CSC 551 (Design and Analysis of Algorithms) Assessment

Answer all questions in 15 minutes

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Draft saved

* Indicates required question

Email *

Record **kodsam005@gmail.com** as the email to be included with my response

Question:

Goal(s) of Algorithm Design are:

- ○ Space saving
- ◉ All the options here
- ○ Time saving
- ○ Time and Space saving
- ○ Face saving

Clear selection

Question:

Which of the following is not a standard algorithm that follows Divide and Conquer approach

- ○ Closest Pair of Points
- ○ Strassen's Algorithm
- ○ Cooley–Tukey Fast Fourier Transform (FFT) algorithm
- ◉ None of the list

Clear selection

Question:

A graph in which the vertices can be divided into two disjoint sets such that every edge connects a vertex in one set to a vertex in the other set is called?

- ○ Bi-clustered Graph
- ○ Clustered Graph
- ○ Closed Connected Graph
- ◉ Bipartite Graph

Clear selection

Question:

Which of the following is used to store edges between two vertices in a graph?

- ○ Adjacency Matrix
- ◉ Adjacency List
- ○ Edge List
- ○ Edge Matrix

Clear selection

Full Name: *

Omodele Samuel Oluwakorede

Question:

The Space needed by a program to execute in memory includes ...

- (●) All the options here
- ( ) Environment stack space
- ( ) Instruction space
- ( ) Data space

Clear selection

Question:

if k is a constant, an O(n + k) algorithm is also

- (●) O(n)
- ( ) Theta(n)
- ( ) omega (n)
- ( ) O(n + k)

Clear selection

Question:

A simple graph with n vertices is called a complete graph if the degree of each vertex is

- (●) n - 1
- ( ) n
- ( ) n-squared
- ( ) n - 2

Clear selection

Question:

Which of the following type of randomized algorithms focuses on finishing the execution within the given time constraint?

- ( ) Las Vegas
- (●) Monte Carlo
- ( ) None of the list
- ( ) All of the list

Clear selection

Question:

Which of the following is a reason for classification of algorithms?

- (●) Reusability
- ( ) Data Manipulation
- ( ) Efficiency
- ( ) Efficient Design

Clear selection

Question:

The key idea behind amortized analysis is to

- (●) Spread the cost of an expensive operation over several operations.
- ( ) Keep the cost of an expensive operation over several operations.
- ( ) Save the cost of an expensive operation over several operations.
- ( ) Spread the space of an expensive operation over several operations.

Clear selection

Question:

The following are powerful ways to do Amortized analysis except?

- ○ Aggregate Method
- ○ Accounting Method
- ○ Potential Method
- ◉ None of the list

Clear selection

Question:

Which of the following is not an advantages of Merge Sort?

- ○ Stability
- ○ Guaranteed worst-case performance
- ○ Parallelizable
- ◉ optimal for small datasets

Clear selection

Question:

When a graph contains cycles and a node may be visited twice, which of the following graph search algorithms is appropriate?

- ○ Bread - First Search
- ○ Breadth - First Search
- ○ Depht - First Search
- ◉ Depth - First Search

Clear selection

Question:

Which of the following is not a type of Greedy Algorithm?

- ○ Selection Sort
- ○ Knapsack Problem
- ○ Minimum Spanning Tree
- ◉ None of the list

Clear selection

Question:

Examples of Graph Data Representations are

- ○ Social media networks
- ○ Web pages and links
- ○ Locations and routes in GPS
- ◉ All the options here

Clear selection

Question:

Which of the following algorithms tries to find a localized optimum solution, which may eventually lead to globally optimized solutions?

- ○ Knapsack Algorithm
- ◉ Greedy Algorithm
- ○ Randomized Algorithm
- ○ None of the list

Clear selection

Question:

In the recurrence $T(n) = aT(n/b) + f(n)$, the value of $f(n)$ in Merge Sort Algorithm is

- ○ O(1)
- ◉ O(n)
- ○ O(n-square)
- ○ O(nlgn)

Clear selection

Question:

In the recurrence $T(n) = aT(n/b) + f(n)$, which of the components represents the "Combine" unit in Merge Sort?

- ○ aT(n/b)
- ◉ f(n)
- ○ n/b
- ○ T(n)

Clear selection

Matric No.: *

222506

Question:

How the time complexity increases as data size increases is the main concern of ...

- ○ Order of growth
- ◉ Rate of growth
- ○ algorithm design
- ○ Algorithm design and implementation

Clear selection

Question:

Which of the following techniques is used to speed up computer programs by eliminating the repetitive computation of results, and by avoiding repeated calls to functions that process the same input?

- ○ Memorization
- ○ Ammotization
- ○ Ammorization
- ◉ Memoization

Clear selection

Question:

Algorithms that solve a problem by breaking it up into smaller sub-problems, solving then independently, and then combining the solutions have time complexity of:

- ○ n-square
- ○ n
- ◉ nlgn
- ○ lgn

Clear selection

Question:

Mostly, the storage space required by an algorithm is simply a multiple of the data size "n"

- ◉ the data size "n"
- ○ the memorysize "n"
- ○ the storagesize "n"
- ○ the time coplexity

Clear selection

Question:

A problem is called NP (nondeterministic polynomial) if ...

- (●) its solution can be guessed and verified in polynomial time and no particular rule is followed to make the guess of a solution to the problem.
- ( ) its solution cannot be guessed and verified in polynomial time and no particular rule is followed to make the guess of a solution to the problem.
- ( ) its solution cannot be guessed and verified in polynomial time
- ( ) a particular rule is followed to make the guess of a solution to the problem.

Clear selection

Question:

In the recurrence $T(n) = aT(n/b) + f(n)$, which of the components represents the "conquer" unit in Merge Sort?

- ( ) T(n)
- (●) aT(n/b)
- ( ) f(n)
- ( ) n/b

Clear selection

Question:

In the greedy algorithm,

- (●) at each step, a decision is made to choose the local optimum, without thinking about the future consequences
- ( ) we have recursive function calls with the same result
- ( ) there are inequalities in terms of inputs and maximizing or minimizing some linear functions of inputs
- ( ) None of the points is correct

Clear selection

Question:

Which of the following algorithms follow a definite procedure to get the same output every time an input is passed?

- (●) Deterministic algorithms
- ( ) Randomized Algorithms
- ( ) Greedy Algorithms
- ( ) Dynamic Programming Algorithms

Clear selection

Question:

Which of the following techniques is very useful in solving combinatorial optimization problem that have *multiple solutions*

- ○ Linear programming
- ○ Dynamic programming
- ◉ Branch and bound algorithm
- ○ Backtracking algorithms

Clear selection

Question:

A computer programming technique where an algorithmic problem is first broken down into sub-problems, the results are saved, and then the sub-problems are optimized to find the overall solution is called

- ○ Merge Sort Technique
- ○ Stepwise Refinement
- ◉ Dynamic Programming
- ○ Strassen's Algorithm Technique

Clear selection

Question:

..... is mainly an optimization algorithm over plain recursion

- (●) Dynamic Programming
- ( ) Greedy Algorithm
- ( ) Parallel Algorithm
- ( ) Distributed Algorithm

Clear selection

Question:

Given the recurrence, $T(n)$ = 4$T(n$ / 4) + 5n, on solving using Master Theorem, $T(n)$ will be computed as ...

- (●) θ ($nlog$ n)
- ( ) O(n-square)
- ( ) Omega(n log n)
- ( ) unsolvable

Clear selection

Question:

Which of the following is not an in-place sorting algorithm?

- ○ Quicksort
- ◉ Mergesort
- ○ Insertion sort
- ○ None of the list

Clear selection

Question:

Which of the following is an efficient algorithm to multiply two matrices

- ◉ Strassen's Algorithm
- ○ Cooley–Tukey Fast Fourier Transform (FFT) algorithm
- ○ Karatsuba algorithm
- ○ None of the list

Clear selection

Question:

In the recurrence $T(n) = aT(n/b) + f(n)$, the value of $T(n)$ in Merge Sort Algorithm is

- ○ O(Lgn)
- ○ O(n-square)
- ◉ O(nLgn)
- ○ O(Lgn - square)

Clear selection

Question:

Which of the following algorithms produce a different output every time they are executed

- ○ Dynamic Programming Algorithms
- ◉ Randomized Algorithms
- ○ Deterministic Algorithms
- ○ Greedy Algorithms

Clear selection

Question:

Which of the following determines the shortest route across all pairings of vertices in a graph with weights?

- (●) Floyd-Warshall Technique
- ( ) Travel Sales Man Algorithm
- ( ) Knapsack Algorithm
- ( ) Randomized Algorithm

Clear selection

Question:

We can use the memoization technique where ...

- (●) the use of the previously-calculated results comes into the picture.
- ( ) the previously calculated result is not needed
- ( ) we need to keep track of the solution path to a problem
- ( ) the solution to an algorithmic problem is very trivial

Clear selection

Question:

Which of the following is very useful in solving combinatorial problems that have *a single unique solution*.

- (●) Backtracking
- ( ) Linear programming
- ( ) Dynamic Programming
- ( ) Branch and bound algorithms

Clear selection

Question:

An example of dynamic programming algorithms is

- (●) Greedy Algorithm
- ( ) Parallel Algorithm
- ( ) Distributed Algorithm
- ( ) Randomized Algorithm

Clear selection

Question:

Which of the following search algorithms is used to search a graph data structure for a node that meets a set of criteria?

- ○ Bread - First Search
- ○ Depth - First Search
- ◉ Breadth - First Search
- ○ Tree Search

Clear selection

Question:

..... is a method for analyzing a given algorithm's complexity, or how much of a resource, especially time or memory, it takes to execute.

- ○ Memorization
- ◉ Amortization
- ○ Memoization
- ○ Memosization

Clear selection

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