Text Areas : PlainText

Possible Answers :

200

PDSA

Section Id :	64065338328
Section Number :	11
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	28
Number of Questions to be attempted :	28
Section Marks :	100
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065380414
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 291 Question Id : 640653564008 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "DIPLOMA LEVEL : PROGRAMMING, DATA STRUCTURES AND ALGORITHMS USING PYTHON (COMPUTER BASED EXAM)"

ARE YOU SURE YOU HAVE TO WRITE EXAM FOR THIS SUBJECT?

CROSS CHECK YOUR HALL TICKET TO CONFIRM THE SUBJECTS TO BE WRITTEN.

(IF IT IS NOT THE CORRECT SUBJECT, PLS CHECK THE SECTION AT THE TOP FOR THE SUBJECTS REGISTERED BY YOU)

Options :

6406531885409. ✔ YES

6406531885410. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065380415
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 292 Question Id : 640653564009 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

$f1(n) = 2^n$

$f2(n) = n^{3/2}$

$f3(n) = n \log n$

$f4(n) = n^{\log n}$

Arrange the above functions in increasing order of asymptotic complexity.

Options :

6406531885411. ✖ $f4(n), f3(n), f2(n), f1(n)$

6406531885412. ✔ $f3(n), f2(n), f4(n), f1(n)$

6406531885413. ✖ $f3(n), f4(n), f2(n), f1(n)$

6406531885414. ✖ $f3(n), f4(n), f1(n), f2(n)$

Question Number : 293 Question Id : 640653564011 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider two integer lists `L1` and `L2` of same size `n`. `L1` contains all distinct integers and `L2` contains all distinct integers, but there can be some elements common between `L1` and `L2`.

What would be the time complexity of the best known algorithm to find the common elements in both list ?

Options :

6406531885419. ✖ $O(n)$

6406531885420. ✖ $O(n^2)$

6406531885421. ✔ $O(n\ log\ n)$

6406531885422. ✖ $O(n^2\ log\ n)$

Question Number : 294 Question Id : 640653564018 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider a weighted, directed acyclic graph $G = (V, E, w)$ in which edges that leave the source vertex s may have negative weights and all other edges weights are non-negative.

Which of the following statement(s) is/are correct?

I . Dijkstra's algorithm correctly computes the shortest-path weight $\delta(s, t)$ from s to every vertex t in this graph G.

II. Dijkstra's algorithm may compute an incorrect shortest-path weight $\delta(s, t)$ from s to at least one vertex t in this graph G.

III. Bellman's Ford algorithm correctly computes the shortest-path weight $\delta(s, t)$ from s to every vertex t in this graph G.

Options :

6406531885446. ✖ Only I

6406531885447. ✖ II and III

6406531885448. ✖ Only III

6406531885449. ✔ I and III

Question Number : 295 Question Id : 640653564020 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Let $G = (V, E)$ is an undirected graph having distinct positive edge weights. Let V be partitioned into two non-empty sets X and Y. Let S be the set of all the edges, where one end of each edge belongs to X and another end belongs to Y.

Consider a single edge e which has the strictly lowest weight among all edges in set S. Which one of the following is true?

Options :

6406531885454. ✔ Edge e would be present in all the MSTs of the graph.

6406531885455. ✖ Edge e would not be present in any MST of the graph.

6406531885456. ✖ Edge e would be not present in all the MSTs of the graph, but would be present in some of the MSTs of the graph.

Question Number : 296 Question Id : 640653564028 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following strategy to solve a problem of input size n.

Divide the problem into 4 sub-problems, each of size $\frac{n}{4}$. Number of steps required to combine these 4 solutions is $2n$. We apply this strategy recursively till the sub-problems can not be further divided into sub-problems.

What will be the nearest upper bound for the above algorithm?

Options :

6406531885480. ✖ $O(n^2)$

6406531885481. ✖ $O(n^4)$

6406531885482. ✔ $O(n \log n)$

6406531885483. ✖ $O(n)$

Question Number : 297 Question Id : 640653564036 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Given a flow network (G, s, t, c) and a flow f, how will you determine if f is maximum flow?

Options :

6406531885506. ✖ If there is any edge that is not saturated to full capacity, then we can conclude that f is not a maximum flow.

6406531885507. ✔ If the residual graph does not have any augmenting paths then f is a maximum flow.

6406531885508. ✖ If the value of the flow f is not the sum of the capacities of the edges coming out of the source s then f is not a maximum flow.

6406531885509. ✖ If the value of the flow f is not the sum of the capacities of the edges coming into the sink t then f is not a maximum flow.

Sub-Section Number :	3
Sub-Section Id :	64065380416
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 298 Question Id : 640653564013 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Let `S` be a stack and `Q` be a queue supporting the following operations:

Stack operation:

- `Push(d)` : Insert element `d` in stack
- `Pop()` : Remove element from the stack and return the removed element

Queue Operation:

- `Enqueue(d)` : Insert element `d` in queue
- `dequeue()` : Remove element from the queue and return the removed element

Suppose initially elements A, B, C, D, E, F and G are pushed onto stack `S` in reverse order, i.e., starting from G.

The following sequence of operations is performed on stack `S` and queue `Q`:

```
1 Q.Enqueue(S.Pop())
2 Q.Enqueue(S.Pop())
3 Q.Enqueue(S.Pop())
4 Q.Enqueue(S.Pop())
5 Q.Enqueue(S.Pop())
6 S.Push(Q.Dequeue())
7 S.Push(Q.Dequeue())
8 Result = S.Pop()
```

What would be the value of `Result` after completion of operations ?

Options :

6406531885427. ✖ A

6406531885428. ✔ B

6406531885429. ✖ E

6406531885430. ✖ G

6406531885431. ✖ F

Question Number : 299 Question Id : 640653564015 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Let G be a simple graph with 16 vertices and 8 connected components. If we delete one vertex from G, then the minimum and maximum number of possible connected components are _____.

Options :

6406531885437. ✖ 7 and 16

6406531885438. ✖ 8 and 15

6406531885439. ✔ 7 and 15

6406531885440. ✖ 8 and 16

Question Number : 300 Question Id : 640653564016 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the **BFS traversal** of an undirected connected graph G. Let $u_1, u_2, \ldots, u_n$ be the order in which the vertices of G are visited for the first time during BFS traversal. Let u_i and u_{i+1} be two consecutively visited vertices during the BFS traversal for some i, where $1 \leq i < n$. Which of the following option is correct?

Options :

6406531885441. ✖ (u_i, u_{i+1}) must be an edge in G.

6406531885442. ✔ (u_i, u_{i+1}) may not be an edge in G.

6406531885443. ✖ If (u_i, u_{i+1}) is not an edge in G, then there must exist at least one vertex which is adjacent to both u_i and u_{i+1} in G.

6406531885444. ✖

Vertex u_n must be a leaf in G (i.e. degree of u_n must be 1 in G).

Question Number : 301 Question Id : 640653564019 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Consider a undirected graph G with the following edges where each tuple `(u,v,w)` represent one edge between vertex `u` and `v` with weight `w`:

```
[(A,B,1), (A,C,1), (B,C,2), (B,D,6), (C,E,5), (D,E,4), (D,F,3), (E,F,3)]
```

Which of the following statement(s) is/are correct for given graph `G` ?

I . The cost of the minimum spanning tree for graph G is 13.

II. More than one minimum spanning tree are possible with same cost, because edges weights are not distinct in given graph G

III. Edge `(C,E)` will not be the part of minimum spanning tree

Options :

6406531885450. ✖ I and III

6406531885451. ✔ Only I

6406531885452. ✖ Only II

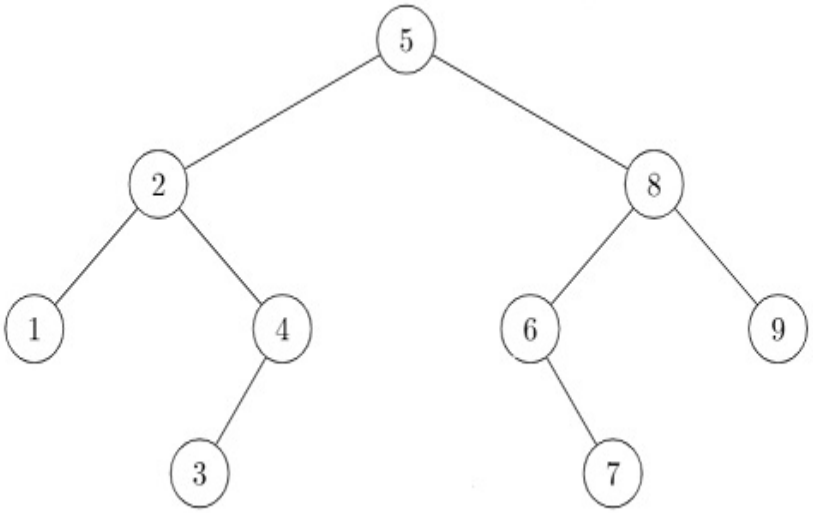
6406531885453. ✖ II and III

Question Number : 302 Question Id : 640653564023 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the following binary tree.



Which of the following order is represented **pre-order traversal** for the given binary tree ?

Options :

6406531885463. ✖ 5 2 1 3 4 8 6 7 9

6406531885464. ✖ 5 2 1 4 3 7 6 8 9

6406531885465. ✔ 5 2 1 4 3 8 6 7 9

6406531885466. ✖ 1 3 4 2 7 6 9 8 5

Question Number : 303 Question Id : 640653564027 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Let `A` be a list of `n` integers. The function `findMaxMin(i, j, A)` returns maximum `maxA` and minimum `minA` in `A[i:j]` where `i <= j`.

```
def findMaxMin(i, j, A):
  if (i == j):
    maxA = minA = A[i]
  if (i == j - 1):
    if (A[i] < A[j]):
      maxA, minA = A[j], A[i]
    else
      maxA, minA = A[i], A[j]
  else
    m = (i + j) // 2
    maxL, minL = findMaxMin(i, m, A)
    maxR, minR = findMaxMin(m + 1, j, A)
    maxA = max(maxL, maxR)
    minA = min(minL, minR)
  return maxA, minA
```

Let $T(n)$ denote the worst case running time of the algorithm. Which of the following is a **valid** recurrence for given function ?

Options :

6406531885476. ✔ $T(1) = T(2) = 1$
$For\ n > 2, T(n) = 2T(n/2) + 1$

6406531885477. ✖ $T(1) = T(2) = 1$
$For\ n > 2, T(n) = 2T(n/2) + n$

6406531885478. ✖ $T(1) = T(2) = 1$
$For\ n > 2, T(n) = T(n/2) + 1$

6406531885479. ✖ $T(1) = T(2) = 1$
$For\ n > 2, T(n) = T(n/2) + n$

Question Number : 304 Question Id : 640653564032 Question Type : MCQ Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Which of the following combination of input text T and pattern P will exhibit the worst case running time behavior for **Boyer-Moore skipping heuristic**?

Options :

6406531885492. ✖ T = `baabaabaabaabaa` and P = `abb`

6406531885493. ✖ T = `aaaaaaaaaaaaaaa` and P = `abb`

6406531885494. ✔ T = `aaaaaaaaaaaaaaa` and P = `baa`

6406531885495. ✖ T = `aaaaaaaaaaaaaaa` and P = `bbb`

Sub-Section Number :	4
Sub-Section Id :	64065380417
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 305 Question Id : 640653564010 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following statements is/are **true** about the sorting algorithms ?

Options :

6406531885415. ✔ The complexity of Selection sort remains the same irrespective of the sequence of elements.

6406531885416. ✖ The complexity of Insertion sort remains the same irrespective of the sequence of elements.

6406531885417. ✔ The complexity of Merge sort remains the same irrespective of the sequence of elements.

6406531885418. ✔ The complexity of Heap sort remains the same irrespective of the sequence of elements.

Question Number : 306 Question Id : 640653564012 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following statements is/are **true** about the **Quicksort algorithm** to sort elements in ascending order? Assume that the first element in the list selected as pivot for partitioning each time.

Options :

6406531885423. ✔ The best case is when the pivot element always divides the list into two equal halves.

6406531885424. ✖ The best case is when the input list is already sorted in ascending order.

6406531885425. ✔ The worst case is when the input list is arranged in descending order.

6406531885426. ✔ The worst case is when the input list is arranged in ascending order.

Question Number : 307 Question Id : 640653564025 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following are possible **valid** codes for the character set S = {A, B, C, D, E, F}, generated using the **Huffman algorithm**?

Options :

6406531885471. ✖

Character	A	B	C	D	E	F
Huffman code	000	0010	0101	01	10	11

6406531885472. ✔

Character	A	B	C	D	E	F
Huffman code	000	0010	0011	01	10	11

6406531885473. ✖

Character	A	B	C	D	E	F
Huffman code	100	1011	1001	011	101	000

6406531885474. ✔

Character	A	B	C	D	E	F
Huffman code	000	001	010	011	10	11

Question Number : 308 Question Id : 640653564033 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following statement(s) is/are true about **Knuth-Morris-Pratt (KMP)** algorithm for string matching? Consider that `n` and `m` are the length of text and pattern.

Options :

6406531885496. ✔ Complexity for computing `fail function` is `O(m)`

6406531885497. ✖ Overall KMP algorithm's complexity is `O(nm)`

6406531885498. ✔ Overall KMP algorithm's complexity is `O(n + m)`

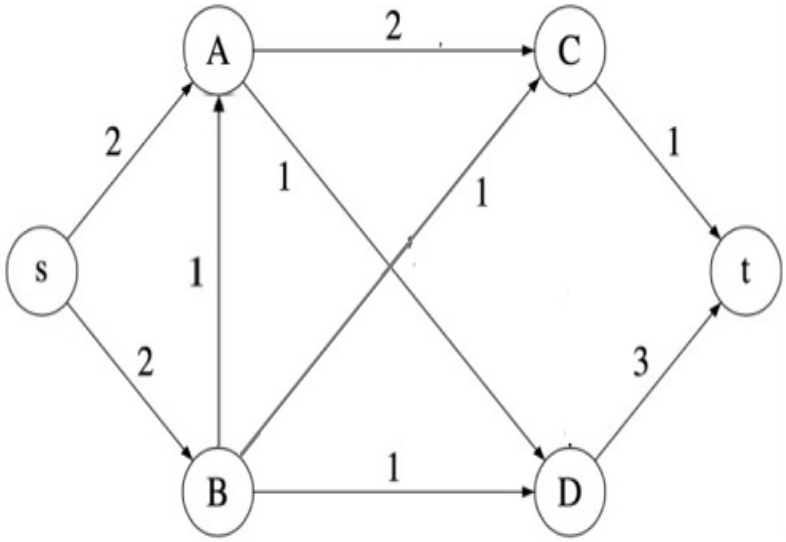
6406531885499. ✔ KMP algorithm efficiently computes the automaton describing prefix matches in the pattern.

Question Number : 309 Question Id : 640653564037 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3 Selectable Option : 0

Question Label : Multiple Select Question

Consider the following network with source `s` and sink `t`, with the numbers on the edges denoting maximum capacity across a particular edge.



Suppose we want to increase the flow from the vertex s to t. An edge is called a bottleneck edge if the flow from s to t increases upon increasing the capacity of that edge. Select the bottleneck edge(s) from the below given options.

Note: If there are multiple bottleneck edges in the given options then select all of them.

Options :

6406531885510. ✖ (B,C)

6406531885511. ✔ (A,D)

6406531885512. ✔ (B,D)

6406531885513. ✖ (B, A)

Sub-Section Number : 5

Sub-Section Id : 64065380418

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 310 Question Id : 640653564014 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Selectable Option : 0

Question Label : Multiple Select Question

Linear probing is an open addressing scheme in computer programming for resolving hash collisions in hash tables. Linear probing takes the original hash index and increments the value by 1 until a free slot is found.

Consider the given hash table with hash function `h(key) = key mod 10` which uses **linear probing** for solving collisions.

Index	Key
0	
1	
2	
3	63
4	23
5	45
6	25
7	37
8	15
9	

Which among the following options correspond to possible orders of insertion of values in the hash table?

Options :

6406531885432. ✔ 45, 63, 37, 25, 23, 15

6406531885433. ✖ 45, 23, 25, 37, 63, 15

6406531885434. ✖ 45, 37, 63, 15, 23, 25

6406531885435. ✔ 37, 45, 25, 63, 23, 15

6406531885436. ✔ 63, 45, 23, 25, 37, 15

Question Number : 311 Question Id : 640653564022 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Selectable Option : 0

Question Label : Multiple Select Question

Consider the max-heap [30, 25, 20, 5, 15, 8, 10, 3, 2, 12] built by repeatedly inserting values into an empty heap. Which of the following could not have been the last element inserted into this heap?

Options :

6406531885458. ✖ 15

6406531885459. ✖ 25

6406531885460. ✔ 20

6406531885461. ✔ 5

6406531885462. ✖ 30

Question Number : 312 Question Id : 640653564024 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Selectable Option : 0

Question Label : Multiple Select Question

Which of the following is/are true about **AVL Tree**? Assume that the height of the empty tree is 0.

Options :

6406531885467. ✖ In AVL tree, the absolute difference between the number of nodes in the left subtree and the number of nodes in the right subtree of any node can't be more than 1.

6406531885468. ✔ The complexity of searching in an AVL tree is $O(log\ n)$.

6406531885469. ✖ The complexity of both insertion and deletion in AVL tree is $O(n)$.

6406531885470. ✔ If the height of an AVL tree is `h`, the maximum number of nodes will be $2^h - 1$.

Question Number : 313 Question Id : 640653564035 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Selectable Option : 0

Question Label : Multiple Select Question

A plant manufactures two types of products A and B and sells them at a profit of Rs. 5 per item on type A and Rs. 3 per item on type B. Each product is processed on two machines G and H. One item of type A requires one minute of processing time on G and two minutes on H; One item of type B requires one minute on G and one minute on H. The machine G is available for not more than 5 hours 40 minutes, while machine H is available for 7 hours 20 minutes during any working day. Let X_1 be the number of item produced of type A and X_2 be the number of item produced of type B.

Objective function to maximize the total profit $Z = 5X_1 + 3X_2$

Which of the following is/are **not a valid** constraint for the given problem?

Options :

6406531885501. ✖ $X_1 + X_2 \leq 340$

6406531885502. ✔ $X_1 + 2X_2 \leq 440$

6406531885503. ✖ $X_1 \geq 0, X_2 \geq 0$

6406531885504. ✖ $2X_1 + X_2 \leq 440$

6406531885505. ✔ $X_1 + X_2 \geq 340$

Sub-Section Number : 6

Sub-Section Id : 64065380419

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 314 Question Id : 640653564017 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Short Answer Question

A house is being rewired. The house has 10 rooms named from A to J. To avoid wires getting entangled and creating short circuits, the electricians have been asked to observe the following rules.

- Room A must be rewired before rooms D and E.
- Room B must be rewired before rooms D and E.
- Room C must be rewired before room H.
- Room D must be rewired before rooms C and F.
- Room E must be rewired before rooms F and G.
- Room F must be rewired before rooms H and J.
- Room G must be rewired before room I.
- Room H must be rewired before room J.
- Room I must be rewired before room J.

It takes one full day to rewire a room. There are enough electricians to rewire as many rooms as can be rewired in parallel, keeping in mind the constraints above. What is the minimum number of days required to complete the job?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

5

Question Number : 315 Question Id : 640653564021 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Short Answer Question

Consider a binary tree with 30 nodes, where the number of nodes which have one child is 11. The number of leaf nodes is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 316 Question Id : 640653564026 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Short Answer Question

In a list L, two elements $L[i]$ and $L[j]$ form a **significant inversion** if $L[i] \geq 2 * L[j]$ and $i < j$.
The total number of significant inversions for $L = [6, 4, 5, 2, 1, 3]$ is__.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

8

Question Number : 317 Question Id : 640653564034 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Short Answer Question

Consider the **Rabin-Karp algorithm** using modulo arithmetic to match the pattern in base 10. Taking modulo q = 11, how many **false positives** matches does the Rabin-Karp matcher encounter while searching pattern `24` in the text `3241572653579324`?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Sub-Section Number :	7
Sub-Section Id :	64065380420
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653564029 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (318 to 319)

Question Label : Comprehension

Your final End term exams are going to be over and you are catching up on Netflix. You have a schedule of interesting live shows during the next day. You hate to start or stop watching a show midway, so your aim is to watch as many complete shows as possible during the day.

Suppose there are n such shows $S_1, S_2, \ldots, S_n$ available during the coming day. The shows are ordered by starting time, so for each $i \in 1, 2, \ldots, n-1$, S_i starts before S_{i+1}. However, show S_i may not end before S_{i+1} starts, so for each $i \in 1, 2, \ldots, n-1$, $Next[i]$ is the smallest $j > i$ such that S_j starts after S_i finishes if such a j exists, otherwise `-1`.

Given the sequence $S_1, S_2, \ldots, S_n$ and the values $Next[i]$ for each $i \in 1, 2, \ldots, n$, your aim is to compute the maximum number of complete shows that can be watched.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 318 Question Id : 640653564030 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the following dynamic programming approch:

Let $Watch[i]$ denote the maximum number of complete shows that can be watched among $S_i, S_{i+1}, \ldots, S_n$. Which of the following is a correct inductive formulation of $Watch[i]$ for $i \in n-1, n-2, \ldots, 2, 1$? Consider initially $Watch[n] = 1$.

Options :

$$Watch[i] = \begin{cases} Watch[i+1], & if\ \ Next[i] = -1 \\ max(Watch[Next[i]], Watch[i+1]), & if\ \ Next[i] \neq -1 \end{cases}$$

6406531885484. ✖

$$Watch[i] = \begin{cases} Watch[i+1], & if\ \ Next[i] = -1 \\ max(Watch[Next[i]], 1 + Watch[i+1]), & if\ \ Next[i] \neq -1 \end{cases}$$

6406531885485. ✖

$$Watch[i] = \begin{cases} Watch[i+1], & if\ \ Next[i] = -1 \\ max(1 + Watch[Next[i]], Watch[i+1]), & if\ \ Next[i] \neq -1 \end{cases}$$

6406531885486. ✔

$$Watch[i] = \begin{cases} 1 + Watch[i+1], & if\ \ Next[i] = -1 \\ max(Watch[Next[i]], Watch[i+1]), & if\ \ Next[i] \neq -1 \end{cases}$$

6406531885487. ✖

Question Number : 319 Question Id : 640653564031 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

How much time will the given dynamic programming approach take to compute the answer? Assume you have direct access to the *Next* list as well, and you don't have to worry about computing it on your own.

Options :

6406531885488. ✖ $O(n^2)$

6406531885489. ✖ $O(n^3)$

6406531885490. ✖ $O(n\ log\ n)$

6406531885491. ✔ $O(n)$

DBMS

Section Id :	64065338329
Section Number :	12
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	23
Number of Questions to be attempted :	23
Section Marks :	50
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065380421
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 320 Question Id : 640653564038 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "DIPLOMA LEVEL : DATABASE MANAGEMENT SYSTEMS (COMPUTER BASED EXAM)"