

Q 33. A branch office requires secure communication with headquarters over the internet. The design must also provide bandwidth visibility and ensure that critical voice applications always take priority during congestion. Which solution satisfies all these needs?

- Ops:**
- A. VPN connectivity with QoS and monitoring
 - B. NAT policies combined with DHCP reservations
 - C. Proxy caching integrated with firewall devices
 - D. VLAN separation of voice and data traffic

Q 34. A banking app requires that debit and credit operations in a transfer either succeed together or fail together. Which implementation ensures this?

- Ops:**
- A. Using foreign keys across accounts
 - B. Creating triggers for automatic rollback
 - C. Writing to log files before updates
 - D. Wrapping debit and credit in a single transaction

Q 35. A retail system needs to list customers who placed orders in the last 90 days but excludes those whose accounts are inactive. Which query is most appropriate?

- Ops:**
- A. SELECT * FROM Customers WHERE LastOrderDate > CURRENT_DATE - INTERVAL '90 DAY' AND Status = 'Inactive';
 - B. SELECT * FROM Customers WHERE LastOrderDate < CURRENT_DATE - INTERVAL '90 DAY' AND Status = 'Active';
 - C. SELECT * FROM Customers WHERE LastOrderDate > CURRENT_DATE - INTERVAL '90 DAY' AND Status = 'Active';
 - D. SELECT * FROM Customers WHERE LastOrderDate > CURRENT_DATE - INTERVAL '90 DAY' AND OrderCount > 0;

Q 36. A bank deploys 200 microservices. Security requires every service-to-service call to use encryption and produce detailed traffic logs without rewriting code.

Which cloud-native solution supports this?

- Ops:**
- A. VPN tunnels connecting all subnets

- Ops:**
- A. CDN cache warming configured before the big event
 - B. Cloud-native load testing with scaling validation enabled
 - C. Reserved VM capacity configured for peak demand
 - D. Object storage archival configured to free up capacity

Q 39. A financial firm recently suffered a phishing attack where attackers stole admin passwords. Regulators now demand that admins must use a second factor such as OTP or hardware tokens when logging in to the cloud console.

Which solution should IT adopt?

- Ops:**
- A. Object lifecycle encryption
 - B. CDN edge certificates
 - C. Multi-Factor Authentication (MFA)
 - D. API throttling policies

Q 40. A university manages ten SaaS platforms for students. Password fatigue has increased helpdesk tickets and raised risks of weak reuse. IT leadership wants students to log in with their campus credentials across all apps, while ensuring role-based access is enforced centrally.

Which approach fits best?

- Ops:**
- A. CDN caching student portals
 - B. IAM logs only
 - C. Multi-cloud networking optimisations
 - D. Federated identity with SSO integration

SECTION 01/02

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SECTION 02/02

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Q 30. A global bank maintains critical database replication between headquarters and its disaster recovery site. During nightly backup windows, engineers notice that replication traffic slows dramatically, leading to potential Recovery Point Objective (RPO) violations. QoS policies were configured, but investigation shows replication flows use non-standard ports, so they are not classified properly. All replication packets fall into the default best-effort class, losing bandwidth priority to backups. Which correction ensures replication consistently gets the required performance?

- Ops:**
- A. Update QoS policies to classify based on application/port
 - B. Deploy VLAN separation for replication servers only
 - C. Enable NAT overload for outbound replication sessions
 - D. Use DHCP reservations for database server addresses

Q 31. An enterprise network runs OSPF across hundreds of routers, all placed in a single area. During link or node changes, engineers observe slow convergence, heavy CPU usage, and a flood of Link State Advertisements (LSAs) spreading to every router. This impacts network stability and troubleshooting efforts. The team is asked to redesign OSPF so that updates are contained locally while still maintaining connectivity across the organisation. Which redesign improves scalability?

- Ops:**
- A. Shorten DHCP lease timers on critical hosts
 - B. Split into multiple OSPF areas summarised into backbone
 - C. Switch to RIP for all routing domains
 - D. Enable VLAN tagging at all distribution routers

Q 32. An enterprise introduces IPv6 alongside IPv4. Administrators want hosts to automatically assign IPv6 addresses without running a DHCPv6 server, while also remaining resolvable through DNS names. Which mechanism provides this capability?

- Ops:**
- A. Proxy neighbour discovery for IPv6 devices
 - B. IPv6 tunnelling across existing IPv4 networks
 - C. Manual static addressing on every single host
 - D. Stateless autoconfiguration with DNS integration

D. SELECT * FROM Customers WHERE LastOrderDate > CURRENT_DATE - INTERVAL '90 DAY' AND OrderCount > 0;

Q 36. A bank deploys 200 microservices. Security requires every service-to-service call to use encryption and produce detailed traffic logs without rewriting code.

Which cloud-native solution supports this?

- Ops:**
- A. VPN tunnels connecting all subnets
 - B. CDN edge servers near applications
 - C. Load balancers with SSL termination
 - D. Service mesh using sidecar proxies

Q 37. An e-commerce site notices slowdowns because frequently requested product details always hit the database. They decide to keep popular items in fast memory.

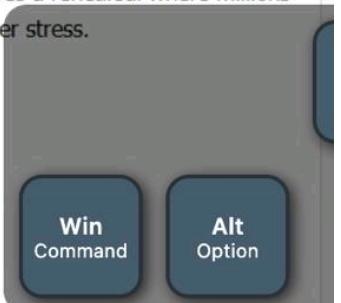
Which cloud service is this?

- Ops:**
- A. Block storage with high IOPS
 - B. Versioning of object storage for fast rollback
 - C. File storage mounted across app servers
 - D. In-memory caching layer integrated with DB

Q 38. A retailer is preparing for Black Friday. Past failures during checkout caused revenue loss. IT leadership requires a rehearsal where millions of simulated users generate traffic, allowing them to verify auto-scaling and load-balancer configurations under stress.

Which solution enables this?

- Ops:**
- A. CDN cache warming configured before the big event
 - B. Cloud-native load testing with scaling validation enabled
 - C. Reserved VM capacity configured for peak demand
 - D. Object storage archival configured to free up capacity



Q 27. A product analytics team must display a top-sellers leaderboard where equal sales must share the same rank, but subsequent positions should not skip numbers to keep reports readable.

To assign ranks that handle ties appropriately for this leaderboard, which statement is correct?

- Ops:**
- A. Dense_rank creates skipped numbers whenever ties appear in results lists.
 - B. Rank leaves gaps after ties; dense_rank compacts numbering continuously always.
 - C. Both functions behave identically for ties and overall numbering behaviour.
 - D. Both functions produce ranks without gaps when ties occur here.

Q 28. An e-commerce site tracks millions of customer profiles. The Gender column only has two possible values (M/F), but analysts frequently run reports filtering on this field to segment customers for campaigns. Query performance is slowing as the dataset grows.

To optimise filtering on such a low-cardinality column, which type of index is most suitable?

- Ops:**
- A. Hash index optimised for exact key lookups
 - B. Full-text index designed for word searching
 - C. Bitmap index ideal for few distinct values
 - D. B-tree index for general ordering operations

Q 29. An IT services firm implements Quality of Service (QoS) policies to give priority to voice-over-IP traffic. However, employees still experience call drops and jitter whenever large file transfers occur on the network. On closer inspection, administrators discover that all packets entering the switch are being stamped with the same DSCP value, meaning that voice traffic is not actually distinguished from data. To restore effective prioritisation, what correction must be applied?

- Ops:**
- A. Classification and marking of VoIP traffic at edge
 - B. DHCP reservations configured for all VoIP phones
 - C. NAT64 translation applied to VoIP application servers
 - D. VLAN tagging dedicated to all VoIP endpoints

02. IT Fundamentals

15 questions

Q 26. A pricing team wants to identify premium products by comparing them against all items in a specific category. The business rule is: only show products whose price is strictly higher than every product in CategoryID = 5.

What does the following query return?

```
SELECT Name FROM Products  
WHERE Price > ALL (SELECT Price FROM Products WHERE CategoryID = 5);
```

- Ops:**
- A. Finds products cheaper than all category 5 items
 - B. Finds products more expensive than every item in category 5
 - C. Finds only products belonging to category 5 items
 - D. Finds all products regardless of category and price

Q 27. A product analytics team must display a top-sellers leaderboard where equal sales must share the same rank, but subsequent positions should not skip numbers to keep reports readable.

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Q 15. What will be the output of the following pseudocode?

```
1.  
2.  
3. String s = "hardlevel"  
4. Integer x = INDEX(s,"d") + INDEX(s,"l")  
5. Integer y = LENGTH(s) - x  
6. If ((x MOD 3 = 0) AND (y > 2)) Then  
7.   x = x + y  
8. Else  
9.   x = x - y  
10. EndIf  
11. Output x  
12.
```

- Ops:
- A. 6
 - B. 4
 - C. 3
 - D. 5

Q 16. In a binary tree, the getHeight(node) function uses postorder traversal where the height of null is -1. When getHeight is called for node Y:

```
getHeight(Y.left) returns 4  
getHeight(Y.right) returns 2
```

What is the computed height of node Y?

- Ops:
- A. 5
 - B. 4

Win
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Option

- B. 9
C. 11
D. 8

Q 14. What will be the output of the following pseudocode?

```
1.  
2.  
3. Integer arr[3][3] = {{2,4,6},{3,6,9},{5,10,15}}  
4. Integer res = arr[1][2] + arr[2][0] * arr[0][1] - arr[2][2] DIV  
   arr[0][0]  
5. Output res  
6.
```

- Ops: A. 25
B. 22
C. 24
D. 23

Q 15. What will be the output of the following pseudocode?

```
1.  
2.  
3. String s = "hardlevel"  
4. Integer x = INDEX(s,"d") + INDEX(s,"l")  
5. Integer y = LENGTH(s) - x  
6. If ((x MOD 3 = 0) AND (y > 2)) Then  
7.   x = x + y  
8. Else
```

- B. 18
C. 16
D. 12
-

Q 09. You are given a graph $G=(V,E)$ with the following properties:

- >The vertices can be divided into two sets X and Y.
- >Every edge in the graph connects a vertex from X to a vertex from Y.
- >No edge exists between two vertices in the same set.

What type of graph is G?

- Ops:**
- A. Bipartite Graph
 - B. Complete Graph
 - C. Cyclic Graph
 - D. Directed Graph
-

Q 10. Consider a problem where you need to perform numerous range sum queries (e.g., sum of elements from index i to j) and also frequently update individual elements (point updates) within a large array.

Which specialized tree-based data structure is optimally suited for this, providing logarithmic time complexity for both types of operations?

- Ops:**
- A. Hash Map
 - B. Stack
 - C. Segment Tree
 - D. Linked List
-

Q 11. What will be the output of the following pseudocode?

- Ops:**
- A. 149
 - B. 143
 - C. 7
 - D. 49

Q 08. What will be the output of the following pseudocode?

```
1.  
2.  
3. Integer a, b, c  
4. Set a = 10, b = 7, c = 3  
5. Set a = a + (b MOD c)  
6. Set b = b - (a DIV c)  
7. Set c = c + (a AND b)  
8. If ((a + b) MOD c = 0) OR ((a XOR c) > b) Then  
9.   Output a + b + c  
10. Else  
11.   Output a - b - c  
12. EndIf  
13.
```

- A. 8
- B. 18
- C. 16
- D. 12

Q 09. You are given a graph $G=(V,E)$ with the following properties:

Q 20. What will be the output of the following pseudocode?

```
1.  
2.  
3. FUNCTION check(a, b)  
4. IF a > b THEN  
5. RETURN a - b  
6. ELSE  
7. RETURN b - a  
8. ENDIF  
9. END FUNCTION  
10.  
11. FUNCTION wrap(m, n)  
12. RETURN check(m+1, n) + check(m, n+1)  
13. END FUNCTION  
14.  
15. out = wrap(4, 6)  
16. OUTPUT out  
17.
```

- Ops:
- A. 5
 - B. 7
 - C. 6
 - D. 4

Q 21. After removing the maximum value from the following max-heap

[500, 450, 480, 400, 390, 420, 300, 350, 320, 310, 280, 250, 200, 150, 100, 50]

Q 12. What will be the output of the following pseudocode?

```
1.  
2.  
3. FUNCTION F(a)  
4. IF a MOD 2 = 0 THEN  
5. RETURN a DIV 2  
6. ELSE RETURN 3*a + 1  
7. ENDIF  
8. END FUNCTION  
9.  
10. FUNCTION H(x, y)  
11. u = F(x)  
12. v = F(y)  
13. IF u < v THEN RETURN v - u  
14. ELSE RETURN u - v  
15. ENDIF  
16. END FUNCTION  
17.  
18. res = H(7, 10) + F(H(4, 5))  
19. OUTPUT res  
20.
```

- Ops:
- A. 26
 - B. 24
 - C. 27
 - D. 25

Q 24. What will be the output of the following pseudocode?

```
1.  
2.  
3. k = 12  
4. FOR i = 1 TO 5  
5. IF (i MOD 2 = 1) THEN  
6. k = k - i  
7. ELSE  
8. k = k + (i*2)  
9. ENDIF  
10. IF (k MOD 5 = 0) THEN  
11. k = k DIV 5  
12. ENDIF  
13. NEXT i  
14. OUTPUT k  
15.
```

- Ops:
- A. 2
 - B. 3
 - C. 0
 - D. 8

Q 25. What will be the output of the following pseudocode?

```
1.  
2.
```

Q 03. What will be the output of the following pseudocode?

```
1.  
2.  
3. s = 0  
4. FOR i = 1 TO 6  
5. IF i = 3 THEN CONTINUE ENDIF  
6. s = s + i  
7. NEXT i  
8. OUTPUT s  
9.
```

- Ops:
- A. 18
 - B. 21
 - C. 15
 - D. 16

Q 04. You want to sort the array [0.78, 0.17, 0.39, 0.26, 0.72, 0.94, 0.21, 0.12, 0.23, 0.68].

You decide to first divide the numbers into groups based on their value ranges, then sort the numbers within each group, and finally join all the groups to form the sorted array.

Which sorting algorithm best matches this approach?

- Ops:
- A. Heap Sort
 - B. Merge Sort
 - C. Quick Sort
 - D. Bucket Sort

Q 05. An AVL tree has nodes with values 15, 25, 35, 45, 55, 65. After deleting the node with value 65, a rebalancing operation is required.

Q 05. An AVL tree has nodes with values 15, 25, 35, 45, 55, 65. After deleting the node with value 65, a rebalancing operation is required.

What is the final balance factor of the node with value 45 after rebalancing?

- Ops:
- A. 0
 - B. -1
 - C. 2
 - D. 1

Q 06. What will be the output of the following pseudocode?

```
1.  
2.  
3. Real x, y  
4. Integer k, r  
5. Set x = 7.8, y = 2.3, k = 5  
6. Set r = FLOOR(x / y) + CEIL(y) - (k MOD 3)  
7. If ((r MOD 2 = 0) XOR (k > 4)) Then  
8. Output r + 1  
9. Else  
10. Output r - 1  
11. EndIf  
12.
```

- Ops:
- A. 3
 - B. 2
 - C. 1
 - D. 0

01. Pseudo Code

25 questions

Q 01. A binary tree has an Inorder traversal {C, F, A, E, D, B} and a Postorder traversal {C, F, E, B, D, A}. What is the root of the right subtree of the root of the tree?

- Ops:
- A. E
 - B. B
 - C. D
 - D. A

Q 02. What will be the output of the following pseudocode?

```
1.  
2.  
3. n = 12  
4. IF (n MOD 4 = 0) AND (n > 10) THEN  
5.   OUTPUT "Case1"  
6. ELSEIF (n MOD 6 = 0) OR (n < 5) THEN  
7.   OUTPUT "Case2"  
8. ELSE  
9.   OUTPUT "Case3"  
10. ENDIF  
11.
```

- Ops:
- A. Case2
 - B. Case3
 - C. Case1
 - D. Compilation Error

Q 13. What will be the output of the following pseudocode?

```
1.  
2.  
3. FUNCTION R(n)  
4. IF n <= 0 THEN RETURN 0  
5. IF (n MOD 2 = 0) OR (n AND 3 = 1) THEN  
6. RETURN R(n - 2) + n  
7. ELSE  
8. RETURN R(n - 1) - (n MOD 4)  
9. ENDIF  
10. END FUNCTION  
11.  
12. out = R(7)  
13. OUTPUT out  
14.
```

- Ops:
- A. 10
 - B. 9
 - C. 11
 - D. 8

Q 14. What will be the output of the following pseudocode?

```
1.  
2.  
3. Integer arr[3][3] = {{2,4,6},{3,6,9},{5,10,15}}  
4. Integer res = arr[1][2] + arr[2][0] * arr[0][1] - arr[2][2] DIV  
arr[0][0]
```

- C. 0
D. 8

Q 25. What will be the output of the following pseudocode?

```
1.  
2.  
3. a = 20  
4. b = 0  
5. WHILE a > 0  
6. IF (a AND 1) = 1 THEN  
7. b = b + (a >> 1)  
8. ELSE  
9. b = b - (a DIV 3)  
10. ENDIF  
11. a = a - 5  
12. ENDWHILE  
13. OUTPUT b  
14.
```

- Ops: A. 0
B. 1
C. -2
D. -4

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Q 07. What will be the output of the following pseudocode?

```
1.  
2.  
3. Integer m, n, p  
4. Set m = 14, n = 11, p = 6  
5. Set res = (m * n) - (p << 2) + (n MOD m)  
6. If (res MOD 5 = 0) Then  
7.   res = res / (m DIV 2)  
8. Else  
9.   res = res + (n AND p)  
10. EndIf  
11. If ((res < 50) OR (m - p > 10)) Then  
12.   res = res - (m OR n)  
13. EndIf  
14. Output res  
15.
```

- Ops:
- A. 149
 - B. 143
 - C. 7
 - D. 49

Q 08. What will be the output of the following pseudocode?

```
1.  
2.  
3. Integer a, b, c
```

Q 23. What will be the output of the following pseudocode?

```
1.  
2.  
3. c = 0  
4. FOR i = 1 TO 4  
5. FOR j = 1 TO 3  
6. IF (i + j) MOD 3 = 0 THEN  
7. CONTINUE  
8. ENDIF  
9. IF (i * j) MOD 2 = 1 THEN  
10. c = c + (i - j)  
11. ELSE  
12. c = c - (i + j)  
13. ENDIF  
14. NEXT j  
15. NEXT i  
16. OUTPUT c  
17.
```

- Ops:**
- A. -26
 - B. -24
 - C. -11
 - D. -19

Q 24. What will be the output of the following pseudocode?

- D. 5

Q 16. In a binary tree, the `getHeight(node)` function uses postorder traversal where the height of null is -1. When `getHeight` is called for node Y:

`getHeight(Y.left)` returns 4
`getHeight(Y.right)` returns 2

What is the computed height of node Y?

- Ops: A. 5
B. 4
C. 2
D. 3

Q 17. Match the expressions in Column X (Prefix) with their equivalent expressions in Column Y (Infix).

Column X (Prefix)

1. $+ * P Q / R S$
2. $- / P Q * R S$
3. $* + P Q - R S$

Column Y (Infix)

- i. $(P * Q) + (R / S)$
- ii. $(P / Q) - (R * S)$
- iii. $(P + Q) * (R - S)$

- Ops: A. 1-i, 2-ii, 3-iii
B. 1-iii, 2-i, 3-ii
C. 1-ii, 2-iii, 3-i
D. 1-i, 2-iii, 3-ii

Ops: A.

	X	Y	Z	W
X	0	3	7	0
Y	0	0	2	0
Z	0	4	0	0
W	5	0	1	0

B.

	X	Y	Z	W
X	0	3	0	7
Y	0	0	2	0
Z	0	4	0	0
W	5	0	1	0

C.

	X	Y	Z	W
X	0	3	7	0
Y	0	0	0	2
Z	0	4	0	0
W	5	1	0	0

D.

	X	Y	Z	W
X	0	3	7	0
Y	0	0	0	2
Z	0	4	0	0
W	5	0	1	0

D. 4

Q 21. After removing the maximum value from the following max-heap

[500, 450, 480, 400, 390, 420, 300, 350, 320, 310, 280, 250, 200, 150, 100, 50]

the last element 50 is moved to the root and heapify-down is performed to restore the max-heap property.

At which 0-based index does 50 end up after this extract-max operation?

- Ops:**
- A. Index = 13
 - B. Index = 11
 - C. Index = 12
 - D. Index = 14

Q 22. You are given a directed weighted graph represented by the following connections:

X -> Y (weight 3)

X -> Z (weight 7)

Y -> W (weight 2)

Z -> Y (weight 4)

W -> X (weight 5)

W -> Z (weight 1)

Which of the following adjacency matrices correctly represents this graph?

- Ops:**
- A.
- | | X | Y | Z | W |
|---|---|---|---|---|
| X | 0 | 3 | 7 | 0 |
| Y | 0 | 0 | 2 | 0 |
| Z | 0 | 0 | 0 | 0 |
| W | 0 | 0 | 0 | 5 |

- C. Segment Tree
D. Linked List

Q 11. What will be the output of the following pseudocode?

```
1.  
2.  
3. FUNCTION SCORE(n)  
4. c = 0  
5. FOR i = 1 TO n  
6. IF n MOD i = 0 THEN  
7. c = c + (i MOD 4)  
8. ELSE  
9. c = c - 1  
10. ENDIF  
11. NEXT i  
12. RETURN c  
13. END FUNCTION  
14.  
15. out = SCORE(12)  
16. OUTPUT out  
17.
```

- Ops: A. 1
B. 3
C. 5
D. 2

Q 12. What will be the output of the following pseudocode?

- C. 1-ii, 2-iii, 3-i
D. 1-i, 2-iii, 3-ii

Q 18. What will be the output of the following pseudocode?

```
1.  
2.  
3. String s = "abcd"  
4. Integer arr[6] = {1,2,3,4,5,6}  
5. Integer x = LENGTH(s) + LENGTH(arr)  
6. Output x  
7.
```

- Ops:** A. 9
B. 12
C. 11
D. 10

Q 19. A 2-D array $A[2..4][3..5]$ is stored in row-major order.

The base address $B = 30$, and each element occupies 2 bytes.

If the byte address of some element is 40 and the column index is 5,
what is the row index of this element (i.e., the value of i in $A[i][j]$)?

- Ops:** A. 3
B. 4
C. 2
D. Cannot be determined

Q 22. What will be the output of the following pseudocode?

```
1.  
2.  
3. SET a = 14  
4. SET b = 7  
5. SET r = (a MOD 5) * b - (a / (b - 3)) + (b MOD a)  
6. PRINT r  
7.
```

Ops: A. 31

B. 33

C. 34

D. 32

[Reset](#)

Q 23. A microservice dependency graph is represented as both an adjacency matrix and an adjacency list.

The undirected graph has 6 services with edges:

S1-S2, S1-S3, S2-S4, S3-S5, S4-S6, S5-S6

Adjacency Matrix representation (0-indexed):

```
1. n = 6  
2. matrix = [[0]*n for _ in range(n)]  
3. edges = [(0,1),(0,2),(1,3),(2,4),(3,5),(4,5)]  
4. for u,v in edges:  
5.     matrix[v] = 1  
6.     matrix[u] = 1
```

A DFS is executed starting from vertex 0 (S1). Which of the following is the correct DFS traversal?

Ops: A. 0 → 2 → 4 → 5 → 3 → 1

B. 0 → 1 → 3 → 5 → 4 → 2

C. 0 → 2 → 1 → 3 → 5 → 4

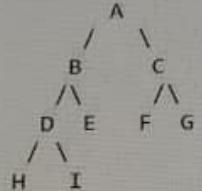
[Submit](#)

01. Pseudo Code
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02. IT Fundamentals
00 / 15 attempted

D. 8

Q 05. A company models two different caching strategies for its cloud data centers. Each cache hierarchy is stored as a binary tree:

Cache Design T1 (balanced hierarchy): 

Cache Design T2 (skewed hierarchy): 

The performance audit defines a metric:

Metric T1 = (Height of the cache tree + Number of leaf caches in it)

The compliance audit defines a metric:

Metric T2 = (Height of the cache tree + Number of internal caches in it)

What is the difference between the performance metric of T1 and the compliance metric of T2?

Ops: A. 3

B. 4

C. 2

D. 5

Activate Win
Go to Settings

... 128 bytes. If N = 256, and you iterate over the

02. IT Fundamentals

15 questions

Q 26. A government agency is digitising land records. Each plot of land is identified by a combination of (DistrictCode, VillageCode, PlotNumber), but developers propose adding a new auto-generated column PlotID to simplify joins across multiple applications. The agency wants to avoid performance bottlenecks but also preserve natural identifiers for legal validation.

Which design decision balances usability and compliance?

- Ops:
- A. Use only the surrogate column and ignore natural keys in legal queries.
 - B. Keep both: composite key for legal checks, surrogate key for joins.
 - C. Create alternate keys for all three natural identifiers separately.
 - D. Use only the composite natural key and drop the surrogate column.

Q 27. In a ticket booking platform, several users may attempt to reserve the same seat simultaneously. Without proper locking, this could result in double-bookings and disputes during payment. The system must ensure that when one transaction updates a seat record, no other transaction can update it until the first completes.

Which locking mechanism resolves this?

- Ops:
- A. Denormalisation of booking tables.
 - B. Exclusive lock on seat records during update.
 - C. Shared lock on seat records during read.
 - D. Hash partitioning of seat records.

Q 28. A financial database processes thousands of critical transactions daily. If a sudden power failure occurs just after a transaction is committed, the system must guarantee that the committed changes are not lost. During recovery, the database should be able to reapply all confirmed updates to restore consistency.

Which mechanism ensures this?

- Ops:
- A. Undo logs to roll back uncommitted work.
 - B. Savepoints to isolate partial work.
 - C. Indexes to optimise recovery queries.
 - D. Redo logs to reapply committed changes.

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Q 32. An engineering office experiences very slow VPN file transfers. Packet captures show large packets being fragmented repeatedly as they traverse the tunnel.

Which configuration change should the administrators make to optimise throughput?

- Ops:**
- A. Enable VLAN tagging on the tunnel.
 - B. Switch to static IP addressing.
 - C. Increase DHCP lease times.
 - D. Reduce MTU on VPN tunnel interfaces.

Q 33. A university deploys VLANs for different departments. Students in VLAN 20 cannot access central library servers in VLAN 40 even though both VLANs have been created on the switch. Network engineers confirm the servers and clients have valid IPs.

Which additional configuration is required to enable communication?

- Ops:**
- A. Expand the subnet mask for both VLANs to include more hosts.
 - B. Enable inter-VLAN routing on a router or Layer 3 switch.
 - C. Configure STP priority for VLAN 20 to prevent loops.
 - D. Increase DHCP lease time on VLAN 40 to avoid conflicts.

Q 34. A multinational enterprise connects to two different ISPs for redundancy. They require a routing protocol that can handle external connectivity and select optimal internet paths dynamically.

Which protocol should be deployed?

- Ops:**
- A. EIGRP
 - B. OSPF
 - C. BGP
 - D. RIP

Q 35. A bank wants to keep sensitive transaction data in a private setup but also run large-scale risk analysis using public cloud ML service

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Q 19. What will be the output of the following pseudocode?

```
1.  
2.  
3. SET x = 13  
4. SET y = 9  
5. SET r = ((x AND y) << 1) + ((x XOR y) >> 1) - ((x OR y) MOD 5)  
6. PRINT r  
7.
```

Ops: A. 20B. 19C. 18D. 17[Reset](#)

Q 20. A social network has n=10 users. The administrator guarantees that every user has a minimum of 6 friends. Which of the following statements must be true about this network?

Ops: A. The network is a complete graph (K_{10}).B. The network has no triangles (K_3 subgraphs).C. There are at most 3 users with a degree of 6.D. The network must contain at least one triangle (K_3 subgraph).[Reset](#)

Q 21. Consider a Min-Heap represented by the array [10, 20, 30, 40, 50, 60]. If the element 10 is removed (which is the minimum), and the last element 60 is moved to the root, what is the sequence of values that 60 will be compared against during the heapify-down process until it finds its correct position?

Ops: A. 20, 40B. 30, 60 (no further comparisons for 60)C. 20, 30D. 20 (no further comparisons for 60)[Activate Window](#)
[Go to Settings to activ](#)[Submit](#)[Reset](#)

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```
3. edges = [(0,1),(0,2),(0,3),(1,2),(1,3),(2,3),(2,4),(3,4),(3,5),(4,5),(4,6),(5,6),(5,7),(6,7),(6,8),(7,8),(7,9),(8,9),(8,10),(9,10),(9,11),(10,11),(10,12),(11,12),(11,13),(12,13),(12,14),(13,14),(13,15),(14,15),(14,16),(15,16),(15,17),(16,17),(16,18),(17,18),(17,19),(18,19),(18,20),(19,20),(19,21),(20,21),(20,22),(21,22),(21,23),(22,23),(22,24),(23,24),(23,25),(24,25),(24,26),(25,26),(25,27),(26,27),(26,28),(27,28),(27,29),(28,29),(28,30),(29,30),(29,31),(30,31),(30,32),(31,32),(31,33),(32,33),(32,34),(33,34),(33,35),(34,35),(34,36),(35,36),(35,37),(36,37),(36,38),(37,38),(37,39),(38,39),(38,40),(39,40),(39,41),(40,41),(40,42),(41,42),(41,43),(42,43),(42,44),(43,44),(43,45),(44,45),(44,46),(45,46),(45,47),(46,47),(46,48),(47,48),(47,49),(48,49),(48,50),(49,50),(49,51),(50,51),(50,52),(51,52),(51,53),(52,53),(52,54),(53,54),(53,55),(54,55),(54,56),(55,56),(55,57),(56,57),(56,58),(57,58),(57,59),(58,59),(58,60),(59,60),(59,61),(60,61),(60,62),(61,62),(61,63),(62,63),(62,64),(63,64),(63,65),(64,65),(64,66),(65,66),(65,67),(66,67),(66,68),(67,68),(67,69),(68,69),(68,70),(69,70),(69,71),(70,71),(70,72),(71,72),(71,73),(72,73),(72,74),(73,74),(73,75),(74,75),(74,76),(75,76),(75,77),(76,77),(76,78),(77,78),(77,79),(78,79),(78,80),(79,80),(79,81),(80,81),(80,82),(81,82),(81,83),(82,83),(82,84),(83,84),(83,85),(84,85),(84,86),(85,86),(85,87),(86,87),(86,88),(87,88),(87,89),(88,89),(88,90),(89,90),(89,91),(90,91),(90,92),(91,92),(91,93),(92,93),(92,94),(93,94),(93,95),(94,95),(94,96),(95,96)
```

A DFS is executed starting from vertex 0 (S1). Which of the following is the correct DFS traversal?

- Ops:
- A. 0 → 2 → 4 → 5 → 3 → 1
 - B. 0 → 1 → 3 → 5 → 4 → 2
 - C. 0 → 2 → 1 → 3 → 5 → 4
 - D. 0 → 1 → 2 → 4 → 5 → 3

Q 24. A programmer is given the prefix expression *+AB/CD. If they convert this expression to infix notation and then evaluate it using the values A=5, B=3, C=10, and D=2, what is the final numerical result?

- Ops:
- A. 20
 - B. 15
 - C. 40
 - D. 45

Q 25. A production line queue is represented by [5, 3, 3, 4, 2]. Each unit can only swap with its neighbour, but identical units must retain their original relative order.

After sorting, what is the minimum swap count?

- Ops:
- A. 7
 - B. 8
 - C. 6
 - D. 9

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Q 16. What will be the output of the following pseudocode?

```
1.  
2.  
3. FUNCTION inc(n):  
4.     n = n + 2  
5.     RETURN n  
6.  
7. SET x = 3  
8. SET y = inc(x)  
9. PRINT x + y  
10.
```

Ops: A. 10

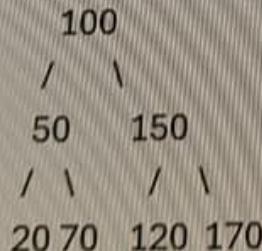
B. 7

C. 9

D. 8

Q 17. A developer is tasked with optimizing an existing BST deletion function. The current function recursively searches for the node to delete. If the node to be deleted has two children, it always finds the in-order successor, copies its value to the target node, and then recursively calls delete on the in-order successor.

Consider the following BST:



```
10.           x = x + (i + j)
11.      ELSE
12.          x = x - 1
13.      END IF
14.  END FOR
15. END FOR
16. PRINT x
17.
```

- Ops:
- A. 22
 - B. 20
 - C. 23
 - D. 21

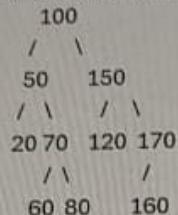
Q 14. What will be the output of the following pseudocode?

```
1.
2.
3. SET acc = 0
4. FOR i = 1 TO 3
5.   SET k = i + 2
6.   WHILE k >= i
7.     IF (k - i) MOD 2 = 0 THEN
8.       acc = acc + (k - i + 1)
9.     ELSE
10.       acc = acc + i
11.     END IF
12.     k = k - 1
13.   END WHILE
14. END FOR
15. OUTPUT
```

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- Q 17.** A developer is tasked with optimizing an existing BST deletion function. The current function recursively searches for the node to delete. If the node to be deleted has two children, it always finds the in-order successor, copies its value to the target node, and then recursively calls delete on the in-order successor.

Consider the following BST:



If the node 50 is deleted using this logic, and then subsequently the node 150 is deleted, what is the value of the root's right child after both deletions?

- Ops: A. 80
B. 160
C. 120
D. 170

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- Q 18.** What will be the output of the following pseudocode?

```
1.
2.
3. SET x = 5
4. SET y = 9
5. SET z = (x XOR y) + ((x AND y) << 1) - ((x OR y) >> 1)
6. PRINT z
7.
```

- Ops: A. 10
B. 9
C. 7
D. 8

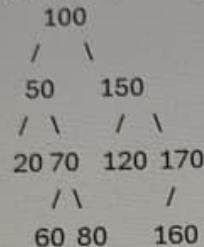
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calls delete on the in-order successor.
Consider the following BST:



If the node 50 is deleted using this logic, and then subsequently the node 150 is deleted, what is the value of the root's right child after both deletions?

- Ops:
- A. 80
 - B. 160
 - C. 120
 - D. 170

Q 18. What will be the output of the following pseudocode?

```
1.  
2.  
3. SET x = 5  
4. SET y = 9  
5. SET z = (x XOR y) + ((x AND y) << 1) - ((x OR y) >> 1)  
6. PRINT z  
7.
```

- Ops:
- A. 10
 - B. 9
 - C. 7
 - D. 8

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Q 15. What will be the output of the following pseudocode?

```
1.  
2.  
3. SET acc = 0  
4. FOR i = 1 TO 4  
5.     SET tmp = i  
6.     FOR j = 1 TO i  
7.         IF j MOD 2 = 0 THEN  
8.             tmp = tmp + j  
9.         ELSE  
10.            tmp = tmp - (i - j)  
11.        END IF  
12.    END FOR  
13.    acc = acc + tmp  
14. END FOR  
15. PRINT acc  
16.
```

- Ops:
- A. 14
 - B. 15
 - C. 13
 - D. 12

Q 16. What will be the output of the following pseudocode?

```
1.  
2.  
3. FUNCTION inc(n):  
4.     n = n + 2  
5.     RETURN n  
6.  
7. SET x = 3  
8. SET y = inc(x)  
9. PRINT x + y
```

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```
1.  
2.  
3. SET s = "ALGORITHM"  
4. SET out = ""  
5. FOR i = 0 TO LENGTH(s) - 1  
6.   IF i MOD 2 = 0 THEN  
7.     out = s[i] + out  
8.   ELSE  
9.     out = out + s[LENGTH(s) - 1 - i]  
10.  END IF  
11. END FOR  
12. PRINT out  
13.
```

- Ops:
- A. MRTAHLGIOL
 - B. MTRGAHIOL
 - C. MTRGIAHOL
 - D. MTRGAHILo

Q 13. What will be the output of the following pseudocode?

```
1.  
2.  
3. SET x = 0  
4. FOR i = 2 TO 5  
5.   FOR j = 1 TO 3  
6.     IF i + j > 6 THEN  
7.       BREAK  
8.     END IF  
9.     IF (i + j) MOD 2 = 0 THEN  
10.      x = x + (i + j)  
11.    ELSE  
12.      x = x - 1  
13.    END IF  
14.  END FOR
```

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Q 38. When a device wants to send data to another host in the same network, what does it use to identify the destination host's MAC address?

- Ops:
- A. DNS query
 - B. NAT translation
 - C. ARP request
 - D. ICMP echo

Q 39. A shipping company embeds tax calculation logic in multiple applications. The DBA suggests moving this logic into the database so it can be reused centrally.

Which feature achieves this?

- Ops:
- A. Foreign keys
 - B. Triggers
 - C. Views
 - D. Stored procedures

Q 40. A finance database stores loan amounts. When FLOAT is used, results show small rounding errors in interest calculations.

Which data type should replace FLOAT to ensure precision?

- Ops:
- A. INTEGER
 - B. DECIMAL
 - C. CHAR
 - D. VARCHAR

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```
2.  
3. FUNCTION mix($REF x, y):  
4.     x = x + y  
5.     RETURN x + 2 * y  
6.  
7. SET p = 3  
8. SET q = 5  
9. SET r = mix(p, q)  
10. SET s = mix(p, 2)  
11. PRINT p + r + s  
12.
```

- Ops:
- A. 14
 - B. 16
 - C. 13
 - D. 15

Q 11. What will be the output of the following pseudocode?

```
1.  
2.  
3. SET s = "DATABASE"  
4. SET out = ""  
5. SET rev = ""  
6. FOR i = 0 TO LENGTH(s) - 1  
7.     IF s[i] IN ['A','E','I','O','U'] THEN  
8.         out = s[i] + out  
9.     ELSE  
10.        rev = s[i] + rev  
11.    END IF  
12. END FOR  
13. PRINT out + rev  
14.
```

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- Ops:
- A. AAESBTD

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D. 20 (no further computation)

Q 22. What will be the output of the following pseudocode?

- 1.
- 2.
3. SET a = **14**
4. SET b = **7**
5. SET r = (a MOD 5) * b - (a / (b - **3**)) + (b MOD a)
6. PRINT r
- 7.

Ops:

- A. 31
- B. 33
- C. 34
- D. 32

Q 23. A microservice dependency graph is represented as both an adjacency matrix and an adjacency list.

The undirected graph has 6 services with edges:

S1-S2, S1-S3, S2-S4, S3-S5, S4-S6, S5-S6

Adjacency Matrix representation (0-indexed):

1. n = **6**
2. matrix = [[**0**]*n for _ in range(n)]
3. edges = [(**0,1**),(**0,2**),(**1,3**),(**2,4**),(**3,5**),(**4,5**)]
4. for u,v in edges:
5. matrix[v] = **1**
6. matrix[v] = **1**

A DFS is executed starting from vertex 0 (S1). Which of the following is the correct DFS traversal?

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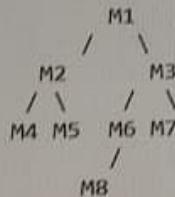
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Q 06. A 2D array $A[N][N]$ is stored in row-major order. Each element is 8 bytes. A cache line is 128 bytes. If $N = 256$, and you iterate over the array such that you access $A[i][j]$ then $A[i][j+1]$ then $A[i+1][j]$ then $A[i+1][j+1]$ (a 2x2 block traversal, then moving to the next 2x2-block in a row-major fashion) how many cache misses will occur for the first full row of 2x2 blocks (i.e., for $i=0$ and j varying from 0 to $N-2$ with step 2)?

- Ops:
- A. 64
 - B. 256
 - C. 128
 - D. 32

Q 07. A monitoring hierarchy is stored as a binary tree:



During restructuring, node M2 (and its subtree) is removed and replaced by its in-order successor from within the same tree. Which of the following represents the correct new structure?

- Ops:
- A.

```
graph TD; M1[M1] --> M8[M8]; M1 --> M3[M3]; M8 --> M4[M4]; M8 --> M6[M6]; M3 --> M7[M7]; M7 --> M5[M5];
```

Tree A: Root M1 has children M8 and M3. M8 has children M4 and M6. M3 has child M7, which in turn has child M5.
 - B.

```
graph TD; M1[M1] --> M8[M8]; M1 --> M3[M3]; M8 --> M4[M4]; M8 --> M5[M5]; M3 --> M6[M6]; M3 --> M7[M7];
```

Tree B: Root M1 has children M8 and M3. M8 has children M4 and M5. M3 has children M6 and M7.

SECTIONS**01. Pseudo Code**
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00 / 15 attempted**Q 08.** What will be the output of the following pseudocode?

```
1.  
2.  
3. FUNCTION bump(REF p, k):  
4.     SET temp = p  
5.     p = p + k  
6.     RETURN temp  
7.  
8. SET p = 3  
9. SET q = 4  
10. SET r = bump(p, q) + bump(p, 1)  
11. PRINT p + r  
12.
```

- Ops:
- A. 16
 - B. 17
 - C. 15
 - D. 18

Q 09. What will be the output of the following pseudocode?

```
1.  
2.  
3. FUNCTION acc(REF a):  
4.     STATIC s = 5  
5.     a = a + s  
6.     s = s - 2  
7.     RETURN a + s  
8.  
9. SET x = 3  
10. SET r1 = acc(x)  
11. SET r2 = acc(x)  
12. PRINT x + r1 + r2
```

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Q 03. What will be the output of the following pseudocode?

```
1.  
2.  
3. SET n = 11  
4. SET c = 0  
5. WHILE n > 0  
6.     IF n MOD 4 = 0 THEN  
7.         n = n - 1  
8.         c = c + 2  
9.     ELSE IF n MOD 2 = 0 THEN  
10.        n = n - 3  
11.        c = c + 1  
12.    ELSE  
13.        n = n - 5  
14.        c = c + 3  
15.    END IF  
16. END WHILE  
17. PRINT c  
18.
```

- Ops:
- A. 6
 - B. 7
 - C. 8
 - D. 9

Q 04. What will be the output of the following pseudocode?

```
1.  
2.  
3. SET s = 0  
4. SET flip = 0
```

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5. matrix[v] = V
6. matrix[v] = T

A DFS is executed starting from vertex 0 (S1). Which of the following is the correct DFS traversal?

- ops:
- A. 0 → 2 → 4 → 5 → 3 → 1
 - B. 0 → 1 → 3 → 5 → 4 → 2
 - C. 0 → 2 → 1 → 3 → 5 → 4
 - D. 0 → 1 → 2 → 4 → 5 → 3

[Reset](#)

Q 24. A programmer is given the prefix expression *+AB/CD. If they convert this expression to infix notation and then evaluate it using the values A=5, B=3, C=10, and D=2, what is the final numerical result?

- ops:
- A. 20
 - B. 15
 - C. 40
 - D. 45

Q 25. A production line queue is represented by [5, 3, 3, 4, 2]. Each unit can only swap with its neighbour, but identical units must remain in their original relative order.

After sorting, what is the minimum swap count?

- ops:
- A. 7
 - B. 8
 - C. 6
 - D. 9

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Which deployment strategy should they use?

- Ops:**
- A. On-premises hosting only.
 - B. Multi-cloud with different vendors for redundancy.
 - C. Hybrid cloud combining private and public.
 - D. Community cloud for all workloads.

Q 36. A company uses several SaaS applications and wants to reduce the number of login credentials employees need to remember.

Which solution should the company implement?

- Ops:**
- A. Role-based IAM policies
 - B. Object storage for credential files
 - C. Single Sign-On (SSO)
 - D. Multi-cloud deployment

Q 37. A company tests IPv6 alongside IPv4 on the same routers and clients to ensure service continuity.

What is this setup called?

- Ops:**
- A. Dual-stack
 - B. Tunnelling
 - C. Translation
 - D. NAT overload

Q 38. When a device wants to send data to another host in the same subnet but only knows the IP address, which process is used to find the MAC address?

- Ops:**
- A. DNS query
 - B. NAT translation
 - C. ARP request
 - D. ICMP echo

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Q 15. What will be the output of the following pseudocode?

```
1.  
2.  
3. SET acc = 0  
4. FOR i = 1 TO 4  
5.     SET tmp = i  
6.     FOR j = 1 TO i  
7.         IF j MOD 2 = 0 THEN  
8.             tmp = tmp + j  
9.         ELSE  
10.            tmp = tmp - (i - j)  
11.        END IF  
12.    END FOR  
13.    acc = acc + tmp  
14. END FOR  
15. PRINT acc  
16.
```

- Ops:
- A. 14
 - B. 15
 - C. 13
 - D. 12

Q 16. What will be the output of the following pseudocode?

1.

Q 29. An insurance company has set up a warm standby in another region for disaster recovery. During a quarterly drill, engineers find that DNS failover took too long, delaying recovery. The CIO asks for improvements without incurring the full cost of active-active deployments.

Which change best balances cost and recovery time?

- Ops:**
- A. Moving all workloads to a private cloud environment.
 - B. Implementing pilot-light recovery with fewer standby resources.
 - C. Automating DNS failover with health checks and routing policies.
 - D. Stopping DR drills to reduce downtime risk.

Q 30. An e-commerce company discovers that developers with admin rights were also able to approve production changes. This violates separation-of-duties requirements under compliance audits. The security team wants to enforce policies where no single role has full control.

Which approach is most appropriate?

- Ops:**
- A. Deploying workloads across multiple availability zones.
 - B. Assigning multi-factor authentication to all employees.
 - C. Encrypting customer data with provider-managed keys.
 - D. Using role-based IAM with least privilege and approval workflows.

Q 31. A digital marketing firm deploys multiple analytics clusters for short campaigns. Finance reports huge monthly variances in cloud bills because engineers often forget to shut down clusters. Management wants controls that enforce policies such as mandatory tags, scheduled shutdowns, and budget alerts, without restricting innovation.

Which feature best supports this?

- Ops:**
- A. Cost governance with tagging and budget enforcement.
 - B. Multi-cloud deployments across providers.
 - C. File storage lifecycle policies for older data.
 - D. Reserved instances with long-term commitments.

Q 32. An engineering office experiences very slow VPN file transfers. Packet captures show large packets being fragmented repeatedly as

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Q 16. What will be the output of the following pseudocode?

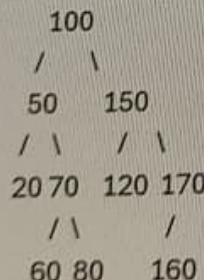
```
1.  
2.  
3. FUNCTION inc(n):  
4.     n = n + 2  
5.     RETURN n  
6.  
7. SET x = 3  
8. SET y = inc(x)  
9. PRINT x + y  
10.
```

- Ops:
- A. 10
 - B. 7
 - C. 9
 - D. 8

[Reset](#)

Q 17. A developer is tasked with optimizing an existing BST deletion function. The current function recursively searches for the node to delete. If the node to be deleted has two children, it always finds the in-order successor, copies its value to the target node, and then recursively calls delete on the in-order successor.

Consider the following BST:



If the node 50 is deleted using this logic, and then subsequently the node 150 is deleted, what is the value of the root's right child after both deletions?

Activate Windows
Go to Settings to activate Windows

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Q 19. What will be the output of the following pseudocode?

```
1.  
2.  
3. SET x = 13  
4. SET y = 9  
5. SET r = ((x AND y) << 1) + ((x XOR y) >> 1) - ((x OR y) MOD 5)  
6. PRINT r  
7.
```

- Ops:
- A. 20
 - B. 19
 - C. 18
 - D. 17

Q 20. A social network has $n=10$ users. The administrator guarantees that every user has a minimum of 6 friends. Which of the following statements must be true about this network?

- Ops:
- A. The network is a complete graph (K_{10}).
 - B. The network has no triangles (K_3 subgraphs).
 - C. There are at most 3 users with a degree of 6.
 - D. The network must contain at least one triangle (K_3 subgraph).

Q 21. Consider a Min-Heap represented by the array [10, 20, 30, 40, 50, 60]. If the element 10 is removed (which is the minimum), and the last element 60 is moved to the root, what is the sequence of values that 60 will be compared against during the heapify-down process until it finds its correct position?

- Ops:
- A. 20, 40
 - B. 30, 60 (no further comparisons for 60)
 - C. 20, 30
 - D. 20 (no further comparisons for 60)

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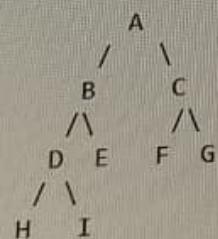
Q 04. What will be the output of the following pseudocode?

```
1.  
2.  
3. SET s = 0  
4. SET flip = 0  
5. FOR i = 1 TO 6  
6.     IF flip = 0 THEN  
7.         s = s + i  
8.     ELSE  
9.         s = s - 1  
10.    END IF  
11.    flip = 1 - flip  
12. END FOR  
13. PRINT s  
14.
```

- Ops:
- A. 5
 - B. 7
 - C. 6
 - D. 8

Q 05. A company models two different caching strategies for its cloud data centers. Each cache hierarchy is stored as a binary tree:

Cache Design T1 (balanced hierarchy):



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00 / 15 attempted5. `matrix[v] = 1`
6. `matrix[v] = 1`

A DFS is executed starting from vertex 0 (S1). Which of the following is the correct DFS traversal?

- ops:
- A. 0 → 2 → 4 → 5 → 3 → 1
 - B. 0 → 1 → 3 → 5 → 4 → 2
 - C. 0 → 2 → 1 → 3 → 5 → 4
 - D. 0 → 1 → 2 → 4 → 5 → 3

[Reset](#)

Q 24. A programmer is given the prefix expression *+AB/CD. If they convert this expression to infix notation and then evaluate it using the values A=5, B=3, C=10, and D=2, what is the final numerical result?

- ops:
- A. 20
 - B. 15
 - C. 40
 - D. 45

Q 25. A production line queue is represented by [5, 3, 3, 4, 2]. Each unit can only swap with its neighbour, but identical units must remain in their original relative order.

After sorting, what is the minimum swap count?

- Ops:
- A. 7
 - B. 8
 - C. 6
 - D. 9

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Q 03. What will be the output of the following pseudocode?

```
1.  
2.  
3. SET n = 11  
4. SET c = 0  
5. WHILE n > 0  
6.   IF n MOD 4 = 0 THEN  
7.     n = n - 1  
8.     c = c + 2  
9.   ELSE IF n MOD 2 = 0 THEN  
10.    n = n - 3  
11.    c = c + 1  
12.  ELSE  
13.    n = n - 5  
14.    c = c + 3  
15. END IF  
16. END WHILE  
17. PRINT c  
18.
```

- Ops:
- A. 6
 - B. 7
 - C. 8
 - D. 9

Q 04. What will be the output of the following pseudocode?

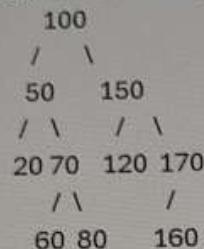
```
1.  
2.  
3. SET s = 0  
4. SET flip = 0
```

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calls delete on the in-order successor.

Consider the following BST:



If the node 50 is deleted using this logic, and then subsequently the node 150 is deleted, what is the value of the root's right child after both deletions?

- Ops:
- A. 80
 - B. 160
 - C. 120
 - D. 170

Q 18. What will be the output of the following pseudocode?

```
1.  
2.  
3. SET x = 5  
4. SET y = 9  
5. SET z = (x XOR y) + ((x AND y) << 1) - ((x OR y) >> 1)  
6. PRINT z  
7.
```

- Ops:
- A. 10
 - B. 9
 - C. 7
 - D. 8

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Q 16. What will be the output of the following pseudocode?

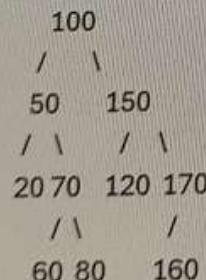
```
1.  
2.  
3. FUNCTION inc(n):  
4.     n = n + 2  
5.     RETURN n  
6.  
7. SET x = 3  
8. SET y = inc(x)  
9. PRINT x + y  
10.
```

- Ops:
- A. 10
 - B. 7
 - C. 9
 - D. 8

Reset

Q 17. A developer is tasked with optimizing an existing BST deletion function. The current function recursively searches for the node to delete. If the node to be deleted has two children, it always finds the in-order successor, copies its value to the target node, and then recursively calls delete on the in-order successor.

Consider the following BST:



If the node 50 is deleted using this logic, and then subsequently the node 150 is deleted, what is the value of the root's right child after both deletions?

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Q 16. What will be the output of the following pseudocode?

```
1.  
2.  
3. FUNCTION inc(n):  
4.     n = n + 2  
5.     RETURN n  
6.  
7. SET x = 3  
8. SET y = inc(x)  
9. PRINT x + y  
10.
```

Ops: A.

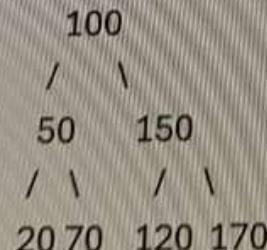
B.

C.

D.

Q 17. A developer is tasked with optimizing an existing BST deletion function. The current function recursively searches for the node to delete. If the node to be deleted has two children, it always finds the in-order successor, copies its value to the target node, and then recursively calls delete on the in-order successor.

Consider the following BST:



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Q 22. What will be the output of the following pseudocode?

```
1.  
2.  
3. SET a = 14  
4. SET b = 7  
5. SET r = (a MOD 5) * b - (a / (b - 3)) + (b MOD a)  
6. PRINT r  
7.
```

- Ops:
- A. 31
 - B. 33
 - C. 34
 - D. 32

Reset

Q 23. A microservice dependency graph is represented as both an adjacency matrix and an adjacency list.

The undirected graph has 6 services with edges:

S1-S2, S1-S3, S2-S4, S3-S5, S4-S6, S5-S6

Adjacency Matrix representation (0-indexed):

```
1. n = 6  
2. matrix = [[0]*n for _ in range(n)]  
3. edges = [(0,1),(0,2),(1,3),(2,4),(3,5),(4,5)]  
4. for u,v in edges:  
5.     matrix[v] = 1  
6.     matrix[u] = 1
```

A DFS is executed starting from vertex 0 (S1). Which of the following is the correct DFS traversal?

- Ops:
- A. 0 → 2 → 4 → 5 → 3 → 1
 - B. 0 → 1 → 3 → 5 → 4 → 2
 - C. 0 → 2 → 1 → 3 → 5 → 4

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```
10.           x = x + (i + j)
11.      ELSE
12.          x = x - 1
13.      END IF
14.  END FOR
15. END FOR
16. PRINT x
17.
```

- Ops:
- A. 22
 - B. 20
 - C. 23
 - D. 21

Q 14. What will be the output of the following pseudocode?

```
1.
2.
3. SET acc = 0
4. FOR i = 1 TO 3
5.   SET k = i + 2
6.   WHILE k >= i
7.     IF (k - i) MOD 2 = 0 THEN
8.       acc = acc + (k - i + 1)
9.     ELSE
10.       acc = acc + i
11.     END IF
12.     k = k - 1
13.   END WHILE
14. END FOR
15. PRINT acc
```

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```
2.  
3. FUNCTION mix$REF x, y:  
4.     x = x + y  
5.     RETURN x - 2 * y  
6.  
7. SET p = 3  
8. SET q = 5  
9. SET r = mix(p, q)  
10. SET s = mix(p, 2)  
11. PRINT p + r + s  
12.
```

- Ops:
- A. 14
 - B. 16
 - C. 13
 - D. 15

Q 11. What will be the output of the following pseudocode?

```
1.  
2.  
3. SET s = "DATABASE"  
4. SET out = ""  
5. SET rev = ""  
6. FOR i = 0 TO LENGTH(s) - 1  
7.     IF s[i] IN ['A','E','I','O','U'] THEN  
8.         out = s[i] + out  
9.     ELSEF  
10.        rev = s[i] + rev  
11.    END IF  
12. END FOR  
13. PRINT out + rev  
14.
```

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- Ops:
- A. AAESBTD

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Q 03. What will be the output of the following pseudocode?

```
1.  
2.  
3. SET n = 11  
4. SET c = 0  
5. WHILE n > 0  
6.   IF n MOD 4 = 0 THEN  
7.     n = n - 1  
8.     c = c + 2  
9.   ELSE IF n MOD 2 = 0 THEN  
10.    n = n - 3  
11.    c = c + 1  
12.  ELSE  
13.    n = n - 5  
14.    c = c + 3  
15. END IF  
16. END WHILE  
17. PRINT c  
18.
```

- Ops:
- A. 6
 - B. 7
 - C. 8
 - D. 9

Q 04. What will be the output of the following pseudocode?

```
1.  
2.  
3. SET s = 0  
4. SET flip = 0
```

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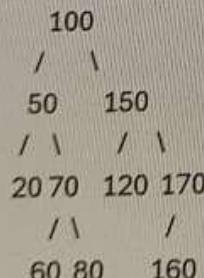
01. Pseudo Code
23 / 25 attempted**02. IT Fundamentals**
00 / 15 attempted**Q 16.** What will be the output of the following pseudocode?

```
1.  
2.  
3. FUNCTION inc(n):  
4.     n = n + 2  
5.     RETURN n  
6.  
7. SET x = 3  
8. SET y = inc(x)  
9. PRINT x + y  
10.
```

- Ops:
- A. 10
 - B. 7
 - C. 9
 - D. 8

Reset**Q 17.** A developer is tasked with optimizing an existing BST deletion function. The current function recursively searches for the node to delete. If the node to be deleted has two children, it always finds the in-order successor, copies its value to the target node, and then recursively calls `delete` on the in-order successor.

Consider the following BST:



If the node 50 is deleted using this logic, and then subsequently the node 150 is deleted, what is the value of the root's right child after both deletions?

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Q 19. What will be the output of the following pseudocode?

```
1.  
2.  
3. SET x = 13  
4. SET y = 9  
5. SET r = ((x AND y) << 1) + ((x XOR y) >> 1) - ((x OR y) MOD 5)  
6. PRINT r  
7.
```

- Ops:
- A. 20
 - B. 19
 - C. 18
 - D. 17

Q 20. A social network has $n=10$ users. The administrator guarantees that every user has a minimum of 6 friends. Which of the following statements must be true about this network?

- Ops:
- A. The network is a complete graph (K_{10}).
 - B. The network has no triangles (K_3 subgraphs).
 - C. There are at most 3 users with a degree of 6.
 - D. The network must contain at least one triangle (K_3 subgraph).

Q 21. Consider a Min-Heap represented by the array [10, 20, 30, 40, 50, 60]. If the element 10 is removed (which is the minimum), and the last element 60 is moved to the root, what is the sequence of values that 60 will be compared against during the heapify-down process until it finds its correct position?

- Ops:
- A. 20, 40
 - B. 30, 60 (no further comparisons for 60)
 - C. 20, 30
 - D. 20 (no further comparisons for 60)

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```
1.  
2.  
3. FUNCTION bump(REF p, k):  
4.     SET temp = p  
5.     p = p + k  
6.     RETURN temp  
7.  
8. SET p = 3  
9. SET q = 4  
10. SET r = bump(p, q) + bump(p, 1)  
11. PRINT p + r  
12.
```

- Ops:
- A. 16
 - B. 17
 - C. 15
 - D. 18

Q 09. What will be the output of the following pseudocode?

```
1.  
2.  
3. FUNCTION acc(REF a):  
4.     STATIC s = 5  
5.     a = a + s  
6.     s = s - 2  
7.     RETURN a + s  
8.  
9. SET x = 3  
10. SET r1 = acc(x)  
11. SET r2 = acc(x)  
12. PRINT x + r1 + r2
```

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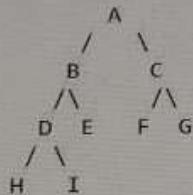
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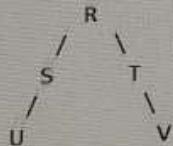
D. 8

Q 05. A company models two different caching strategies for its cloud data centers. Each cache hierarchy is stored as a binary tree:

Cache Design T1 (balanced hierarchy):



Cache Design T2 (skewed hierarchy):



The performance audit defines a metric:

Metric T1 = (Height of the cache tree + Number of leaf caches in it)

The compliance audit defines a metric:

Metric T2 = (Height of the cache tree + Number of internal caches in it)

What is the difference between the performance metric of T1 and the compliance metric of T2?

What is the difference between the performance metric of T1 and the compliance metric of T2?

- Ops: A. 3
B. 4
C. 2
D. 5

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... 128 bytes. If N = 256, and you iterate over the

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```
3. edges = [(0, 1), (0, 2), (0, 3), (1, 2), (1, 3),  
4. for u,v in edges:  
5.     matrix[v] = 1  
6.     matrix[u] = 1
```

A DFS is executed starting from vertex 0 (S1). Which of the following is the correct DFS traversal?

- Ops:
- A. 0 → 2 → 4 → 5 → 3 → 1
 - B. 0 → 1 → 3 → 5 → 4 → 2
 - C. 0 → 2 → 1 → 3 → 5 → 4
 - D. 0 → 1 → 2 → 4 → 5 → 3

Q 24. A programmer is given the prefix expression *+AB/CD. If they convert this expression to infix notation and then evaluate it using the values A=5, B=3, C=10, and D=2, what is the final numerical result?

- Ops:
- A. 20
 - B. 15
 - C. 40
 - D. 45

Q 25. A production line queue is represented by [5, 3, 3, 4, 2]. Each unit can only swap with its neighbour, but identical units must retain their original relative order.

After sorting, what is the minimum swap count?

- Ops:
- A. 7
 - B. 8
 - C. 6
 - D. 9

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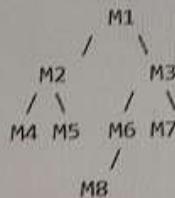
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- Q 06.** A 2D array $A[N][N]$ is stored in row-major order. Each element is 8 bytes. A cache line is 128 bytes. If $N = 256$, and you iterate over the array such that you access $A[i][j]$ then $A[i][j+1]$ then $A[i+1][j]$ then $A[i+1][j+1]$ (a 2×2 block traversal, then moving to the next 2×2 block in a row-major fashion) how many cache misses will occur for the first full row of 2×2 blocks (i.e., for $i=0$ and j varying from 0 to $N-2$ with step 2)?

- Ops:
- A. 64
 - B. 256
 - C. 128
 - D. 32

- Q 07.** A monitoring hierarchy is stored as a binary tree:



During restructuring, node M2 (and its subtree) is removed and replaced by its in-order successor from within the same tree. Which of the following represents the correct new structure?

- Ops:
- A.

```
graph TD; M1[M1] --> M8[M8]; M1 --> M3[M3]; M8 --> M4[M4]; M8 --> M6[M6]; M3 --> M7[M7]; M7 --> M5[M5];
```

New tree structure A: Root M1 has children M8 and M3. M8 has children M4 and M6. M3 has child M7, which in turn has child M5.
 - B.

```
graph TD; M1[M1] --> M8[M8]; M1 --> M3[M3]; M8 --> M4[M4]; M8 --> M5[M5]; M3 --> M6[M6]; M3 --> M7[M7];
```

New tree structure B: Root M1 has children M8 and M3. M8 has children M4 and M5. M3 has children M6 and M7.

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5. matrix[v] = 1
6. matrix[v] = 1

A DFS is executed starting from vertex 0 (S1). Which of the following is the correct DFS traversal?

- ops:
- A. 0 → 2 → 4 → 5 → 3 → 1
 - B. 0 → 1 → 3 → 5 → 4 → 2
 - C. 0 → 2 → 1 → 3 → 5 → 4
 - D. 0 → 1 → 2 → 4 → 5 → 3

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Q 24. A programmer is given the prefix expression *+AB/CD. If they convert this expression to infix notation and then evaluate it using the values A=5, B=3, C=10, and D=2, what is the final numerical result?

- ops:
- A. 20
 - B. 15
 - C. 40
 - D. 45

Q 25. A production line queue is represented by [5, 3, 3, 4, 2]. Each unit can only swap with its neighbour, but identical units must remain in their original relative order.

After sorting, what is the minimum swap count?

- ops:
- A. 7
 - B. 8
 - C. 6
 - D. 9

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Q 29. An insurance company has set up a warm standby in another region for disaster recovery. During a quarterly drill, engineers find that DNS failover took too long, delaying recovery. The CIO asks for improvements without incurring the full cost of active-active deployments.

Which change best balances cost and recovery time?

- Ops:**
- A. Moving all workloads to a private cloud environment.
 - B. Implementing pilot-light recovery with fewer standby resources.
 - C. Automating DNS failover with health checks and routing policies.
 - D. Stopping DR drills to reduce downtime risk.

Q 30. An e-commerce company discovers that developers with admin rights were also able to approve production changes. This violates separation-of-duties requirements under compliance audits. The security team wants to enforce policies where no single role has full control.

Which approach is most appropriate?

- Ops:**
- A. Deploying workloads across multiple availability zones.
 - B. Assigning multi-factor authentication to all employees.
 - C. Encrypting customer data with provider-managed keys.
 - D. Using role-based IAM with least privilege and approval workflows.

Q 31. A digital marketing firm deploys multiple analytics clusters for short campaigns. Finance reports huge monthly variances in cloud bills because engineers often forget to shut down clusters. Management wants controls that enforce policies such as mandatory tags, scheduled shutdowns, and budget alerts, without restricting innovation.

Which feature best supports this?

- Ops:**
- A. Cost governance with tagging and budget enforcement.
 - B. Multi-cloud deployments across providers.
 - C. File storage lifecycle policies for older data.
 - D. Reserved instances with long-term commitments.

Q 32. An engineering office experiences very slow VPN file transfers. Packet captures show large packets being fragmented repeatedly as

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Q 22. What will be the output of the following pseudocode?

```
1.  
2.  
3. SET a = 14  
4. SET b = 7  
5. SET r = (a MOD 5) * b - (a / (b - 3)) + (b MOD a)  
6. PRINT r  
7.
```

- Ops:
- A. 31
 - B. 33
 - C. 34
 - D. 32

Reset

Q 23. A microservice dependency graph is represented as both an adjacency matrix and an adjacency list.
The undirected graph has 6 services with edges:

S1-S2, S1-S3, S2-S4, S3-S5, S4-S6, S5-S6

Adjacency Matrix representation (0-indexed):

```
1. n = 6  
2. matrix = [[0]*n for _ in range(n)]  
3. edges = [(0,1),(0,2),(1,3),(2,4),(3,5),(4,5)]  
4. for u,v in edges:  
5.     matrix[v] = 1  
6.     matrix[u] = 1
```

A DFS is executed starting from vertex 0 (S1). Which of the following is the correct DFS traversal?

- Ops:
- A. 0 → 2 → 4 → 5 → 3 → 1
 - B. 0 → 1 → 3 → 5 → 4 → 2
 - C. 0 → 2 → 1 → 3 → 5 → 4

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- Q 17.** A developer is tasked with optimizing an existing BST deletion function. The current function recursively searches for the node to delete. If the node to be deleted has two children, it always finds the in-order successor, copies its value to the target node, and then recursively calls delete on the in-order successor.

Consider the following BST:

```
    100
     / \
    50  150
   / \  / \
  20 70 120 170
  / \   /
 60 80 160
```

If the node 50 is deleted using this logic, and then subsequently the node 150 is deleted, what is the value of the root's right child after both deletions?

- Ops: A. 80
B. 160
C. 120
D. 170

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- Q 18.** What will be the output of the following pseudocode?

```
1.
2.
3. SET x = 5
4. SET y = 9
5. SET z = (x XOR y) + ((x AND y) << 1) - ((x OR y) >> 1)
6. PRINT z
7.
```

- Ops: A. 10
B. 9
C. 7
D. 8

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Q 15. What will be the output of the following pseudocode?

```
1.  
2.  
3. SET acc = 0  
4. FOR i = 1 TO 4  
5.     SET tmp = i  
6.     FOR j = 1 TO i  
7.         IF j MOD 2 = 0 THEN  
8.             tmp = tmp + j  
9.         ELSE  
10.            tmp = tmp - (i - j)  
11.        END IF  
12.    END FOR  
13.    acc = acc + tmp  
14. END FOR  
15. PRINT acc  
16.
```

- Ops:
- A. 14
 - B. 15
 - C. 13
 - D. 12

Q 16. What will be the output of the following pseudocode?

```
1.  
2.  
3. FUNCTION inc(n):  
4.     n = n + 2  
5.     RETURN n  
6.  
7. SET x = 3  
8. SET y = inc(x)  
9. PRINT x + y
```