts the job priority based on the time the job was submitted.

---

25. **In Slurm, which algorithm reduces job queue waiting by allowing small jobs to run first?** A) Shortest Job First (SJF)
B) First-Come, First-Served (FCFS)
C) Fairshare Scheduling
D) Backfilling

Answer: A
Explanation: The Shortest Job First (SJF) algorithm allows small jobs to be prioritized for execution to reduce waiting times.

---

26. **Which of the following scheduling policies gives priority to jobs from users who have consumed fewer resources in the past?** A) Fairshare Scheduling
B) Preemptive Scheduling
C) Priority Scheduling
D) Round-robin Scheduling

Answer: A
Explanation: Fairshare Scheduling prioritizes jobs from users who have consumed fewer resources historically.

---

27. **Which algorithm in Slurm dynamically adjusts job scheduling based on resource availability?** A) Backfilling
B) Round-robin
C) Shortest Job First (SJF)
D) First-Come, First-Served (FCFS)

Answer: A
Explanation: Backfilling dynamically adjusts scheduling by fitting smaller jobs into gaps between larger jobs.

---

28. **What is the main advantage of using the Preemptive Scheduling algorithm in Slurm?** A) It prevents job starvation
B) It ensures that jobs with the highest resource demands are scheduled first
C) It allows jobs to interrupt and replace lower-priority jobs
D) It guarantees equal allocation of resources

Answer: C
Explanation: Preemptive Scheduling allows higher-priority jobs to interrupt and replace lower-priority jobs to maximize system throughput.

---

29. **Which of the following is a disadvantage of the First-Come, First-Served (FCFS) scheduling algorithm?** A) Jobs may experience high wait times if a large job is at the front of the queue
    B) It always results in equitable resource distribution
    C) It prioritizes jobs from new users
    D) It preempts jobs to ensure fairness

    Answer: A
    Explanation: FCFS can result in high wait times if a large job occupies the front of the queue, leading to longer delays for smaller jobs.

---

30. **Which of the following Slurm scheduling algorithms is most appropriate for handling clusters with a mix of large and small jobs?** A) First-Come, First-Served (FCFS)
    B) Backfilling
    C) Preemptive Scheduling
    D) Round-robin

    Answer: B
    Explanation: Backfilling is ideal for clusters with a mix of job sizes because it allows smaller jobs to be scheduled in the gaps left by larger jobs, improving overall efficiency.

These questions cover a broad range of scheduling algorithms used in Slurm, from basic to advanced scheduling strategies.

Here are **30 multiple-choice questions (MCQs)** related to **SLURM Accounting**:

SLURM Accounting

1. **What is SLURM Accounting used for?** A) Managing node hardware resources
   B) Recording and tracking resource usage for jobs
   C) Scheduling jobs based on priority
   D) Enabling user authentication

   Answer: B
   Explanation: SLURM Accounting records and tracks the usage of resources for jobs submitted to the cluster, such as CPU time, memory, etc.

---

2. **Which SLURM command is used to display job accounting information?** A) sacct
   B) scontrol
   C) squeue
   D) sbatch

   Answer: A
   Explanation: sacct is used to retrieve accounting information for jobs that have completed.

---

3. **In SLURM, which database is typically used for accounting information storage?**
   A) MySQL
   B) PostgreSQL
   C) SQLite
   D) MongoDB

   Answer: B
   Explanation: SLURM uses a PostgreSQL database for storing job accounting information.

---

4. **Which SLURM configuration parameter enables accounting in SLURM?** A) SlurmdPort

B) AccountingStorageType
C) JobSubmitPlugins
D) SlurmdPort

Answer: B
Explanation: The AccountingStorageType parameter in the SLURM configuration enables accounting features.

---

5. **What is the purpose of the sacct command in SLURM?** A) To submit jobs
   B) To display information about job submissions
   C) To retrieve historical job accounting data
   D) To monitor real-time job status

   Answer: C
   Explanation: The sacct command is used to display historical accounting data about completed jobs.

---

6. **Which of the following SLURM accounting records would you find in the accounting database?** A) CPU time used
   B) Job submission time
   C) Memory usage
   D) All of the above

   Answer: D
   Explanation: The SLURM accounting database tracks CPU time, memory usage, job submission time, and other resource utilization metrics.

---

7. **In SLURM accounting, what does the field TotalCPU represent?** A) The total number of nodes used
   B) The total number of CPUs allocated
   C) The total time spent on computation by a job
   D) The total number of jobs submitted

   Answer: C
   Explanation: TotalCPU represents the total CPU time (in seconds) consumed by a job

during its execution.

---

8. **Which command provides detailed job information from the SLURM accounting logs?** A) scontrol
   B) sacct
   C) squeue
   D) slurmd

   Answer: B
   Explanation: The sacct command is used to get detailed information about completed jobs, including their resource usage.

---

9. **Which of the following is a typical use case for SLURM accounting data?** A) Estimating job wait times
   B) Monitoring resource usage and billing
   C) Allocating jobs to different nodes
   D) Balancing the cluster's workload

   Answer: B
   Explanation: SLURM accounting data is commonly used for monitoring resource usage and for billing purposes in environments where users are charged for resource consumption.

---

10. **What is the function of the AccountingStorageHost parameter in SLURM?** A) Specifies the host for job scheduling
    B) Specifies the location of the accounting database server
    C) Determines which node runs the accounting job
    D) Sets the memory usage limits for accounting jobs

    Answer: B
    Explanation: AccountingStorageHost defines the host where the SLURM accounting database is stored.

---

11. **Which of the following is a valid format for specifying job information when using sacct?** A) sacct -j <jobid>
B) sacct -u <user>
C) sacct -S <start_time> -E <end_time>
D) All of the above

Answer: D
Explanation: All of the mentioned options are valid for querying job information using the sacct command, including filtering by job ID, user, and time range.

---

12. **What is the default SLURM accounting database schema?** A) accounting_v1
B) slurm_acct_db
C) slurmdbd
D) job_accounting

Answer: C
Explanation: The default schema for SLURM accounting is stored in the slurmdbd database.

---

13. **Which of the following fields can be included in the output of sacct?** A) Job ID
B) Job name
C) Start and end times
D) All of the above

Answer: D
Explanation: The sacct command can display the job ID, name, start and end times, and many other fields from the accounting database.

---

14. **What does the sacct -p option in SLURM do?** A) Shows the job's status
B) Displays the output in plain text
C) Displays job information in a parsable format
D) Prints the accounting data to a PDF

Answer: C
Explanation: The -p option makes sacct display job data in a format that is easier to

parse programmatically.

---

15. **What does the field Elapsed in SLURM accounting data represent?** A) The total number of nodes used by a job
    B) The total amount of memory consumed
    C) The amount of time a job has been running
    D) The total number of CPUs requested

    Answer: C
    Explanation: Elapsed represents the total duration a job ran, from submission to completion.

---

16. **Which SLURM accounting tool helps system administrators track usage across multiple clusters?** A) squeue
    B) slurmdbd
    C) sacctmgr
    D) scontrol

    Answer: C
    Explanation: sacctmgr is the command used to manage SLURM accounting data, including user, account, and resource usage across clusters.

---

17. **In SLURM accounting, which field shows the number of nodes allocated to a job?**
    A) NodeList
    B) NumNodes
    C) AllocNodes
    D) NodeCount

    Answer: C
    Explanation: AllocNodes shows the number of nodes allocated to a job.

---

18. **Which SLURM command is used to manage SLURM accounting information, including users and accounts?** A) sacct
    B) scontrol

C) sacctmgr
D) sbatch

Answer: C
Explanation: sacctmgr is used to manage SLURM accounting information, such as managing accounts and users.

---

19. **What is the purpose of AccountingStorageType in SLURM's configuration?** A) To specify the type of database to use for accounting
B) To define how jobs are scheduled
C) To control user job priority
D) To set the maximum number of jobs per user

Answer: A
Explanation: AccountingStorageType specifies the type of storage system used for accounting data (e.g., PostgreSQL).

---

20. **What does the field MaxRSS in SLURM accounting data represent?** A) Maximum disk space used by the job
B) Maximum number of nodes used by the job
C) Maximum memory usage during job execution
D) Maximum number of CPUs requested

Answer: C
Explanation: MaxRSS shows the maximum resident set size (memory) used by the job.

---

21. **Which SLURM configuration file defines the accounting storage backend?** A) slurm.conf
B) slurmdbd.conf
C) accounting.conf
D) jobconfig.conf

Answer: B
Explanation: The slurmdbd.conf file defines the SLURM accounting storage backend.

22. **In SLURM accounting, what does the field ExitCode represent?** A) The number of nodes used during the job
B) The exit status of the job
C) The amount of time the job ran
D) The job's memory consumption

Answer: B
Explanation: ExitCode represents the exit status of the job, indicating whether it completed successfully or failed.

---

23. **Which SLURM accounting command allows administrators to manage user account limits?** A) scontrol
B) sacctmgr
C) squeue
D) sacct

Answer: B
Explanation: sacctmgr is used to manage user accounts and their resource usage limits within SLURM.

---

24. **What does the sacct field State represent?** A) The total CPU time consumed
B) The current job status (e.g., RUNNING, COMPLETED, FAILED)
C) The total memory used
D) The job's allocated CPU cores

Answer: B
Explanation: The State field shows the current state of the job, such as RUNNING, COMPLETED, FAILED, etc.

---

25. **How does SLURM calculate the billing for resource usage?** A) Based on the number of nodes used
B) Based on the job duration and resource usage
C) Based on job priority
D) Based on job type

Answer: B
Explanation: Billing is typically calculated based on the job duration and the resources used, including CPU time and memory.

---

26. **Which SLURM feature helps in tracking resources allocated to jobs over time?** A) Job Submission Tracking
B) Job Completion Events
C) Accounting Data Logging
D) Job Queues

Answer: C
Explanation: SLURM accounting data logging tracks resources allocated to jobs over time.

---

27. **What does the sacctmgr command allow you to do in SLURM?** A) Submit jobs
B) Monitor real-time job status
C) Manage user accounts and job limits
D) Schedule jobs on a specific partition

Answer: C
Explanation: sacctmgr is used for managing SLURM user accounts and job limits.

---

28. **Which SLURM parameter specifies the location of the accounting database server?** A) AccountingStorageType
B) AccountingStorageHost
C) SlurmUser
D) SlurmctldPort

Answer: B
Explanation: AccountingStorageHost specifies the host where the accounting database server is located.

---

29. **Which SLURM command can be used to view accounting data in a tabular format for jobs completed within a specific date range?** A) scontrol
    B) sacctmgr
    C) sacct
    D) sbatch

    Answer: C
    Explanation: The sacct command is used to view job accounting data in a tabular format, including filtering by date ranges.

---

30. **In SLURM, what does the JobID field in accounting data uniquely identify?** A) The node on which the job ran
    B) The job that was executed
    C) The user who submitted the job
    D) The job priority

    Answer: B
    Explanation: The JobID field uniquely identifies each job executed in SLURM.

These MCQs cover various aspects of SLURM accounting, including job tracking, commands, configuration, and the usage of the accounting data for administrative and billing purposes.

Here are 30 multiple-choice questions (MCQs) on **Batch Systems**, specifically focusing on the **Resource Manager** and **Scheduler** in the context of **Slurm**, a popular resource management and job scheduling system used in high-performance computing (HPC) environments.

---

1. What is the primary function of a Resource Manager in a batch system?

A) To execute the jobs submitted by users.
B) To allocate resources like CPU and memory to jobs.
C) To monitor the execution of all jobs.
D) To determine the priority of jobs in the queue.

Answer: B
Explanation: The Resource Manager allocates resources such as CPU, memory, and disk space to jobs submitted to the system.

---

2. In Slurm, which command is used to submit a job to the batch system?

A) scontrol
B) sbatch
C) srun
D) squeue

Answer: B
Explanation: sbatch is used to submit jobs to Slurm's batch system.

---

3. Which Slurm command can be used to check the status of a job queue?

A) squeue
B) sbatch
C) scontrol
D) sinfo

Answer: A
Explanation: squeue displays the status of jobs in the queue, including running and pending jobs.

---

4. What is the primary role of a Scheduler in a batch system like Slurm?

A) To submit jobs to the system.
B) To manage and allocate resources for jobs.
C) To determine the order and timing of job execution.
D) To monitor the resource usage of jobs.

Answer: C
Explanation: The Scheduler decides which jobs to run, when to run them, and on which resources.

---

5. Which scheduling algorithm is often used by Slurm for job queuing?

A) First-Come-First-Served (FCFS)
B) Round Robin
C) Shortest Job First (SJF)
D) Multi-level Queue Scheduling

Answer: A
Explanation: By default, Slurm uses the First-Come-First-Served (FCFS) algorithm for job scheduling.

---

6. In Slurm, how does the system prioritize jobs in the queue?

A) Based on the time the job was submitted.
B) Based on job priority settings.
C) Based on job resource requirements.
D) Based on job type (interactive vs batch).

Answer: B
Explanation: Slurm allows jobs to have different priority levels based on user settings, job type, and other factors.

---

7. Which of the following is true about the scontrol command in Slurm?

A) It is used to monitor job status.
B) It is used to submit a job to the queue.
C) It provides administrative control over the job and system.
D) It cancels a job from the queue.

Answer: C
Explanation: scontrol is an administrative tool used for job management, including suspending, resuming, and canceling jobs.

---

8. What does the sbatch command do in Slurm?

A) It runs a job interactively.
B) It cancels a job.
C) It submits a batch job to the scheduler.
D) It displays the status of a job.

Answer: C
Explanation: sbatch is used to submit batch jobs to Slurm for scheduling and execution.

---

9. What is a job script in Slurm?

A) A script that configures the Slurm scheduler.
B) A script submitted to Slurm that contains job specifications (e.g., resources, commands).
C) A script that checks job status.
D) A script used for user authentication.

Answer: B
Explanation: A job script in Slurm contains job-related information such as resource requirements, job commands, and environment variables.

---

10. Which Slurm command can be used to view information about available nodes in the cluster?

A) scontrol
B) sinfo
C) squeue
D) sbatch

Answer: B
Explanation: sinfo provides information about the available nodes in the cluster, including their state, partitions, and resource availability.

---

11. In Slurm, which parameter specifies the number of CPU cores needed for a job?

A) -n
B) -c
C) --cpus-per-task
D) --nodes

Answer: C
Explanation: The --cpus-per-task parameter specifies how many CPU cores are requested per task in a job.

---

12. Which of the following is NOT a valid resource specification for a job in Slurm?

A) Memory
B) CPU cores
C) Number of nodes
D) Job execution time (walltime)

Answer: D
Explanation: While Slurm uses parameters like memory, CPU cores, and nodes, the execution time is usually set by defining a time limit (e.g., --time), not as a resource.

---

13. What does the sacct command do in Slurm?

A) Submits a job to the scheduler.
B) Cancels a job.
C) Displays accounting information about jobs.
D) Provides a real-time job status update.

Answer: C
Explanation: sacct provides accounting information, showing detailed job and resource usage statistics after job completion.

---

14. In Slurm, what is a partition?

A) A storage device.
B) A division of the job queue based on resource types or job priorities.

C) A group of nodes allocated to specific users.
D) A specific type of resource (e.g., GPU).

Answer: B
Explanation: A partition in Slurm is a logical division of the available nodes, often based on resource characteristics, user groups, or priorities.

---

15. What happens when a job in Slurm exceeds its allocated time limit?

A) It is paused until time is freed.
B) It is automatically canceled.
C) It continues running indefinitely.
D) It waits for the next available time slot.

Answer: B
Explanation: If a job exceeds its time limit in Slurm, it is automatically canceled by the system.

---

16. How does Slurm manage resource contention between jobs?

A) By allocating resources equally.
B) By preempting jobs based on priority.
C) By increasing the system load.
D) By suspending the job queue.

Answer: B
Explanation: Slurm can preempt lower-priority jobs to free up resources for higher-priority jobs.

---

17. Which of the following is a job state in Slurm?

A) Running
B) Queueing
C) Idle
D) All of the above

Answer: D
Explanation: Jobs in Slurm can have various states, including Running, Queueing, Idle, and more.

---

18. In Slurm, which command is used to cancel a running job?

A) scontrol cancel
B) scancel
C) sbatch cancel
D) squeue cancel

Answer: B
Explanation: The scancel command is used to cancel running or queued jobs in Slurm.

---

19. Which option in Slurm job script defines the maximum memory required by a job?

A) --cpus-per-task
B) --nodes
C) --mem
D) --time

Answer: C
Explanation: The --mem option defines the amount of memory required by a job in Slurm.

---

20. Which Slurm command provides detailed job information, including resource usage and job statistics?

A) sacct
B) squeue
C) scontrol
D) sbatch

Answer: A
Explanation: sacct provides detailed information on job statistics, including resource usage and status.

---

21. What does the srun command do in Slurm?

A) It submits jobs to the queue.
B) It runs an interactive job.
C) It checks the status of jobs.
D) It manages job priorities.

Answer: B
Explanation: srun is used to execute jobs interactively within a Slurm environment.

---

22. In a Slurm cluster, a job requesting more than one node will use which parameter?

A) --cpus-per-task
B) --nodes
C) --tasks
D) --jobid

Answer: B
Explanation: The --nodes parameter is used to request multiple nodes for a job.

---

23. Which of the following Slurm commands is used to view the status of running jobs?

A) scontrol
B) squeue
C) sbatch
D) sinfo

Answer: B
Explanation: squeue provides information about the current status of jobs in the queue, including running and pending jobs.

---

24. In Slurm, which command provides administrative control over the system and jobs?

A) squeue
B) scontrol
C) sbatch
D) srun

Answer: B
Explanation: scontrol provides administrative tools for managing jobs and controlling Slurm system configurations.

---

25. Which parameter in Slurm is used to specify the maximum wall time for a job?

A) --nodes
B) --cpus-per-task
C) --time
D) --mem

Answer: C
Explanation: The --time parameter sets the maximum wall time for a job in Slurm.

---

26. Which Slurm option is used to specify the number of tasks for a parallel job?

A) --tasks
B) --cpus-per-task
C) --mem
D) --time

Answer: A
Explanation: The --tasks option specifies how many tasks a job requires for parallel execution.

---

27. What is the function of the Slurm job array?

A) It allows you to submit multiple jobs that are similar in nature.
B) It sets the number of nodes required for the job.
C) It checks the status of all jobs in the queue.
D) It divides a large job into smaller chunks.

Answer: A
Explanation: A job array in Slurm allows the user to submit multiple similar jobs at once, with different task-specific parameters.

---

28. What does the sinfo command provide in Slurm?

A) Detailed accounting information for jobs.
B) Information about job queue status.
C) Information about available resources and node status.
D) A list of all job scripts.

Answer: C
Explanation: sinfo provides details about the status of available nodes and resources in the cluster.

---

29. Which of the following commands is used to interact with a running job in Slurm?

A) squeue
B) scontrol
C) srun
D) sbatch

Answer: B
Explanation: scontrol allows you to interact with running jobs, including suspending, resuming, or modifying them.

---

30. What happens if a job exceeds its memory allocation in Slurm?

A) The job is automatically restarted.
B) The job is killed and an error message is generated.
C) The system requests more resources for the job.
D) The job runs slower.

Answer: B
Explanation: If a job exceeds its memory allocation, Slurm will terminate the job and provide an error message.

Here are some multiple-choice questions (MCQs) related to **Submitting and Managing Jobs** and **Writing the Batch Script** in the context of a **batch processing system** like **Slurm**:

---

1. What is the purpose of a batch script in Slurm?

A) To submit interactive jobs
B) To define job parameters and commands for submission
C) To monitor job progress
D) To check job status

Answer: B
Explanation: A batch script in Slurm defines job parameters, such as requested resources (e.g., CPU, memory), job time, and the commands to be executed.

---

2. Which command in Slurm is used to submit a job batch script?

A) sbatch
B) srun
C) scancel
D) squeue

Answer: A
Explanation: The sbatch command is used to submit a job batch script to Slurm for scheduling and execution.

---

3. In a Slurm batch script, how do you specify the number of nodes required for a job?

A) --nodes
B) --cpus-per-task
C) --mem
D) --tasks

Answer: A
Explanation: The --nodes parameter is used in a batch script to specify how many nodes are needed for the job.

---

4. Which of the following is a correct way to define a time limit for a job in a Slurm batch script?

A) --time=02:00:00
B) --walltime=02:00:00
C) --max-time=02:00:00
D) --duration=02:00:00

Answer: A
Explanation: In Slurm, the --time parameter is used to set the time limit (wall time) for a job in the format HH:MM:SS.

---

5. How do you specify the amount of memory a job requires in a Slurm batch script?

A) --mem-per-cpu=4GB
B) --memory=4GB
C) --mem=4GB
D) --mem=4000MB

Answer: C
Explanation: The --mem option in a Slurm batch script specifies the amount of memory required for the job.

---

6. Which of the following commands should be included in a Slurm batch script to run a specific program after the job starts?

A) #SBATCH
B) srun
C) sbatch
D) squeue

Answer: B
Explanation: The srun command in the batch script is used to execute the program or command after the job starts on the allocated resources.

---

7. How would you submit a batch job in Slurm using a batch script file named **jobscript.sh**?

A) srun jobscript.sh
B) sbatch jobscript.sh
C) submit jobscript.sh
D) batch jobscript.sh

Answer: B
Explanation: The command sbatch jobscript.sh is used to submit the batch job script jobscript.sh to Slurm.

---

8. What does the #SBATCH directive in a Slurm batch script do?

A) Specifies commands to be run before the job.
B) Configures job resource requests like CPU, memory, and wall time.
C) Runs the batch script interactively.
D) Sets the priority of a job in the queue.

Answer: B
Explanation: #SBATCH directives are used in the batch script to define job resource requirements, such as memory, number of nodes, time, etc.

---

9. Which Slurm command is used to cancel a running job?

A) scontrol cancel
B) scancel
C) sbatch cancel
D) squeue cancel

Answer: B
Explanation: The scancel command is used to cancel a job that is running or in the queue.

---

10. In a Slurm batch script, which directive is used to specify the job name?

A) --job-name
B) --name
C) #SBATCH --job-name
D) #SBATCH --name

Answer: C
Explanation: The #SBATCH --job-name directive is used in the script to specify a custom name for the job.

---

11. How can you specify that a job should use a GPU in a Slurm batch script?

A) --gpu=1
B) --gres=gpu:1
C) --gpu-resource=1
D) --use-gpu

Answer: B
Explanation: In Slurm, the --gres=gpu:1 directive specifies that the job should use one GPU.

---

12. In Slurm, how can you specify the number of tasks in a batch job script?

A) --tasks=4
B) --num-tasks=4
C) --ntasks=4
D) All of the above

Answer: D
Explanation: In Slurm, you can use --tasks, --num-tasks, or --ntasks to specify the number of tasks a job requires.

---

13. Which option is used to allocate a specific amount of memory per CPU core in Slurm?

A) --mem-per-core
B) --mem
C) --mem-per-cpu
D) --cpu-mem

Answer: C
Explanation: The --mem-per-cpu directive is used to request a specific amount of memory per CPU core.

---

14. What is the default behavior in Slurm if you do not specify the --time parameter in a batch script?

A) The job will run indefinitely.
B) The job will be killed immediately after submission.
C) The job will run until the system shuts down.
D) The job will use the default time limit defined by the system.

Answer: D
Explanation: If no --time parameter is specified, Slurm assigns the job a default time limit, which is typically defined by the system administrator.

---

15. How do you specify the standard output file for a Slurm job?

A) #SBATCH --output=job.out
B) #SBATCH --stderr=job.out
C) #SBATCH --log=job.out
D) #SBATCH --stdout=job.out

Answer: A
Explanation: The #SBATCH --output=job.out directive is used to specify the file where standard output will be written.

---

16. How do you specify that a Slurm job should run on a specific partition?

A) --partition=partition_name
B) --queue=partition_name
C) --node=partition_name
D) --queue-name=partition_name

Answer: A
Explanation: The --partition=partition_name directive specifies the partition where the job should run in Slurm.

---

17. How would you run a job interactively using Slurm?

A) sbatch -I jobscript.sh
B) srun --interactive jobscript.sh
C) scontrol --interactive jobscript.sh
D) sbatch --interactive jobscript.sh

Answer: B
Explanation: srun --interactive is used to run a job interactively in Slurm.

---

18. Which directive in a Slurm batch script is used to set the job's priority?

A) --priority
B) --job-priority
C) --nice
D) Slurm does not allow direct modification of job priority in the script.

Answer: D
Explanation: Slurm does not allow direct specification of job priority in the script. Job priorities are managed by the scheduler.

---

19. What is the purpose of the #SBATCH --exclusive directive in a Slurm batch script?

A) To request exclusive use of a node or set of nodes
B) To specify the job should run on the fastest nodes
C) To reserve nodes for future jobs
D) To allocate only one task per job

Answer: A
Explanation: The --exclusive directive requests exclusive use of the node or set of nodes, ensuring no other jobs share the same resources.

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20. How do you specify a job's exit status to be written to a log file in Slurm?

A) --exit-status
B) --status-file
C) --log-file
D) Use #SBATCH --output and #SBATCH --error for standard output and error.

Answer: D
Explanation: The --output and --error directives allow you to specify the log files for standard output and error, respectively.

These questions cover important aspects of writing and managing job scripts in Slurm, including resource allocation, job parameters, and how to monitor and control jobs effectively in the batch system.