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Quiz 2 S4

Where the greedy algorithm will fail:

i.)

let $n = 31$, such $31 \geq 0$

- Our greedy algorithm will choose the largest coin first that being 10 cents, such that if $n=31$ it would be:

It will fail here after choosing the third 10 cent coin.

$n=31$

$10+10+10+2=32$ } where it fails because we were unable to make exact change, since our greedy algorithm will choose the largest value first

$32 \neq 31$

ii.)

- We can make exact change for $n=31$, such that:

$n=31$

$10+10+5+2+2+2=31$

- This will make exact change because we are able to choose the coins in a way that we can make exact change.

2 - 10 cent coins
1 - 5 cent coin
3 - 2 cent coins

Thus, our greedy algorithm will not make change for n, using the fewest number of coins because in some cases it will not make exact change even though we can use our set of coins to make exact change.