Magnitudes and Button Pressing

LAB 8

SECTION C

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Problem

The problem in this lab was to rework lab 6 using functions for the magnitude calculation and to convert time from ms to mm:ss:ms.

Analysis

This program takes inputs from the Esplora and then using functions determines magnitude and time. The second program also takes in data from the Esplora but instead of calculating values from the input it prints out the number of buttons being pressed at any given moment.

Design

We had to design 5 functions in this lab. One to calculate mag from our ax, ay, and az variables. 3 to convert the time in ms to a mm:ss:ms format. The last function was made to take in the inputs from the Esplora and determine how many buttons are being pressed at the time.

Testing

In order to format my scanf correctly I needed to run explore.exe without inputting to a program so I could see what the data was, how it was formatted, and how I can use that to implement code to do what I wanted it to do.

Comments

N/A

Source Code

Lab8-1.c:

```
//Author: Kenneth A. Jacobson
//Name: Lab 7
//Description: Rework of Lab 6 with functions
//27.10.2017

#include <stdio.h>
#include <math.h>

#define TRUE 1

//Function Prototypes
double mag(double, double, double);

int minutes(int);
int seconds(int);
int millis(int);


int main(void) {
    /* DO NOT MODIFY THESE VARIABLE DECLARATIONS */
     int t;
     double  ax, ay, az;


     while (TRUE) {
          scanf("%d,%lf,%lf,%lf", &t, &ax, &ay, &az);

/* CODE SECTION 0 */
          printf("Echoing output: %d, %lf, %lf, %lf\n", t, ax,
ay, az);

//   CODE SECTION 1
          printf("At %d ms, the acceleration's magnitude was:
%lf\n",
               t, mag(ax, ay, az)); //*/
//   CODE SECTION 2
          printf("At %d minutes, %d seconds, and %d milliseconds
it was: %lf\n",
          minutes(t), seconds(t), millis(t), mag(ax,ay,az));
//*/

     }

return 0;
```

```
}

//Returns magnitude of values from main
double mag(double ax, double ay, double az){
     return sqrt(pow(ax,2)+pow(ay,2)+pow(az,2));
}

/* Functions to return time in a readable way */

     //return minutes
     int minutes(int t){
          t= t/1000;
          return t/60;
     }

     //return seconds
     int seconds(int t){
          t= t/1000;
          return t%60;
     }

     //return milliseconds
     int millis(int t){
          return t-(minutes(t)*60*1000)-(seconds(t)*1000);
     }
```

Lab8-2.c:

```
//Author: Kenneth A. Jacobson
//Name: Lab 7
//Description: Rework of Lab 6 with functions
//27.10.2017

#include <stdio.h>
#include <math.h>

#define TRUE 1

int buttons(int, int, int, int, int);

int main(void) {
    //variables to store values from Esplora
     //zz store the 2 values at the end
```

```
     //I don't know what they are but can't ignore them
completely
     int a, b, x, y, l3, zz;


     while (TRUE) {
          //change values of a,b,x,y,z and, zz based on input
from explore.exe
          scanf("%d,%d,%d,%d,%d,%d", &a, &b, &x, &y, &l3, &zz);
          //print output of buttons() based on a,b,x,y
          printf("Buttons Pressed: %d\r", buttons(a, b, x, y,
l3));

          fflush(stdout);
     }

return 0;
}

//function to return # of buttons pressed
int buttons(int a, int b, int x, int y, int l3){
     int button= 0;
     if(a==1){
          button = button + 1;
     }
     if(b==1){
          button = button + 1;
     }
     if(x==1){
          button = button + 1;
     }
     if(y==1){
          button = button + 1;
     }
     if(l3==1){
          button = button + 1;
     }
     return button;
}
```

Screen Shots

Output of lab8-2.c:

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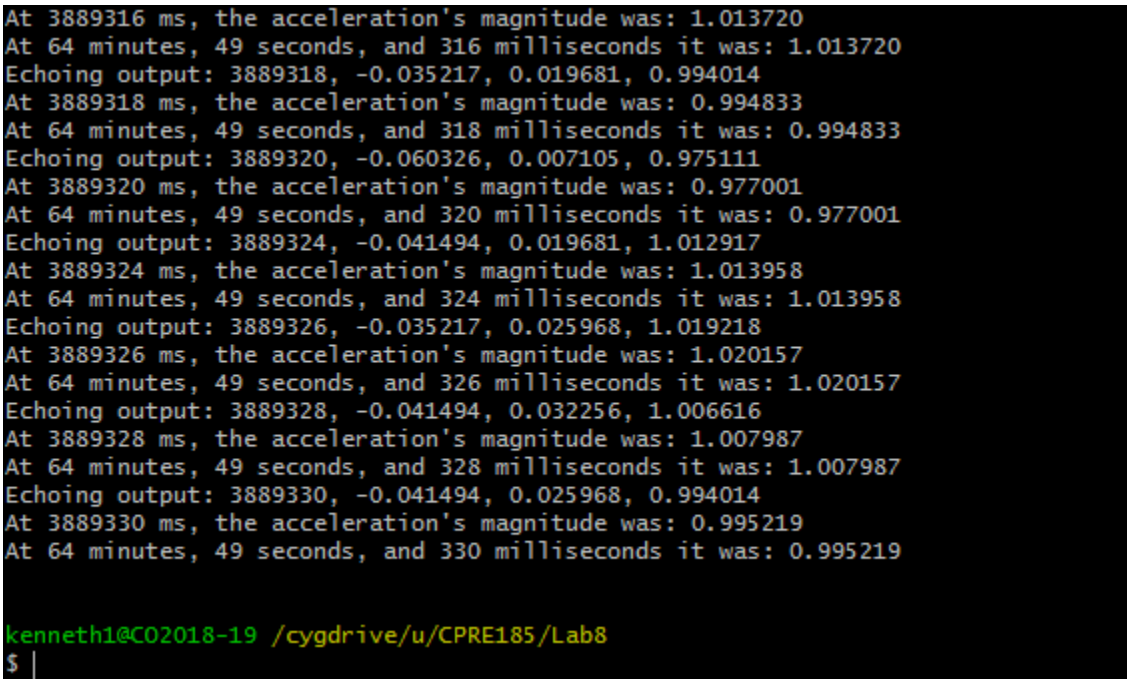
Screenshot of Parts 1 and 2 working:



Screenshot of Part 3 working: