Al-Khwarizmi's work was written in a book titled _____

Answer (Please select your correct option)

○ al Kitab al-mukhatasar fi hisab al-jabrwa'l-muqabalah

○ Calculation by Completion

○ al Kitab

○ al-jabrwa'l-muqabalah

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What is the asymptotic growth of $\dfrac{4n^3 + 15n^2 + 11n}{6}$?

Answer (Please select your correct option)

- $\Theta\left(\dfrac{4n^3 + 15n^2 + 11n}{6}\right)$

- $\Theta\left(4n^3 + 15n^2 + 11n\right)$

- $\Theta\left(15n^2\right)$

- $\Theta\left(n^3\right)$

The reason for introducing Sieve Technique algorithm is that it illustrates a very important special case of,

Answer (Please select your correct option)

○ divide-and-conquer

○ decrease and conquer

○ greedy nature

○ 2-dimension Maxima

Strictly increasing arrays are _____ input for quick sort

Answer (Please select your correct option)

○ The worst-case

○ The best-case

○ Average case

○ None of the given

The running time of quick sort depends heavily on the selection of

Answer (Please select your correct option)

○ Required Output

○ Input and output

○ Pivot ✓

○ Input data only

Quick sort is based on divide and conquer paradigm. In the Combine step of divide and conquer process

Answer (Please select your correct option)

○ No work is needed to combine the sub-arrays, the array is already sorted

○ Work is needed to combine the sub-arrays; the array is not already sorted.

○ Merging the Arrays

○ Dividing the arrays

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In in-place sorting algorithm is one that uses no _____ arrays for storage.

Answer (Please select your correct option)

○ two dimensional

○ three dimensional

○ n dimensional

○ additional   ⟸

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Bubble sort and insertion sort can be implemented as stable algorithms but _____ can not be.

Answer (Please select your correct option)

○ selection sort

correct answer solve
by hadi

○ bubble sort

○ merge sort

○ stable sort

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Catalan number is given by the formula

Answer (Please select your correct option)

○ $C(n) = \dfrac{1}{n+1}\dbinom{2n}{n}$ correct answer solve
by hadi

○ $C(n) = \dfrac{1}{n-1}\dbinom{2n}{n}$

○ $C(n) = \dfrac{1}{n+1}\dbinom{n}{2n}$

○ $C(n) = \dfrac{1}{n-1}\dbinom{n}{2n}$

We can find the product A x B of matrices A and B, only if they are compatible which means,

Answer (Please select your correct option)

○ No of Columns of A must be equal to No of Rows of B

○ No of Columns of A must be equal to No of Columns of B

○ No of Rows of A must be equal to No of Rows of B   correct answer solve
                                                                                                          by hadi

○ Order of A must be equal to order of B

Matrix − Chain − Order is _____ than the exponential time method of enumerating all possible parenthesizations and checking each one.

Answer (Please select your correct option)

○ Much more efficient

○ Only fractional efficient

○ Worst

○ Too slow

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Time complexity of chain matrix multiplication is $\Theta(n^3)$ and space complexity is

Answer (Please select your correct option)

○ $\Theta(n^2)$ correct answer solve
by hadi

○ $\Theta(n^3)$

○ $\Theta(n \log n)$

○ $\Theta(\log n)$

The Knapsack problem belongs to the domain of _____ problems.

Answer (Please select your correct option)

○ Optimization   correct answer solve
                                                                 by hadi

○ NP Complete

○ Linear Solution

○ Sorting

The recurrence relation of Tower of Hanoi is given below

$$T(n) = \begin{cases} 1 & if\ n=1 \\ 2T(n-1)+1 & if\ n>1 \end{cases}$$

In order to move a tower of 4 rings from one peg to another, how many ring moves are required?

Answer (Please select your correct option)

○ 15

○ 7

○ 12

○ 32

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Which type of instructions Random Access Machine (RAM) can execute? Choose best answer

Answer (Please select your correct option)

○ Algebraic and logic

○ Geometric and arithmetic

○ Arithmetic and logic   correct answer solve
                                                          by hadi

○ Parallel and recursive

Algorithm's essential elements are

Answer (Please select your correct option)

○ Step wise solution

○ Stepwise solution and finite time

○ Step wise solution finite inputs   correct answer solve
                                                                      by hadi

○ Stepwise approach in which time and memory does not matter.

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Which one is the correct conversion of the given algorithm to sigma notation?

$\text{MAXIMA}(\text{int }n, \text{Point }P[1 \ldots n])$
1   $\textbf{for } i \leftarrow 1 \textbf{ to } n$ n times
2   $\textbf{do } maximal \leftarrow true$

Answer (Please select your correct option)

○ $\sum_{i=1}^{n} 4n + 4$

○ $\sum_{i=1}^{n} 4n + 2$ correct answer solve
                                                                                         by hadi

○ $\sum_{i=1}^{n} 4n + 2n$

○ $\sum_{i=1}^{n} 2n + 2$

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Which of the following is calculated with **Big Theta** notation?

Answer (Please select your correct option)

○ Lower bounds

○ Upper bounds   correct answer solve
                                                                  by hadi

○ Both upper and lower bound

○ Medium bounds

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Suppose we have an algorithm that carries out N^2 operations for an input of size N. Let us say that a computer takes 1 microsecond (1/1000000 second) to carry out one operation. How long does the algorithm run for an input of size 3000?

Answer (Please select your correct option)

○ 90 seconds

○ 9 seconds   correct answer solve
by hadi

○ 0.9 seconds

○ 0.09 seconds

Which one is the best algorithm from the following with respect to running time?

Answer (Please select your correct option)

○ $\Theta(n)$

○ $\Theta(n^2)$ correct answer solve
                                                                                          by hadi

○ $\Theta(n \log n)$

○ $\Theta(n^3)$

Consider sorting three numbers a1, a2, and a3 with comparison-based sorting algorithms then how many combinations are possible?

Answer (Please click here to Add Answer)
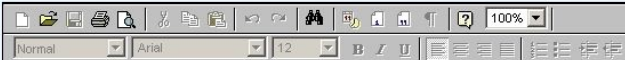
How edit distance is used for speech reorganization?

Answer (Please click here to Add Answer)
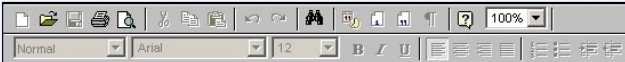
What will be the sorting techniques by analyzing the followings?

(i)   Whenever two consecutive items are found in an array that is out of order, swap them.

(ii)   Assume that **A[1... i - 1]** have already been sorted. Add **A[i]** into its proper position in this sub array. Create this position by shifting all larger elements to the right.

(iii)   Assume that **A[1...i - 1]** contain the **i - 1** smallest elements in sorted order. Find the smallest element in **A[i...n]** Swap it with **A[i]**.
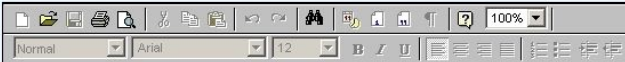
Answer (Please click here to Add Answer)
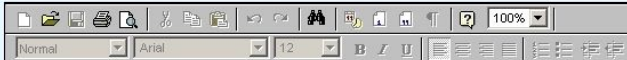
True or False: A sequence of values in a row of the dynamic programming table for an instance of the knapsack problem is always non-decreasing. **Give a brief description.**
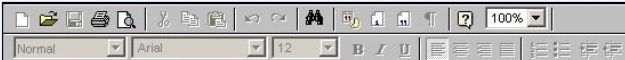
Answer (Please click here to Add Answer)

Draw the final **Max-Heap** structure for the following array,
`50,31,45,30,2,7,40,12,28,1`
You can show the final result (tree) only.

Answer (Please click here to Add Answer)

Describe three solution paths for edit distance of these two given words,
1. MATHS
2. ARTS

Answer (Please click here to Add Answer)