Fullstack Development Milestone Test-8

1. What is recurrence for worst case of QuickSort and what is the time complexity in Worst case?

a)Recurrence is T(n) = T(n-2) + O(n) and time complexity is O(n^2)

b)Recurrence is T(n) = 2T(n/2) + O(n) and time complexity is O(nLogn)

c)Recurrence is T(n) = T(n-1) + O(n) and time complexity is O(n^2)

d)Recurrence is T(n) = T(n/10) + T(9n/10) + O(n) and time complexity is O(nLogn)

Correct Ans: Recurrence is T(n) = T(n-1) + O(n) and time complexity is O(n^2)

2. Which of the following is not true about comparison based sorting algorithms?

a)The minimum possible time complexity of a comparison based sorting algorithm is O(nLogn) for a random input array

b)Heap Sort is not a comparison based sorting algorithm

c)Any comparison based sorting algorithm can be made stable by using position as a criteria when two elements are compared

d)Counting Sort is not a comparison based sorting algortihm

Correct Ans: Heap Sort is not a comparison based sorting algorithm

3. which of the following is ALWAYS TRUE?

Let w(n) and A(n) denote respectively, the worst case and average case running time of an algorithm executed on an input of size n.

a)A(n) = Theta(W(n))

b)A(n) = omega(W(n))

c)A(n) = o(W(n))

d)A(n) = O(W(n))

Correct Ans: A(n) = O(W(n))

4. Randomized quicksort is an extension of quicksort where the pivot is chosen randomly. What is the worst case complexity of sorting n numbers using randomized quicksort?

a)O(n^2)

b)O (n log n)

c)O(!n)

d)O (n)

Correct Ans: O(n^2)

5. Quick sort uses which of the following algorithm to implement sorting?

a)backtracking

b)greedy algorithm

c)divide and conquer

d)dynamic programming

Correct Ans: divide and conquer

6. What is the median of three techniques in quick sort?

a)quick sort with random partitions

b)quick sort with random choice of pivot

c)choosing median element as pivot

d)choosing median of first, last and middle element as pivot

Correct Ans: choosing median of first, last and middle element as pivot

7. What is the purpose of using a median of three quick sort over standard quick sort?

a)so as to avoid worst case time complexity

b)so as to avoid worst case space complexity

c)to improve accuracy of output

d)to improve average case time complexity

Correct Ans: so as to avoid worst case time complexity

8. What is the auxiliary space complexity of a median of three quick sort?

a)O(1)

b)O(n)

c)O(log n)

d)O(n log n)

Correct Ans: O(log n)

9. What is the average time complexity of the median of three quick sort?

a)O(1)

b)O(n)

c)O(log n)

d)O(n log n)

Correct Ans: O(n log n)

10. Median of three quick sort is an in place sort.

a)TRUE

b)FALSE

Correct Ans: TRUE

11. Median of three quick sort is a stable sort.

a)TRUE

b)FALSE

Correct Ans: FALSE

12. What is the best case time complexity Median of three quick sort?

a)O(1)

b)O(n)

c)O(log n)

d)O(n log n)

Correct Ans: O(n log n)

13. What will be the pivot for the array arr={8,2,4,9} for making the first partition when a median of three quick sort is implemented?

a)8

b)2

c)4

d)9

Correct Ans: 8

14. Which of the following is not true about QuickSort?

a)in-place algorithm

b)pivot position can be changed

c)adaptive sorting algorithm

d)can be implemented as a stable sort

Correct Ans: pivot position can be changed

15. The given array is arr = {2,6,1}. What are the pivots that are returned as a result of subsequent partitioning?

a)1 and 6

b)6 and 1

c)2 and 6

d)1

Correct Ans: 1

16. The given array is arr = {2,3,4,1,6}. What are the pivots that are returned as a result of subsequent partitioning?

a)1 and 3

b)3 and 1

c)2 and 6

d)6 and 2

Correct Ans: 1 and 3

17. The best case behaviour occurs for quick sort is, if partition splits the array of size n into _____

a)n/2 : (n/2) – 1

b)n/2 : n/3

c)n/4 : 3n/2

d)n/4 : 3n/4

Correct Ans: n/2 : (n/2) – 1

18. Consider the Quick sort algorithm which sorts elements in ascending order using the first element as pivot. Then which of the following input sequence will require a maximum number of comparisons when this algorithm is applied on it?

a)22 25 56 67 89

b)52 25 76 67 89

c)22 25 76 67 50

d)52 25 89 67 76

Correct Ans: 22 25 56 67 89

19. Quick sort is a space-optimised version of ____

a)Bubble sort

b)Selection sort

c)Insertion sort

d)Binary tree sort

Correct Ans: Binary tree sort

20. Which one of the following sorting algorithm is best suited to sort an array of 1 million elements?

a)Bubble sort

b)Insertion sort

c)Merge sort

d)Quick sort

Correct Ans: Quick sort

21. What is the best time complexity of bubble sort?

a)N^2

b)NlogN

c)N(logN)^2

d)N

Correct Ans: N

22. Which of the following is not an advantage of optimised bubble sort over other sorting techniques in case of sorted elements?

a)It is faster

b)Consumes less memory

c)Detects whether the input is already sorted

d)Consumes less time

Correct Ans: Detects whether the input is already sorted

23. What will be the pivot for the array arr={8,2,4,9} for making the first partition when a median of three quick sort is implemented?

a)8

b)2

c)4

d)9

Correct Ans: 8

24. The given array is arr = {2,6,1}. What are the pivots that are returned as a result of subsequent partitioning?

a)1 and 6

b)6 and 1

c)2 and 6

d)1

Correct Ans: 1

25. The given array is arr = {1, 2, 4, 3}. Bubble sort is used to sort the array elements. How many iterations will be done to sort the array?

a)4

b)3

c)2

d)1

Correct Ans: 4

26. The given array is arr = {2,3,4,1,6}. What are the pivots that are returned as a result of subsequent partitioning?

a)1 and 3

b)3 and 1

c)2 and 6

d)6 and 2

Correct Ans: 1 and 3

27. In the following scenarios, when will you use selection sort?

a)The input is already sorted

b)A large file has to be sorted

c)Large values need to be sorted with small keys

d)Small values need to be sorted with large keys

Correct Ans: Large values need to be sorted with small keys

28. Apply Quick sort on a given sequence 7 11 14 6 9 4 3 12. What is the sequence after first phase, pivot is first element?

a)6 4 3 7 11 9 14 12

b)6 3 4 7 9 14 11 12

c)7 6 14 11 9 4 3 12

d)7 6 4 3 9 14 11 12

Correct Ans: 6 3 4 7 9 14 11 12

29. Find the pivot element from the given input using median-of-three partitioning method.

8, 1, 4, 9, 6, 3, 5, 2, 7, 0.

a)8

b)7

c)9

d)6

Correct Ans: 6

30. How many sub arrays does the quick sort algorithm divide the entire array into?

a)1

b)2

c)3

d)4

Correct Ans: 2

31. What will be the output of the following JavaScript code?

```
int a=0;

for(a;a<5;a++);

console.log(a);
```

a)4

b)5

c)0

d)Error

Correct Ans: 5

32. What will be the result or type of error if p is not defined in the following JavaScript code snippet?

```
console.log(p)
```

a)Value not found Error

b)Reference Error

c)Zero

d)Null

Correct Ans: Reference Error

33. Consider the following JavaScript statement containing regular expressions and check if the pattern matches.

var text = "testing: 1, 2, 3";

var pattern = /d+/g;

a)text.check(pattern)

b)pattern.test(text)

c)text==pattern

d)text.equals(pattern)

Correct Ans: pattern.test(text)

34. What kind of scope does javascript use ?

a)Literal

b)Lexical

c)Segmental

d)Sequential

Correct Ans: Lexical

35. Can we use a function as a variable value?

a)Yes

b)No

Correct Ans: Yes

36. Which keyword is most commonly used to define a function in JavaScript.

a)fun

b)var

c)function

d)define

Correct Ans: function

37. What is the output of the below code snippet?

```
language();

function language() {

var script = "Javascript"

console.log(script)

}
```

a)undefined

b)Error

c)Javascript

d)null

Correct Ans: Javascript

38. From the below function declaration which one is not correct way?

a)function add() {}

b)const function = () => {}

c)var function = () => {}

d)let function() {}

Correct Ans: let function() {}

39. What will be the output of the following JavaScript code?

```
var js = 10;

js *= 5;

console.log(js);
```

a)10

b)50

c)5

d)Error

Correct Ans: 50

40. What will be the output of the following JavaScript code?

```
var js = 10;

js /= 5;

console.log(js);
```

a)1

b)2

c)5

d)error

Correct Ans: 2