

Name: \_\_\_\_\_

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**CIS 455 Class Activity #4: Change Program - Dynamic Programming**Apply the following algorithm to:  $c = (1,3,7)$   $M = 10$ DPChange( $M, c, d$ ) $bestNumCoins_0 \leftarrow 0$ **for**  $m \leftarrow 1$  to  $M$  $bestNumCoins_m \leftarrow \text{infinity}$ **for**  $i \leftarrow 1$  to  $d$ **if**  $m \geq c_i$ **if**  $bestNumCoins_{m-c_i} + 1 < bestNumCoins_m$  $bestNumCoins_m \leftarrow bestNumCoins_{m-c_i} + 1$ **return**  $bestNumCoins_M$ 

M	bestNumOfCoins	Coins used in the best solution
0	0	{}
1	1	{1}
2	2	{1,1}
3	1	{3}
4	2	{3,1}
5	3	{3,1,1}
6	2	{3,3}
7	1	{7}
8	2	{7,1}
9	3	{7,1,1}
10	2	{7,3}