Congratulations! You passed!
TO PASS 60% or higher

Keep Learning

GRADE
100%

Change Money

TOTAL POINTS 4

1. What is the smallest amount of money for which greedy strategy fails with coin denominations of 1, 8 and 20? 1 / 1 point

24

Correct
The optimal solution is $24 = 8 + 8 + 8$, but the greedy algorithm will suggest $24 = 20 + 1 + 1 + 1 + 1$. For all the numbers less than 24, the greedy algorithm gives correct result.

2. What is the minimum number of coins needed to change 32 into coins with denominations 1, 8, 20? 1 / 1 point

- 5
- 3
- 4 (selected)
- 6

Correct
$32 = 8 + 8 + 8 + 8$

3. What is the running time of the dynamic programming algorithm to change m using n different coin denominations? 1 / 1 point

- $O(nm)$ (selected)
- $O(n + m)$
- $O(m \log n)$

Correct
For each value up to m, we need to try to start changing it with each of n coin denominations, thus the running time is $O(nm)$. See the lectures for more details.

4. Is it possible to change 997 using coins with denominations 2, 4 and 8? 1 / 1 point

- No (selected)
- Yes

Correct
Proof by contradiction. If it was possible to change 997 using only coins of denominations 2, 4 and 8, it would mean that 2 divides 997, because 2 divides 2, 4 and 8. However, 2 does not divide 997, which is a contradiction.