Change for an amount: Greedy approach failure

(1) coins we have = 16, 5, 1.

amount = 20.

minimum, using greedy approach = 5 (1 - 16; 4 - pennies).

minimum = **4** (4 - nickel(s)). ✓

(2) Coins we have = 15, 9, 1.

amount = 29.

minimum using greedy approach = 7 ⌐
(1 - 15; 1 - 9; 5 - (s) ←

minimum = 5 ⌐↓

(3 - 9s, 2 - pennies). ✓

(3) Coins we have = 7, 6, 3, 2, 1.

amount = 12.

minimum using greedy approach = 3 (1-7s; 1-3s; 1-2s) ✓

Minimum = 2 (2-6s). ✓

(4) Coins we have = 7, 6, 4, 3, 1.

amount = 19.

minimum using greedy approach = 7 (2-7s; 5- ✗

pennies)

minimum = 4 (3-6s; 1-pennie). ✓

It's 4
(2→7c; 1→4c; 1→1c)

But if we don't have 4c coins; then greedy approach fails.

Greedy = 5 (2→7c; 1→3c; 2→1c)
min. = 4 (3→6c; 1→1c)

(5)

Coins we have = 6,5,2,1
amount = 10
total using greedy approach = 3 (1-6s, 2-2s) ✓
total = 2 (2-nickels) ✓

Score: $\frac{4}{5} = \frac{4}{5} \times \frac{20}{20} = \frac{80}{100}$

Bonus: $\frac{15}{100}$

Total score: $\frac{95}{100}$