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Exercise 2

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Exercise 2

4/4 points (graded)

1. Dynamic programming can be used to solve optimization problems where the size of the space of possible solutions is exponentially large.

☒ True☐ False

2. Dynamic programming can be used to find an approximate solution to an optimization problem, but cannot be used to find a solution that is guaranteed to be optimal.

☐ True☒ False

3. Recall that sorting a list of integers can take $O(n \log n)$ using an algorithm like merge sort. Dynamic programming can be used to reduce the order of algorithmic complexity of sorting a list of integers to something below $n \log n$, where n is the length of the list to be sorted.

☐ True☒ False

4. Problem: I need to go up a flight of N stairs. I can either go up 1 or 2 steps every time. How many different ways are there for me to traverse these steps? For example:

3 steps -> could be 1,1,1 or 1,2 or 2,1

4 steps -> could be 1,1,1,1 or 1,1,2 or 1,2,1 or 2,1,1 or 2,2

5 steps -> could be 1,1,1,1,1 or 1,1,1,2 or 1,1,2,1 or 1,2,1,1 or 2,1,1,1 or 2,2,1 or 1,2,2 or 2,1,2

Does this problem have optimal substructure and overlapping subproblems?

☒ It has optimal substructure and overlapping subproblems☐ It does not have optimal substructure and does not have overlapping subproblems☐ It has optimal substructure and does not have overlapping subproblems☐ It does not have optimal substructure and it has overlapping subproblemsSubmit[< Previous](#)[Next >](#)[Calculator](#)



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