

## Self Checkout at a Super Market

**Aim:** To model a self-checkout counter at a supermarket that is capable of:-

- Scanning through the items and identifying it.
- Deciding if it is vegetable/meat, thereby weigh it.
- Compute and display the final total of the products.
- A burglar alarm feature.
- An alarm to notify if it runs out of bags.

### **Assumptions**

- A table of the different items, their prices and barcodes, is specified.
- Each Message on the LCD screen or seven segment digits should be on for 3 seconds before clearing off.

### **Procedure Details**

- Start with LCD screen “Scan the item”
- Enter the two digit barcode of the item using the keypad in decimal.
- If a Barcode that is not present in the given table is entered, the LCD screen should display “Wrong Code” and then go back to the message “Scan the item”.
- Display the item name on the LCD screen and the price or price per pound on the seven segment digits.
- Check if the item falls into the category of either meat or vegetables.
- In case of meat or vegetables scanned
  - LCD Screen should display “Weigh the item”.
  - Enter the weights through the keypad and display it on LCD, in integer pounds in decimal. The acceptable range of weight is 0-9 pounds. Any weight that is entered outside this range should display a message “Error” on the LCD screen and then go back to the message “Weigh the item”.
  - The total price for that particular item is calculated and displayed on the seven segment digits.
- After scanning the item displaying its name and price, place the item in the bag.
- The action of placing the item in the bag is simulated by pressing SW2 in case of non-meat and non-vegetable items, and by pressing SW3 in case of meat or vegetable items. The total number of bags needed in case of non-meat and non-vegetable item will be one bag per item and in case of meat or vegetable would be 1 bag per every 3 pounds.
- The Total in dollars (the sum of all the prices of various items scanned till that point) is displayed as “Total Amt= XX” on the LCD screen for 3 seconds and the message “Scan the item” should come up.
- If the action of placing the item in the bag (i.e, pressing SW2 in case of non-meat or non-vegetable item and SW3 in case of meat and vegetable item) is done before scanning the item, the burglar alarm is triggered, which is simulated by a LCD message “Alarm” that stays on till the switch SW4 is pressed.
- A counter (counting down) keeps track of the number of bags that are left in the set of 30 bags, indicating the number by lighting up appropriate number of LEDS. For

example, when there are three bags left, you should have three LEDS lit up; when there are two bags left only two LEDS should light up, and so on. Once the count equals 0 it should trigger an alarm by an LCD message “Bags” to notify the shortage of bags. Bags can be refilled back to a count of 30 by SW5.

**Table of Prices and Bar codes**

<b>Bar Code</b>	<b>Name of the Item</b>	<b>Price (Per pound in case of meat or vegetables)</b>
11	Pen	\$ 1.00
12	Table Lamp	\$14.00
13	Travel Bag	\$56.00
14	Tennis Racket	\$22.00
15	Radio	\$25.00
16	Box	\$11.00
17	Shoes	\$37.00
18	Shirt	\$18.00
19	Camera	\$89.00
20	Potato	\$3.00
21	Carrot	\$2.00
23	Chicken	\$5.00
24	Beef	\$4.00
25	Fish	\$6.00