

## Project 1: Coin Change

### Problem Description

Many touching love stories take place in front of the vending machine, as shown in Figure 1. Now, suppose you're standing in front of an old-fashioned vending machine and investing 1 USD (1 USD = 100 cents) to buy a bottle of Coke (37 cents) for someone you have a crush on. This vending machine needs return change for you. If there are only 5 coins supply of each of 1 cent, 5 cents, 10 cents, and 25 cents valued coins in the machine, how many ways can the machine make the change? What is the best solution with the minimum number of coins? The order of coins doesn't matter.



Figure 1: Vending Machine Stories (TOP:“The Half of It”. BOTTOM:“Saving Face”).

- Please writing a naive recursive algorithm to solve this problem.
- Please modify above algorithm to a Dynamic Programming based solution.