



Introduction to Algorithm

Assignment 2

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Sec: I

Part 1: True or False

Q1) The dynamic Programming is an algorithm

Q2) Bellman ford algorithm is a single source shortest path algorithm

Q3) In dynamic programming we Do not need to carefully identify/define the subproblem

Q4) Dynamic programming was introduced by Lenardo martin

Q5) Dynamic programming is typically applied to optimization problem

Part 2: Multiple Choices

Q1) Divide And conquer algorithm includes?

- A) Partition the problem into independent sub-problem**
- B) Solve the sub-problem recursively**
- C) Combine their solution to solve the original problem**
- D) All**

Q2) Is Dynamic programming applicable when the sub-problems are?

- A) dependent**
- B) independent**
- C) Solved**
- D) none**

Q3) In dynamic programming the term programming refers to?

- A) Planning**
- B) Solving Problem**
- C) designing**
- D) none of the above**

Q4) Floyd-War shall Algorithm is used for finding the? b

- A) Longest Path between all the pairs of vertices in a weighted graph**

- B) Shortest Path between all the pairs of vertices in a weighted graph
- C) Longest Path between all the pairs of vertices in a non-weighted graph
- D) None

Q5) floyd-Warshall Algorithm works for all the following except?

- A) Directed Weight graph
- B) Undirected Weight graph
- C) Negative cycles
- D) All of the above

Q6) 0/1 Knapsack Will Fail in which one the following algorithm?

- A) Dynamic programming
- B) Greedy Algorithm
- C) Both A and B
- D) None

Q7) Which of the following is the main idea of Dynamic programming?

- A) Solve smaller problem
- B) Record Solution in a table
- C) Extract solution to the initial instance from that table
- D) All

Q8) Which of the following steps will be omitted if the value of an optimal solution is required?

- A) Compute the value of an optimal solution in a bottom-up fashion
- B) Recursively define the value of an optimal solution
- C) Construct an optimal solution from computed information
- D) NONE

Q9) When a recursive algorithm revisits the same problem repeatedly then the optimization problem has?

- A) Overlapping sub problems
- B) Optimal substructure
- C) Optimal solution
- D) None

Q10) What is the main drawback of the bellman ford algorithm?

- A) It will not produce the correct answer if the sum of the edge is negative
- B) It will not produce the correct answer if the sum of the edge is positive
- C) It will not produce the correct answer if the sum of the edge is greater than 1
- D) It will not produce the correct answer if the sum of the edge is 0

Part 3: Work Out

Q1) What is Dynamic programming?

Q2) What is the best Approach to solve for 0/1 Knapsack?

Q3) What is the main Drawback of the Bellman ford Algorithm?

Q4) What is Bellman ford Algorithm

Q5) What is Floyd-Warsha'll Algorithm?

Answers

T/F:

- 1) False
- 2) True
- 3) False
- 4) False
- 5) True

Choose

- 1) D
- 2) B
- 3) A
- 4) B
- 5) C
- 6) B
- 7) D
- 8) C
- 9) A
- 10) A

WorkOut

- 1) Dynamic Programming is a general algorithm design technique for solving problems defined by recurrences with overlapping subproblems

- 2) The best Approach to solve for the 0/1 knapsack is to use the dynamic programming approach
- 3) The Main drawback of the bellman ford algorithm is that it will not produce the correct answer if the sum of the edge is negative
- 4) Bellman ford algorithm is a single source shortest path algorithm
- 5) Floyd-war shall Algorithm is an algorithm for finding the shortest path between all pairs of vertices in a weighted graph