CS502 Design and Analysis of Algorithms

Grand Quiz 2020

Department of MCS
Compose By
MUNIR HUSSAIN &
ASAD MUNIR
Semester 3rd

OBJECTIVE

1. The sieve technique works where we have to find _____ item(s) from a large input.
   a. Single
   b. Two
   c. Three
   d. Similar
2. The only way to convert an empty string into a string of j characters is by doing j insertions, represented as _____.
   a. E(I,j)=I
   b. E(, o)=i
   c. E(o, j)=j
   d. None of the given
3. In selection problem, the Sieve technique works in_____.
   a. Non-recursive manner
   b. Constant time
   c. Phases
   d. One complete go
4. Algorithm is a sequence of computational steps that _____ the input into output.
   a. Merge
   b. Assign
   c. Transform
   d. Integrate
5. In max heap (for Heap Sort algorithm), when every time maximum element is removed from top we replace it with _____ leaf in the tree.
   a. Second last

b. Last
c. First
d. Any

6. If pj dominates pi and pi dominates ph then pj also dominates ph. It means dominates relation is _____.
   a. Transitive
   b. Non transitive
   c. Equation
   d. Symbolic
7. To find maximal points in brute-force, each point of the space is compared against ____ of that space.
   a. One other point
   b. All other point
   c. Few other points
   d. Most of the other points
8. In the following code the statement "cout<<j;" excutes _____ times.

   For(j = 1; j<=5 ; j= j+2) cout <<j;

   a. 5 times
   b. 2 times
   c. 3 times
   d. 0 times
9. For average-case time analysis of Quick sort algorithm, Pivot selection is on average basis from_____.
   a. Half of the input values
   b. All possible random values
   c. Pivot is input separately
   d. Values greater than 5
10. In the statement "output p[i].x, P[i].y", the number of times elements of P are accessed is_____
    a. 1
    b. 2
    c. 3
    d. 4
11. Identify the TRUE statement.
    a. The Knapsack problem does not belong to the domain of optimization problems.
    b. The Knapsack problem belong belong to the domain of optimization problems.
    c. None of the given
12. Matrix multiplication is a(n) _____ operation.
    a. Commutative
    b. Associative
    c. None of the given

13. _____ provides us more accurate result when input values are not closer with each other.
    a. Average
    b. Median
14. In merge sort algorithm, we split the array around the _____ index q.
    a. Entering
    b. Mid
    c. Exiting
    d. None of the given
15. In the analysis of Selection algorithm, we get the convergent ____ series.
    a. Harmonic
    b. Linear
    c. Arithmetic
    d. Geometric
16. In Selection problem, the Sieve technique _____.
    a. Eliminates undesired data items each time
17. If matrix A of dimension p x q is multiply with matrix B of dimension q x r, then entry in resultant matrix takes _____ time.
    a. 0 (q)
    b. 0 (1)
    c. 0 (p x q)
    d. 0 (q x r)
18. Consider three matrices X, Y, Z of dimension 1 x 2, 2 x3, 3 x4 respectively. The number of multiplication of X(YZ) is :
    a. 16
    b. 32
    c. 26
    d. 31
19. In Sorting the key value or attribute _____ from an ordered domain.
    a. Must be
    b. Not always
20. In Heap Sort algorithm, the total running time for Heapify procedure is _____.
    a. Theta (log n)
    b. Order (log n)
    c. Omega (log n)
    d. None of these
21. Pseudo code of algorithm are to be ready by _____.
    a. People
    b. RAM
    c. Computer
    d. Complier
22. In Dynamic Programming based solution of Knapsack Problem, if we decide to take an object 'I', then we gain_____.
    a. Vi (value of object i)

23. The worst case running of Quick sort algorithm _____.
    a. Cannot be quadratic
    b. Is quadratic
    c. Is always Exponential
    d. Is leaner
24. The only way to convert an empty string into a string is i deletions, represented as _____.
    a. E(I,j)=I
    b. E(i, o)=i
    c. E(o, j)=j
    d. None of the given
25. In Selection problem, the rank of an element will be its _____ position if we sort the input data.
    a. First
    b. Final
    c. Second last
    d. Last
26. Which one is not passed as parameter in Quick sort algorithm?
    a. End of the array
    b. Middle of the array
    c. Array (containing input elements)
    d. None
27. While Soring, the ordered domain means for any two input elements x and y _____ satisfies only.
    a. X<y
    b. X>Y
    c. X=Y
    d. All of the above
28. Which of the following is calculated with Big O notation?
    a. Medium bounds
    b. Upper bounds
    c. Lower bounds
    d. Upper and lower bounds
29. For solving Selection problem, we introduce Sieve technique due to _____.
    a. Eliminating Rank of an element
30. The worst-case running time of merge sort is _____ in order to sort an array of n elements.
    a. 0 (log n)
    b. 0 (n)
    c. 0 (n log n)
    d. None
31. Quick sort is a recursive algorithm.
    a. True
    b. False

32. While analyzing Selection algorithm, we make a number of phases, in fact it could be as many as _____.
    a. N(n+1)
    b. Log (n)
    c. n/3
    d. n/4
33. Approach of solving geometric problems by sweeping a line across the plane is called ____ sweep.
    a. Line
    b. Plane
    c. Cube
    d. Box
34. _____ time is the maximum running time over all legal inputs.
    a. Worst-case
    b. Average-case
    c. Best-case
    d. Good-case
35. The asymptotic growth of n(n+1)/2 is:
    a. 0(n2)
    b. 0(n)
    c. 0(n3)
    d. 0(logn)
36. One of the limitation in 0/1 knapsack is that an item cane either be_____ in the bag or not.
    a. Use
    b. Put
    c. Move
    d. Store
37. _____ is one of the few problems, where provable lower bounds exist on how fast we can sort.
    a. Searching
    b. Sorting
    c. Graphing
    d. None of the given
38. Selection algorithm takes theta_____.
    a. (n2)
    b. (n)
    c. Log(n)
    d. N log (n)
39. The sieve technique is a special case, where the number of sub-problems is just_____.
    a. 1
    b. 2
    c. 3
    d. 4

40. Following is not the application of Edit Distance problem.
    a. Speech recognition
    b. Spelling correction
    c. Ascending sort
    d. Descending sort
41. We can use the optimal substructure property to device a _____ formulation of the edit distance problem.
    a. Selective
    b. Optimum
    c. Iterate
    d. Recursive
42. In plane sweep approach, a vertical is swept across the 2nd-plane from_____.
    a. Right to Left
    b. Left to Right
    c. Top to Bottom
    d. Bottom to Top
43. In 3-Dimension space, appoint P has _____ coordinate(s).
    a. (x,Y)
    b. (X,0)
    c. (0,Y)
    d. None
44. _____ items are not allowed in the 0/1 knapsack.
    a. Lighter
    b. Fractional
    c. Whole
    d. Weightily
45. Radix sorties not a non-comparative integer sorting algorithm.
    a. True
    b. False
46. Fibonacci sequence was named on _____ a famous mathematician in 12th Century.
    a. Fred Brooks
    b. Grady Booch
    c. Leonardo Pisano
    d. Sadat Hassan Manto
47. In generating Fibonacci sequence, we can avoid unnecessary repetitions by _____ process.
    a. Tokenization
    b. Memoization
    c. Randomization
    d. Memorization
48. We do not need to mathematically prove that for comparison-based soritng algorithms always takes Omega nlog(n) time.
    a. True

b. False // sure

49. The sequence of the merge sort algorithm is:
    a. Divide-Combine-Conquer
    b. Conquer-Divide-Combine
    c. Divide-Conquer-Combine
    d. None
50. Soring can be in _____.
    a. Both increasing and decreasing order
51. The process of _____ ends when you are left with such tiny pieces remaining that it is trivial to solve them.
    a. Brute-force
    b. Plan-force
    c. Divide and Conquer
    d. Axis-sweep
52. Time complexity of the '01' knapsack algorithm depends on_____.
    a. Number of items and capacity of knapsack
53. In Dynamically Programming approach, solution is modified/changed_____.
    a. Always once
    b. At each stage
    c. At for problems
    d. None
54. In max-heap, largest element is stored at root node. Where is the smallest element stored?
    a. Right Node
    b. Left Node
    c. Middle node
    d. Leaf Node
55. For _____ values of n, any algorithm is fast enough.
    a. Small
    b. Fast
    c. Large
    d. Medium
56. In the statement // statements // the number of times elements of P are accessed is_____.
    a. 1
    b. 2
    c. 3
    d. 4
57. To predict the cost of an algorithm in terms of resources is called _____.
    a. Key
    b. Analysis
    c. Design
    d. Output

58. When a recursive algorithm revisits the same problem over and over again, we say that the optimization problem has _____ sub-problems.
    a. Non overlapping
    b. Overlapping
    c. Over costing
    d. Optimized
59. Dynamically Programming comprises of _____.
    a. Recursive only
    b. Repetition only
    c. No Repetition but Recursive
    d. None
60. For Quick sort algorithm, Partitioning takes theta? _____.
    a. (n)
    b. Log (n)
    c. N log (n)
    d. None
61. An in-palce sorting algorithm is one that _____ uses additional array for storage.
    a. Always
    b. Permanently
    c. Does not
    d. None
62. The function f(n)=n(logn+1)/2 is a asymptotically equivalent to nlog n. Here Loweer Bound means function f(n) grows asymptotically at____ as fast as nlog n.
    a. Least
    b. Normal
    c. Most
    d. All
63. In Dynamically Programming approach, we do not store the solution to each sub-problem in case if it reappears.
    a. True
    b. False
64. Counting sort has time complexity.
    a. 0(n+k)
    b. 0(n)
    c. 0(k)
    d. None
65. Theta asymptotic notation for T (n):
    a. Set of functions described by
66. Due to left complete nature of binary tree, the heap can be stored in
    a. Arrays
    b. Structures
    c. Link list
    d. Stack

67. Single item from the lager set of_____.
    a. Constant
    b. Pointers
    c. Phases
    d. N items
68. For the heap sort we store the tree nodes in:
    a. Level-order traversal
69. In the clique cover problem, for two vertices to be in the same group, they must be_____ each other.
    a. Apart from
    b. Far from
    c. Near to
    d. Adjacent to
70. How much time merge sort takes for an array of numbers?
    a. T(n^2)
    b. T(n)
    c. T(log n)
    d. T(n log n)
71. In in-place sorting algorithm is one that uses arrays for storage.
    a. No additional array
72. Brute-force algorithm for 2D-Maxima is operated by comparing ____ parts of points.
    a. Two
    b. Some
    c. Most
    d. All
73. F (n) and g (n) are asymptotically equivalent. This means that they have essentially the same _____ for large n.
    a. Results
    b. Growth rates
    c. Variables
    d. Size
74. Quick sort is
    a. Stable & in place
    b. Not stable but in place
    c. Stable but not place
    d. None
75. Heaps can be stored in arrays without using any pointers, this is due to the _____ nature of the binary tree.
    a. Left-complete
    b. Right-complete
    c. Tree nodes
    d. Tree leaves
76. Which may be a stable sort?
    a. Merger

b. Insertion
c. Both above
d. None of these

77. For the Sieve Technique we take time
a. T(nk)
b. IT(n/3)
c. N^2
d. n/3

78. One of the clever aspects of heaps is that can be stored in arrays without using any_____.
a. Pointers
b. Constants
c. Variables
d. Functions

79. Continuation sort is suitable sort the elements in range 1 to k
a. K is large
b. K is not known
c. K may be small or large
d. K is small

80. Asymptotic growth rate of the function is taken over _____ case running time.
a. Best
b. Worst
c. Average
d. Normal

81. The Sieve technique is a special case, where the number of sun problems is just
a. 5
b. Many
c. 1
d. Few

82. Dynamically programming algorithms need to store the result of intermediate sub-problems.
a. True
b. False

83. In counting sort, once we known the ranks, we simply ____ numbers to their final positions in an output array.
a. Delete
b. Copy
c. Mark
d. Arrange

84. In Quick sort, we don't have the control over the sizes of recursive calls
a. True
b. False
c. Less information to decide

d. Either true or false

85. Before sweeping a vertical line in plane sweep approach, in start sorting of the points is done in increasing order of their _____ coordinates.
    a. X
    b. Y
    c. Z
    d. P
86. Random access machine or RAM is a/an
    a. Machine build by Al-Khwarizmi
    b. Mechanical machine
    c. Mathematical model
    d. Electronics machine
87. The Huffman codes provide a method of encoding data inefficiently when coded using ASCII standard.
    a. True
    b. False
88. A heap is a left-complete binary tree that conforms to the _____.
    a. Increasing order only
    b. Decreasing order only
    c. Heap order
    d. (log n) order
89. For the Sieve technique we solve the problem,
    a. Recursively
    b. Mathematically
    c. Precisely
    d. Accurately
90. Dynamic Programming is a problem-solving approach in which _____.
    a. Problem is solved in Zero time
    b. Solution is developed only at final stage
    c. Both are correct
    d. Both are incorrect
91. Merge sort have running time _____ running time Heap sort.
    a. Greater than
    b. Less than
    c. Equal to
    d. Different than
92. Median is not useful measure of central tendency of given input set especially when the distribution of values is highly skewed.
    a. True
    b. False
93. Quick sort algorithm divide the entire array into _____ sub arrays.
    a. One
    b. Two
    c. Three
    d. Four

94. The Omega-notation allows us to state only the asymptotic ___ bounds.
    a. Middle
    b. Lower
    c. Upper
    d. Both upper and lower
95. In plane sweep approach, a vertical line is swept across the 2d-plane _____ structure is used for holding the maximal points lying to the left of the sweep line.
    a. Array
    b. Queue
    c. Stack
    d. Tree
96. When a heapify procedure is applied to the root node to restore the heap, then at each level, the comparison performed takes time.
    a. It will take (log n)
    b. It cannot be predicted
    c. It will take (1)
    d. Time will vary according to the nature of inputs data
97. Efficient algorithm requires less computational _____.
    a. Memory
    b. Running time
    c. Memory and Running time
    d. Energy
98. Best _____ helps in minimizing algorithm cost.
    a. Input
    b. Output
    c. Analysis
    d. Design
99. Recurrence can be described in terms of a tree.
    a. Yes
    b. No
100. Time complexity of Dynamic Programming based algorithm for computing the minimum cost of Chain Matrix Multiplication _____.
    a. Log in
    b. N
    c. N^2 (n square)
    d. N^3 (n Cube)
101. In order to say anything meaningful about our algorithm, it will be inpottant for us to settle on a _____.
    a. Java program
    b. C++ program
    c. Pseudo program
    d. Mathematical model of computation
102. The iteration method id used for _____.
    a. Solving Recursive relation

103. In 3-Dimensional space, a point P has _____ coordinate(s).
   a. (X, Y)
   b. (X, 0)
   c. (X,Y,Z)
   d. None
104. Chain Matrix multiplication problem can be solved through _____ strategy.
   a. Dynamically Programming
   b. Greedy
   c. Sorting
105. Sorting is one of the _____ problems in Computer Sciences.
   a. Easiest
   b. Solution-less
   c. Least popular
106. Quick sort algorithm is developed by _____.
   a. Tony Hoare
107. For comparison-based sorting algorithms, it is _____ possible to sort more efficiently than Omega nlog(n) time.
   a. Always
   b. Not
   c. Sometimes
   d. Not sometimes
108. Dynamically Programming approach is usually useful in solving optimization problems.
   a. True
   b. False
109. Floor ceiling are ____ to calculate while analyzing algorithms.
   a. Very easy
   b. Usually considered difficult
110. _____ of reference is an important fact of current processor technology.
   a. Defining
   b. Assigning
   c. Formality
   d. Locality
111. If Matrix A of dimension 2 x 4 is multiply with Matrix B of dimension 4 X 3, then the dimension of resultant matrix is:
   a. 2 X 3
   b. 4 X 3
112. For 2D Maxima problem, plane sweep algorithm first of all _____.
   a. Sorts of all points
   b. Delete some points
113. To find maximal points in brite-force algorithm, each point of the spce is compared against ____ of that space.
   a. All other points

b. Few other points

114.We can make _____ recursive calls in Fibonacci Sequence.

a. Infinite
b. Finite

115.In Heap Sort algorithm, if heap property is violated _____.

a. We call Heapify procedure

116. _____ is not a characteristic of Random Access Machine.

a. Single-processor

If you found any Mistake then Correct own.