You have to design a vending machine that computes change and also dispenses the merchandise. There is a chip select probe for each merchandise item that tells you if the particular item is available or not. The probe is active low. There is a separate probe for each type of merchandise. The following table tells you the cost of the merchandise.

|  |  |
| --- | --- |
| Item | Cost |
| Misal | 25 |
| Samosa | 10 |
| Poha | 25 |
| Upma | 30 |
| Extra chatni | 5 |
| Lassi | 15 |
| Chai | 10 |

The vending machine takes in as input the following notes and coins. Whenever available, the machine would try to dispense off its change and keep notes of higher denomination to itself.

Notes: 1000, 500, 100, 50, 20, 10.

Coins: 10, 5.

You have to design the vending machine, change dispenser and merchandize dispenser

Assume that there are registers that store the value of the number of notes and coins of each type.

Assume that there are counters that would tell you how many merchandise of each type are available in the machine.

Your design must be through a minimized state machine.