1. $dP[i]$ represents wether we can make change for i.

Base case is $dP[0]$ = true. can make 0 with no coins

Recurrence is for each value i from 1 to V, check if using our coin denomination x_j

↳ $dP[i]$ = true if there exists any coin x_j where $dP[i - x_j]$ = true

Time is $O(nV)$ where n is the number of coin denominations and V is target value

2. Let $dP[i]$ = min total penalty to reach hotel i, 0 is the starting point at mile 0

Base case is $dP[i] = 0$

Recurrence is for each hotel i, we consider all previous hotels $j < i$ where we could've stopped

$dP[i] = \min(dP[j] + (200 - (a[i] - a[j]))^2)$ for all valid j

In order to construct a path it is necessary to keep track of which hotel we came from for each hotel

Time is $O(n^2)$ where n is the # of stops

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