

**Started on** Tuesday, 9 December 2025, 10:47 AM**State** Finished**Completed on** Tuesday, 9 December 2025, 10:51 AM**Time taken** 4 mins 32 secs**Marks** 23.00/25.00**Grade** 92.00 out of 100.00**Question 1**

Complete

Mark 1.00 out of 1.00

A full binary tree has nodes with:

- ☐ a. Exactly two children
- ☐ b. Only one child
- ☐ c. 1 or 3 children
- ☒ d. 0 or 2 children

**Question 2**

Complete

Mark 1.00 out of 1.00

A HashMap stores data as:

- ☒ a. Key-value pairs
- ☐ b. Circular buffers
- ☐ c. Single values
- ☐ d. Indexed blocks

**Question 3**

Complete

Mark 1.00 out of 1.00

A method can be overridden only if:

- ☐ a. It is static
- ☐ b. Return type is unrelated
- ☐ c. It is private
- ☒ d. Signature is identical

**Question 4**

Complete

Mark 1.00 out of 1.00

A process becomes a zombie when:

- ☐ a. Parent calls `exec()`
- ☐ b. Parent exits before child
- ☐ c. Child is blocked on I/O
- ☒ d. Child exits and parent does not call `wait()`

**Question 5**

Complete

Mark 1.00 out of 1.00

A pull request is used to:

- ☐ a. Delete branches
- ☐ b. Tag commits
- ☐ c. Clone a repository
- ☒ d. Merge changes into a branch

**Question 6**

Complete

Mark 1.00 out of 1.00

Average-case hash table lookup time is:

- ☐ a.  $O(n \log n)$
- ☐ b.  $O(\log n)$
- ☒ c.  $O(1)$
- ☐ d.  $O(n)$

**Question 7**

Complete

Mark 1.00 out of 1.00

Calling `run()` directly:

- ☒ a. Executes on the current thread
- ☐ b. Halts the JVM
- ☐ c. Starts a new thread
- ☐ d. Throws exception

**Question 8**

Complete

Mark 1.00 out of 1.00

Constructor chaining within the same class uses:

- ☐ a. `super()`
- ☐ b. `static()`
- ☒ c. `this()`
- ☐ d. `default()`

**Question 9**

Complete

Mark 1.00 out of 1.00

Deleting a node after a given node in a singly linked list takes:

- ☐ a.  $O(n^2)$
- ☐ b.  $O(n)$
- ☐ c.  $O(\log n)$
- ☒ d.  $O(1)$

**Question 10**

Complete

Mark 0.00 out of 1.00

DFS is useful for:

- ☒ a. Minimum spanning tree
- ☐ b. Cycle detection
- ☐ c. Shortest path
- ☐ d. Error correction

**Question 11**

Complete

Mark 1.00 out of 1.00

DHCP provides:

- ☐ a. Hardware addressing
- ☒ b. Automatic IP configuration
- ☐ c. Encryption
- ☐ d. Error reporting

**Question 12**

Complete

Mark 1.00 out of 1.00

In TCP/IP, the Application Layer maps to which OSI layers?

- ☐ a. Transport and Network
- ☐ b. Physical and Data Link
- ☒ c. Application, Presentation, Session
- ☐ d. Network and Data Link

**Question 13**

Complete

Mark 1.00 out of 1.00

Internal fragmentation occurs because:

- ☒ a. Pages are fixed sized
- ☐ b. Memory holes form
- ☐ c. Memory overlaps
- ☐ d. Segments vary in size

**Question 14**

Complete

Mark 1.00 out of 1.00

Jenkins pipelines are defined using:

- ☐ a. settings.xml
- ☒ b. Jenkinsfile
- ☐ c. Dockerfile
- ☐ d. pom.xml

**Question 15**

Complete

Mark 1.00 out of 1.00

Minikube is used to:

- ☐ a. Deploy apps to AWS
- ☐ b. Manage Docker Hub
- ☒ c. Run local single-node Kubernetes clusters
- ☐ d. Load balance services

**Question 16**

Complete

Mark 1.00 out of 1.00

Routers forward packets based on:

- ☐ a. MAC address
- ☐ b. ARP table
- ☐ c. Port number
- ☒ d. IP address

**Question 17**

Complete

Mark 0.00 out of 1.00

The page replacement algorithm with the lowest theoretical page faults is:

- ☐ a. Optimal
- ☒ b. LRU
- ☐ c. Clock
- ☐ d. FIFO

**Question 18**

Complete

Mark 1.00 out of 1.00

Which block always executes?

- ☐ a. throw
- ☒ b. finally
- ☐ c. catch
- ☐ d. try

**Question 19**

Complete

Mark 1.00 out of 1.00

Which command lists running containers?

- ☐ a. docker info
- ☐ b. docker run
- ☐ c. docker images
- ☒ d. docker ps

**Question 20**

Complete

Mark 1.00 out of 1.00

Which mechanism ensures reliable TCP delivery?

- ☐ a. Token passing
- ☐ b. Time slicing
- ☐ c. Broadcast flooding
- ☒ d. Sliding window with acknowledgments

**Question 21**

Complete

Mark 1.00 out of 1.00

Which operation does NOT belong to a queue?

- ☐ a. peek
- ☐ b. dequeue
- ☐ c. enqueue
- ☒ d. push

**Question 22**

Complete

Mark 1.00 out of 1.00

Which scheduling algorithm may cause starvation due to continuous arrival of shorter jobs?

- ☐ a. Priority (Non-Preemptive)
- ☒ b. SJF
- ☐ c. Round Robin
- ☐ d. FCFS

**Question 23**

Complete

Mark 1.00 out of 1.00

Which service launches virtual machines?

- ☐ a. SNS
- ☒ b. EC2
- ☐ c. RDS
- ☐ d. CloudFront

**Question 24**

Complete

Mark 1.00 out of 1.00

Which statement about pipes is TRUE?

- ☐ a. Pipes support bidirectional communication by default
- ☐ b. Pipes preserve message boundaries
- ☒ c. Pipes deliver data in FIFO order
- ☐ d. Pipes can be used between unrelated processes

**Question 25**

Complete

Mark 1.00 out of 1.00

Which subnet mask corresponds to /20?

- ☐ a. 255.255.248.0
- ☐ b. 255.255.192.0
- ☒ c. 255.255.240.0
- ☐ d. 255.255.255.0