1. Consider we wish to compute change for 48 cents given coins of denomination

4 / 4 points

{ 2, 5, 10, 20} cents. We design two tables

Tbl[j] that records the best solution in terms of number of coins for j cents.

S[j] that records the "first" coin denomination that we need to use for obtaining the solution for Tbl[j]

Select all the correct facts from the list below.

- [ ] Tbl[j] = $-\infty$ for $j < 0$
- [x] $Tbl[j] = \min(1 + Tbl[j-2], 1 + Tbl[j-5], 1 + Tbl[j-10], 1 + Tbl[j-20])$

Correct
Correct

- [x] $Tbl[3] = \infty$ denoting that we cannot make change for 3 cents using the given denominations.

Correct

- [x] Suppose we wish to recover the solution, let $S[48]$ have the value 20 after we finish implementing the memoization. The solution recovery will add a 20 cent coin to our solution list and look up $S[28]$

Correct
Correct

- [ ] Following the previous option, suppose we look up $S[28]$ and encounter $S[28] = 2$, we will look up $S[20]$ next.

2. Consider the usual solution that people use to make change for target T. **3 / 3 points**

- Take the largest denomination coin that is $\leq$ T let it be c_j.

- Give c_j and recursively make change for $T - c_j$.

- Stop when the remaining change is 0.

Consider the denominations $\{1, 2, 5, 10, 20, 25\}$ cents.

- [x] Suppose we wish to make change for 50 cents, our approach will provide two 25 cent coins as change, which is optimal.

Correct
Correct

- [ ] Suppose we wish to make change for 40 cents, our approach will use two 20 c coins, which is optimal.
- [ ] The algorithm presented above always produces the optimal solution for any coin denominations and target.
- [x] The algorithm makes optimal decision for T = 49, using four coins: one 25 cent, one 20 cent and two 2 cent coins.

Correct
Correct