survival8

BITS WILP Data Structures and Algorithms Design Quiz-3 2017-H1

Question 1
Consider the experiment of tossing a coin until 10 heads appear. Then expected number of tosses is

Select one:
a. 2
b. 20
c. None of the above
d. 11
e. 10
Feedback
The correct answer is: 20

Question 2
Total number of comparisons needed for merge(L1,L2) where L1 is 2,4,6,8 and L2 is 10, 12, 13,15, 17,19
Select one:
a. 6
b. 10
c. 9
d. None of the above
e. 4
Feedback
The correct answer is: 4

Question 3
Consider the problem of sorting a sequence in ascending order. If the input is already in ascending order, which of the following sorting procedure is most efficient.

Select one:
a. Merge Sort
b. Quick Sort
c. Heap Sort
d. None of the above
e. Insertion Sort
Feedback
The correct answer is: Insertion Sort

Question 4
Suppose the input to Quick sort is 1,2,...17. What would be the best pivot element during the first invocation?
Select one:
a. 9
b. 1
c. None of the above
d. 2

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e. 17

Feedback

The correct answer is: 9

Question 5

Let G be a simple undirected graph with n vertices. Then number of edges in G is

Select one:

a. at least n(n-1)/2
b. at least n
c. at most n
d. None of the above
e. at most n(n-1)/2

Feedback

The correct answer is: at most n(n-1)/2

Question 6

Let T be a tree with m edges. Then the number of vertices in T is

Select one:

a. None of the above
b. exactly m+1
c. exactly m
d. exactly m-1
e. at most m

Feedback

The correct answer is: exactly m+1

Question 7

Let A be an adjacency matrix of an undirected graph in G. Then sum of all entries in the matrix is equal to

Select one:

a. Number of edges in G
b. Number of vertices in G
c. Twice the number of edges in G
d. None of the above
e. Twice the number of vertices in G

Feedback

The correct answer is: Twice the number of edges in G

Question 8

Worst case running time for quick sort is

Select one:

a. O(nlogn)
b. $O(n^2)$
c. None of the above
d. O(n)
e. O(log n)

Feedback

The correct answer is: $O(n^2)$

Question 9

Suppose an undirected graph, which has n vertices and d maximum degree, is represented using adjacency list. The running time to find the degree of a given vertex is

Select one:

a. O(d)
b. O(1)
c. O(logn)
d. O(n)
e. None of the above

Feedback

The correct answer is: O(d)

Question 10

Consider the experiment of tossing a coin until a head appears. The number of elements in the sample space is

Select one:

a. None of the above
b. 0
c. 4
d. 2
e. 1

Feedback

The correct answer is: None of the above

Question 11

Suppose a directed graph is represented using adjacency list. The running time to calculate indegree of a vertex is

Select one:

a. O(log n)
b. None of the above
c. O(m+n)
d. O(n)

e. O(d)

Feedback

The correct answer is: O(n)

Question 12

Which of the following statements is correct.
i) Any comparison based algorithm must perform Ω(nlogn) comparisons to sort n elements in the worst case
ii. Any comparison based algorithm must perform Ω(nlogn) comparisons to sort n elements in the best case

Select one:

a. Both of them is true
b. None of them is true
c. ii only true
d. i only true
e. None of the above

Feedback

The correct answer is: i only true

Question 13

The space complexity to represent a graph with n vertices and m edges using adjacency matrix is

Select one:

a. None of the above
b. O(m+n)
c. $O(n\text{^}2)$
d. O(m)
e. O(n)

Feedback

The correct answer is: $O(n\text{^}2)$

Question 14

Average case running time for quick sort is

Select one:

a. O(n)
b. $O(n\text{^}2)$
c. None of the above
d. O(nlogn)

Feedback

The correct answer is: O(nlogn)

Question 15

Worst case running time for merge sort is

Select one:

a. O(n)
b. $O(n2)$
c. O(nlog logn)
d. O(nlog n)
e. None of the above

Feedback

The correct answer is: O(nlog n)

Question 16

Assume the keys are inserted in the following order. 1055, 1492, 1776, 1812, 1918, 1945.
1812 is stored in the slot _____ if double hashing policy is used with h_1(k) = 5*x mod 8 and h_2(x) = 1+ (k mod 7).

Select one:

a. 7
b. None of the above
c. 4
d. 3
e. 1

Feedback

The correct answer is: None of the above

Question 17

Suppose a simple uniform hashing function is used with chaining. The expected number of key comparisons in successful search is at most _____

Select one:

a. α
b. $1+\alpha$
c. $1+\alpha/2-\alpha/2n$
d. 1
e. None of the above

Feedback

The correct answer is: $1+\alpha/2-\alpha/2n$

Question 18

Which of the following statements are true?
i. In linear probing method, there are only m different probe sequences are possible.

ii. In quadratic probing method, there are m^2 different probe sequences are possible
iii. In double hashing, there are only m different probe sequences are possible.
Select one:
a. i only true
b. None of the above
c. All of them are false
d. All of them are true
e. i and ii are true and iii is false

Feedback
The correct answer is: All of them are true

Question 19
1812 is stored in the slot _____ if double hashing policy is used with h_1(k) = 5*x mod

8 and h_2(x) = 1+ (k mod 7).
Select one:
a. 1
b. None of the above
c. 7
d. 4
e. 3

Feedback
The correct answer is: 3

Question 20
Let T be a tree with a maximum degree d. Then the number of leaf vertices is
Select one:
a. at most d
b. 1
c. None of the above
d. exactly d
e. at least d

Feedback
The correct answer is: at least d

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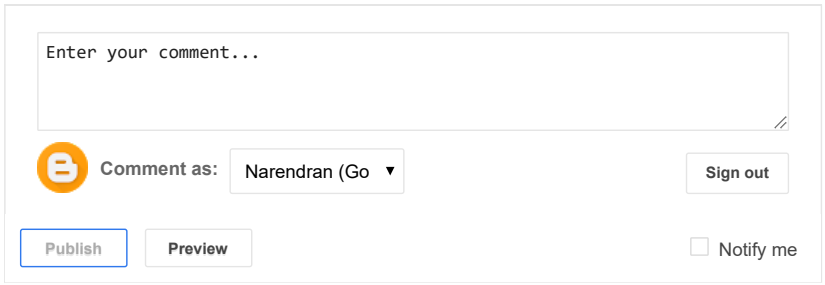

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