**Algorithm**

1. When the shopkeeper turns on the device, he is given 2 choices: online or offline mode.

2. If in online mode, the quantity and name of item selected will be sent via UART1 to rpi which sends the data to the cloud for bill computation

3. If in offline mode, it uses offline rates, which may differ from online rates, to print a physical bill.

4. The next choice is between fruit, vegetable, grain and calibration.

5. For fruit and vegetable, the name of the fruit or vegetable is selected after which the shopkeeper enters the weight of the product desired by the customer. Shopkeeper then places random quantities of the product on the weighing machine until weight on the machine equals entered customer weight.

6. For grain, the stepper motor rotates an angle such that the desired weight of grains falls on the weighing machine. This angle to weight mapping is pre-determined and can be changed in the calibrate mode.

7. The calibrate option is for inspectors or police officers to examine the correctness of the weighing machine’s measurements as well as that of the stepper motor’s rotation. It may also be used if grains of different properties are loaded into the container which needs a different angle of rotation.

8. After step 5,6 or 7 (depending on choice entered in step 4), in online mode the amount and name of product is serially sent to rpi in real time (ultimately creating an online invoice). In offline mode that line for one selected product is printed on the bill. The device asks the shopkeeper if the selections are done, if so, the total will also be printed and then the shopkeeper can tear the receipt from the bill printer and hand it to the customer.

9. The program goes back to step 4 to service future customers or re-calibrate without having to reset the device.

10. If step 2 fails ,the shopkeeper is provided with a software GUI to manually enter the corresponding inputs to the cloud.