**Sound Module:**

**Mode 1:**

* Take in distance b/w cart and user (maybe via function call)
* If user is too close beep
  + Beep at variable lengths based on distance

**Example(not actual code)::**

Int distance = x;

Int threshold = y;

if(distance < threshold){

while(distance < threshold){

int delay\_time = 100/x

play(beep\_sound);

delay(delay\_time);

distance = get\_distance();

}

}

**Requirements:**

* A delay function
* A sound playing function similar to the music module in project 2
* An integer input from the distance detection module or some sort of conversion
* Interrupts for sound module and possibly checking distance from LiDAR module

**Mode 2(maybe)**:

* Receive Boolean or flag from checking if item was scanned by barcode
* Emit beep sound

**Example (not actual code):**

If(flag == 1){

Play(beep);

}

**Requirements**:

* Receive flag from barcode module
* Sound playing module

**Visual Interface Module:**

**Mode 1:**

* Take in distance b/w cart and user (maybe via function call)
* Convert integer values to array of digits example:
  + (assumed max distance = 40m, therefore max digits = 2)
  + Distance = 2, array = [0, 2], displayed “02”
  + Distance = 13, array = [1,3], displayed “13”
* Convert to seven seg values
* Send to 7-seg display

**Example(not actual code):**

Int distance = x;

Int digits[2];

Int\_to\_digits(x, digits);

Display(digits){

Int 7\_seg\_array[*the 7-seg vals for each digits*]

Dig\_to\_7seg(digits){

If (digit[x] == y){

display\_arr[x] = 7\_seg\_array[y];

}

7seg1 = display\_arr[0];

7seg2 = display\_arr[1];

}

**Requirements:**

* Integer input via function call for distance
* Array of 7 seg values
* Int to digit array function
* Digit array to 7seg array function
* Display function
* Possibly interrupts if we want to constantly update distance b/w cart and user shown on 7 segs

**Mode 2(maybe):**

* Would be very similar to mode 1
* Instead of displaying distance would show number of items scanned on 7seg display each time a successful scan flag is triggered by bar code reading module
* Main difference is interrupts would probably not be needed as to trigger this we could just have the barcode reader function call this module at the end each time it successfully scans
  + If this is the case a flag would not even be necessary if check is already done within the barcode function
  + Just only call this function if it scans successfully
* Just after a successful scan increment the items scanned variable and then update the digits array and re-display
* However you could theoretically go up to 4 7-segs since there would not be the limitation like with the lidar only scans up to 40m accurately
  + However how would you demonstrate 100 scans or even 1000 efficiently? Have it count down from preset number for demonstration purposes(e.g. start at 1004 count down to 999)?