Quiz 4

Due Feb 2 at 11:59pm **Points** 8 **Questions** 8
Available Jan 26 at 11:59pm - Feb 2 at 11:59pm 7 days **Time Limit** 15 Minutes
Allowed Attempts 2

Take the Quiz Again

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	15 minutes	8 out of 8

Answers will be shown after your last attempt

Score for this attempt: **8** out of 8
Submitted Feb 1 at 1:40am
This attempt took 15 minutes.

Question 1 — 1 / 1 pts

What does the “greedy choice property” mean?

- The sub-problems must be overlapping.
- (•) A globally optimal solution can be reached by making locally optimal solutions.
- The greedy approach always finds optimal solutions, for all problems.

Question 2

1 / 1 pts

A greedy algorithm

- Makes a globally optimal decision in the hope for a locally optimal solution.
- (selected) Makes a locally optimal decision in the hope for a globally optimal solution.
- Finds the solution to all sub-problems, and then finds the minimum or maximum value.
- May replace the locally optimal solutions.

Question 3

1 / 1 pts

A greedy algorithm should include the following steps:

find the set of candidate solutions,
check if the candidate solutions are feasible,
an objective function that returns the value of each candidate solution, and
a selection function that finds the best unused candidate solution.

- (selected) True
- False

Question 4

1 / 1 pts

Select all the correct items.

- [ ] Dynamic programming algorithms are often more time-efficient than greedy algorithms.

- [x] Greedy algorithms are often more time-efficient than dynamic programming algorithms.

- [x] The optimal solution cannot be guaranteed by greedy algorithms, but dynamic programming guarantees an optimal solution if the optimal sub-structure applies.

- [ ] Dynamic programming may not guarantee an optimal solution, even if the optimal sub-structure applies.

Question 5

1 / 1 pts

Consider a greedy approach for solving the knapsack problem, where we first calculate the value per weight unit for each item *i*; i.e., $v_i = b_i / w_i$, where b_i denotes the benefit of item i and w_i represents its weight. Then, we sort all values v_i in a decreasing order, and fill the knapsack from the beginning of the sorted list. Which of the following is correct?

- ( ) This approach works only for 0-1 knapsack.

- (•) This approach works only for fractional knapsack.

- ( ) This approach works for both 0-1 and fractional knapsack.

Question 6

1 / 1 pts

Which of the following greedy strategies results in an optimal solution for the activity selection problem? Select all that applies.

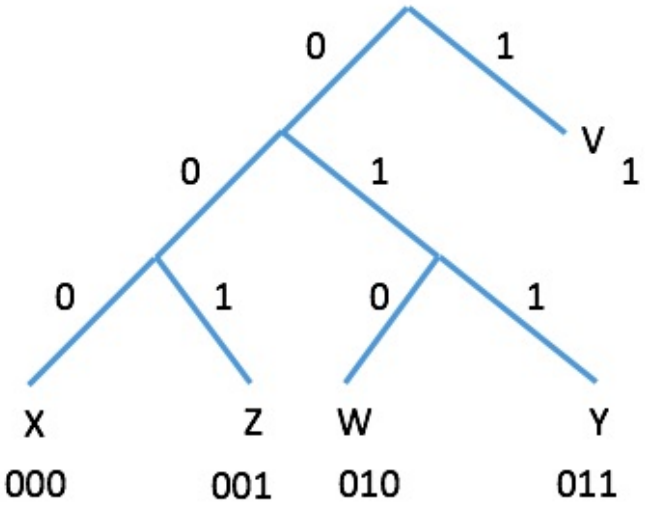
- [ ] Earliest start time
- [ ] Latest finish time
- [x] Earliest finish time
- [x] Latest start time

Question 7

1 / 1 pts

Assume that we have the following frequencies for the characters in a text. Is the following a correct Huffman coding tree?

W: 5 X: 21 Y: 5 Z: 25 V: 30

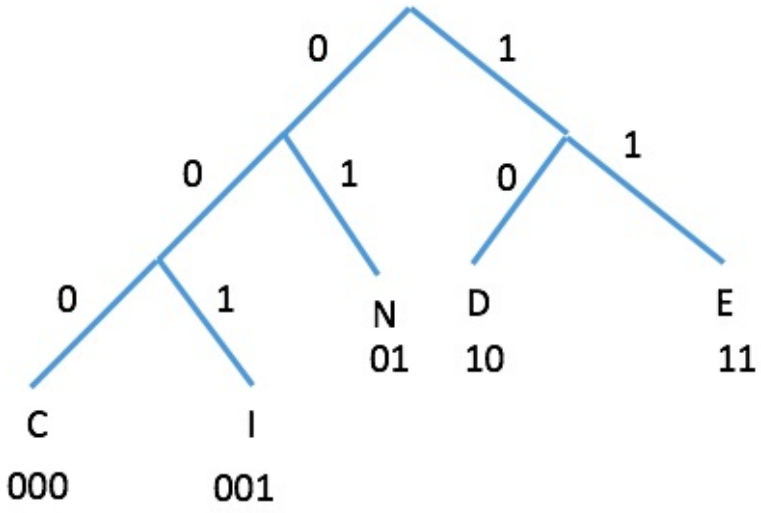


- ( ) True
- (•) False

Question 8

1 / 1 pts

What would be the result of decoding 0100100011 using the following coding tree?



- ICEN
- NICE
- NCIE
- NEIC

Quiz Score: **8** out of 8