Main Code :

```
import RPi.GPIO as GPIO
import time

import serial


GPIO.setmode(GPIO.BCM)
GPIO.setwarnings(False)

port=serial.Serial('/dev/ttyUSB0',9600)

#port.write(str.encode('    hai welcome how aare u'+'\n'))
#port.write(str.encode('    hai welcome how aare u'+'\n'))
#port.write(str.encode('    hai welcome how aare u'+'\n'))

# Define GPIO to LCD mapping
LCD_RS = 2
LCD_E  = 3
LCD_D4 = 4
LCD_D5 = 17
LCD_D6 = 27
LCD_D7 = 22

sw1=23
sw2=24
sw3=25
sw4=8


GPIO.setup(LCD_E, GPIO.OUT)  # E
GPIO.setup(LCD_RS, GPIO.OUT) # RS
GPIO.setup(LCD_D4, GPIO.OUT) # DB4
GPIO.setup(LCD_D5, GPIO.OUT) # DB5
GPIO.setup(LCD_D6, GPIO.OUT) # DB6
GPIO.setup(LCD_D7, GPIO.OUT) # DB7

GPIO.setup(sw1, GPIO.IN)
GPIO.setup(sw2, GPIO.IN)
GPIO.setup(sw3, GPIO.IN)
GPIO.setup(sw4, GPIO.IN)
# Define some device constants
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LCD_WIDTH = 20    # Maximum characters per line
LCD_CHR = True
LCD_CMD = False

LCD_LINE_1 = 0x80 # LCD RAM address for the 1st line
LCD_LINE_2 = 0xC0 # LCD RAM address for the 2nd line
LCD_LINE_3 = 0x94 # LCD RAM address for the 2nd line
LCD_LINE_4 = 0xD4 # LCD RAM address for the 2nd line

# Timing constants
E_PULSE = 0.0005
E_DELAY = 0.0005

total=0

data1= serial.Serial(
                port='/dev/ttyACM0',
                baudrate = 9600,
                parity=serial.PARITY_NONE,
                stopbits=serial.STOPBITS_ONE,
                bytesize=serial.EIGHTBITS,
                timeout=.5
                )


def lcd_init():
  # Initialise display
  lcd_byte(0x33,LCD_CMD) # 110011 Initialise
  lcd_byte(0x32,LCD_CMD) # 110010 Initialise
  lcd_byte(0x06,LCD_CMD) # 000110 Cursor move direction
  lcd_byte(0x0C,LCD_CMD) # 001100 Display On,Cursor Off, Blink Off
  lcd_byte(0x28,LCD_CMD) # 101000 Data length, number of lines, font size
  lcd_byte(0x01,LCD_CMD) # 000001 Clear display
  time.sleep(E_DELAY)

def lcd_byte(bits, mode):

  GPIO.output(LCD_RS, mode) # RS

  # High bits
  GPIO.output(LCD_D4, False)
  GPIO.output(LCD_D5, False)
  GPIO.output(LCD_D6, False)
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  GPIO.output(LCD_D7, False)
  if bits&0x10==0x10:
    GPIO.output(LCD_D4, True)
  if bits&0x20==0x20:
    GPIO.output(LCD_D5, True)
  if bits&0x40==0x40:
    GPIO.output(LCD_D6, True)
  if bits&0x80==0x80:
    GPIO.output(LCD_D7, True)

  # Toggle 'Enable' pin
  lcd_toggle_enable()

  # Low bits
  GPIO.output(LCD_D4, False)
  GPIO.output(LCD_D5, False)
  GPIO.output(LCD_D6, False)
  GPIO.output(LCD_D7, False)
  if bits&0x01==0x01:
    GPIO.output(LCD_D4, True)
  if bits&0x02==0x02:
    GPIO.output(LCD_D5, True)
  if bits&0x04==0x04:
    GPIO.output(LCD_D6, True)
  if bits&0x08==0x08:
    GPIO.output(LCD_D7, True)

  # Toggle 'Enable' pin
  lcd_toggle_enable()

def lcd_toggle_enable():
  # Toggle enable
  time.sleep(E_DELAY)
  GPIO.output(LCD_E, True)
  time.sleep(E_PULSE)
  GPIO.output(LCD_E, False)
  time.sleep(E_DELAY)

def lcd_string(message,line):
  # Send string to display

  message = message.ljust(LCD_WIDTH," ")
```

```
  lcd_byte(line, LCD_CMD)

  for i in range(LCD_WIDTH):
    lcd_byte(ord(message[i]),LCD_CHR)




def main():
    lcd_init()

    lcd_string("  Smart Trolley         ",LCD_LINE_1)
    lcd_string("  Billing System        ",LCD_LINE_2)
    lcd_string("  Using Barcode         ",LCD_LINE_3)
    lcd_string("   System               ",LCD_LINE_4)
    time.sleep(1)
    global total
    add_product=0
    remove_product=0
    total=0
    bill=0
    maricold=0
    milkbikis=0
    dairy_milk=0
    bill=0
    while True:
          if bill==1 and (maricold>0 or milkbikis>0 or dairy_milk>0):
             print("Product.Name    Quantity     price")
             port.write(str.encode("Product             Q    price"+'\n\r'))
             if maricold>0:
                print("maricold :        ",end=' ')
                port.write(str.encode('maricold:       '))
                print(str(maricold),end=' ')
                port.write(str.encode(str(maricold)))
                print("          "+str(maricold*10))
                port.write(str.encode("          "+str(maricold*10)+'\n'))
             if milkbikis>0:
                print("milkbikis :        ",end=' ')
                port.write(str.encode('milkbikis:    '))
                print(str(milkbikis),end=' ')
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```
        port.write(str.encode(str(milkbikis)))
        print("          "+str(milkbikis*10))
        port.write(str.encode("          "+str(milkbikis*10)+'\n'))
    if dairy_milk>0:
        print("dairy_milk :       ",end=' ')
        port.write(str.encode('dairy_milk:       '))
        print(str(dairy_milk),end=' ')
        port.write(str.encode(str(dairy_milk)))
        print("             "+str(dairy_milk*5))
        port.write(str.encode("     "+str(dairy_milk*5)+'\n'))

    print("----------------------------------------")
    port.write(str.encode("----------------------------"+'\n'))
    print("Total:                    ",end=' ')
    port.write(str.encode("Total:                  "))
    print(str(total))
    port.write(str.encode(str(total)+'\n'))
    print("----------------------------------------")
    port.write(str.encode("-------------------------------"+'\n'))
    port.write(str.encode("                                "+'\n'))
    port.write(str.encode("                                "+'\n'))
    port.write(str.encode("                                "+'\n'))

    lcd_string("    Thank u         ",LCD_LINE_1)
    lcd_string("    purchase                  ",LCD_LINE_2)

    lcd_string("  Successfuly           ",LCD_LINE_3)
    lcd_string("  filled              ",LCD_LINE_4)
    bill=0
if add_product==1:
    remove_product=0
    x=data1.read(14)
    print(x)
    if x==b'8901063162426\r':
      maricold=maricold+1
      total=total+10
      lcd_string("  Marie-Gold-10           ",LCD_LINE_1)
      lcd_string(" Quantity-"+str(maricold)+ "     "   ,LCD_LINE_2)

      lcd_string("    ToTal             ",LCD_LINE_3)
      lcd_string("      "+str(total)+"      ",LCD_LINE_4)
    if x==b'8901063012530\r':
      milkbikis=milkbikis+1
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        total=total+10
        lcd_string("  milkbikis-10            ",LCD_LINE_1)
        lcd_string(" Quantity-"+str(milkbikis)+ "     "   ,LCD_LINE_2)

        lcd_string("    ToTal            ",LCD_LINE_3)
        lcd_string("      "+str(total)+"      ",LCD_LINE_4)
      if x==b'8901233030517\r':
        dairy_milk=dairy_milk+1
        total=total+5
        lcd_string("dairy_milk=dairy_milk-10            ",LCD_LINE_1)
        lcd_string(" Quantity-"+str(dairy_milk)+ "     "   ,LCD_LINE_2)

        lcd_string("    ToTal            ",LCD_LINE_3)
        lcd_string("      "+str(total)+"      ",LCD_LINE_4)


if  remove_product==1:
    add_product=0
    x=data1.read(14)
    print(x)
    if x==b'8901063162426\r' and maricold>0 :
      maricold=maricold-1
      total=total-10
      lcd_string("  Marie-Gold-Removed            ",LCD_LINE_1)
      lcd_string(" Quantity-"+str(maricold)+ "     "   ,LCD_LINE_2)

      lcd_string("    ToTal            ",LCD_LINE_3)
      lcd_string("      "+str(total)+"      ",LCD_LINE_4)
    if x==b'8901063012530\r' and  milkbikis>0:
      milkbikis=milkbikis-1
      total=total-10
      lcd_string("  milkbikis-Removed            ",LCD_LINE_1)
      lcd_string(" Quantity-"+str(milkbikis)+ "     "   ,LCD_LINE_2)

      lcd_string("    ToTal            ",LCD_LINE_3)
      lcd_string("      "+str(total)+"      ",LCD_LINE_4)
    if x==b'8901233030517\r' and dairy_milk>0:
      dairy_milk=dairy_milk-1
      total=total-5
      lcd_string(" dairy_milk-Removed            ",LCD_LINE_1)
      lcd_string(" Quantity-"+str(dairy_milk)+ "     "   ,LCD_LINE_2)

      lcd_string("    ToTal            ",LCD_LINE_3)
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```
            lcd_string("       "+str(total)+"      ",LCD_LINE_4)


        if GPIO.input(sw1)==False:
          lcd_string("    ADD             ",LCD_LINE_1)
          lcd_string("   PRODUCT           ",LCD_LINE_2)

          lcd_string("    ToTal            ",LCD_LINE_3)
          lcd_string("       "+str(total)+"      ",LCD_LINE_4)
          remove_product=0
          add_product=1
        if GPIO.input(sw2)==False:
          lcd_string("    Delete           ",LCD_LINE_1)
          lcd_string("   PRODUCT           ",LCD_LINE_2)

          lcd_string("    ToTal            ",LCD_LINE_3)
          lcd_string("       "+str(total)+"      ",LCD_LINE_4)
          remove_product=1
          add_product=0
        if GPIO.input(sw3)==False:
          lcd_string("    Total Product           ",LCD_LINE_1)
          lcd_string("                          ",LCD_LINE_2)

          lcd_string("    ToTal            ",LCD_LINE_3)
          lcd_string("       "+str(total)+"      ",LCD_LINE_4)

        if GPIO.input(sw4)==False:
          bill=1


if __name__ == '__main__':

  try:
    main()
  except KeyboardInterrupt:
    pass
  finally:
    lcd_byte(0x01, LCD_CMD)
    GPIO.cleanup()
```