

Technical Drills

Try to answer in 15 minutes. Do not open the notes until you finish.

1. Which data structure is best for a first-come, first-served ticket line?
2. Which traversal returns sorted keys from a BST?
3. What is the worst-case time complexity of quicksort?
4. Which algorithm finds a shortest path in an unweighted graph?
5. What condition is required for binary search?
6. What occurs when a requested virtual-memory page is absent from main memory?
7. Name all four necessary deadlock conditions.
8. Which shares its address space with other execution units of the same process: a process or a thread?
9. How many traditional usable host addresses does a /27 IPv4 subnet have?
10. What protocol maps a domain name to an IP address?
11. Which is connectionless: TCP or UDP?
12. What component resets a controller if firmware stops responding?
13. Which interface is two-wire and addressed: UART, SPI or I2C?
14. Which SDLC model is risk-driven and repeats analysis in cycles?
15. What testing checks existing functionality after a code change?
16. For allowed input 1–50, name four boundary-value test inputs.
17. Is Selenium mainly a database, UI automation or load-testing tool?
18. Which testing level checks interaction between modules?
19. Which protocol typically uses port 443?
20. Which graph algorithm should not be used unchanged when reachable negative edges exist?

Answers

1. Queue.
2. Inorder traversal.
3. $O(n^2)$.
4. BFS.
5. The searched sequence must be sorted.
6. Page fault.
7. Mutual exclusion, hold-and-wait, no preemption, circular wait.
8. Thread.
9. 30.
10. DNS.
11. UDP.
12. Watchdog timer.
13. I2C.

14. Spiral.
15. Regression testing.
16. 0, 1, 50, 51.
17. UI automation.
18. Integration testing.
19. HTTPS.
20. Dijkstra.

Every incorrect answer should link to its topic in `[[10_Templates/Error_Log|Error log]]`.