Introduction to functions

LAB 4

SECTION G

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Problem

Section 1: when the Esplora gives us time it gives it to us in milliseconds. We wanted It in seconds, not milliseconds.

Section 2: we were given the 3 coordinates and we needed the magnitude of the 3 points.

Section 3: For the third section, we needed to take the milliseconds and make the number of milliseconds into minutes, seconds, and milliseconds; all equaling the original total number milliseconds.

Section 4: for this section se needed to calculate the number of button pushed at one time and then print that number.

Analysis

Section 1: this section was straight forward all it required was me to change the width and precision of the returned number of milliseconds and x, y, and z variables.

Section 2: the “mag” function was very difficult at first but after googling the square root function. It was easy

Section 3: this section gave me the most trouble. The fact that the minutes, seconds, and milliseconds at the end needed to add up to the original milliseconds, gave me a problem that was not easy to fix.

Section 4: I ran out of time in the lab before I could finish this section, during the week I tried to get this part correct, but I was never able to get.

Design

Section 1: all I did was put in a width and precision for the variables

Section 2: instead of using the square function I just took the number times its self sqrt(ax*ax+ay*ay+az*az).

Section 3: this section was difficult because I didn’t know if I could do a function inside a function so instead I just made 3 separate functions.

Section 4: the thought process behind my code was to give each button either a 1 or 0 depending on whether or not it was pushed. Then add the numbers up and print the number.

Testing

Section 1: for some reason the time always came out as zeros for most of the first half hour of the lab. After starting at the code I realized that the “%d” needed to be “%lf”.

Section 2: section 2 ran the first time I tried it to testing it was very simple with no errors

Section 3: testing section 3 was a pain because of the debugging that needed to be done, I was never able to finish all of the functions in the lab so I had an outside source look at it to help with the debugging part. The problem was in the prototype, that didn't match the function when it was supposed to run after being called.

Section 4: I was never able to complete section 4. I did my best with the internet, but by that point it was too late in the week to test the code.

Comments

I forgot to take screen shots of sections 1-3 so I just took one at the end.

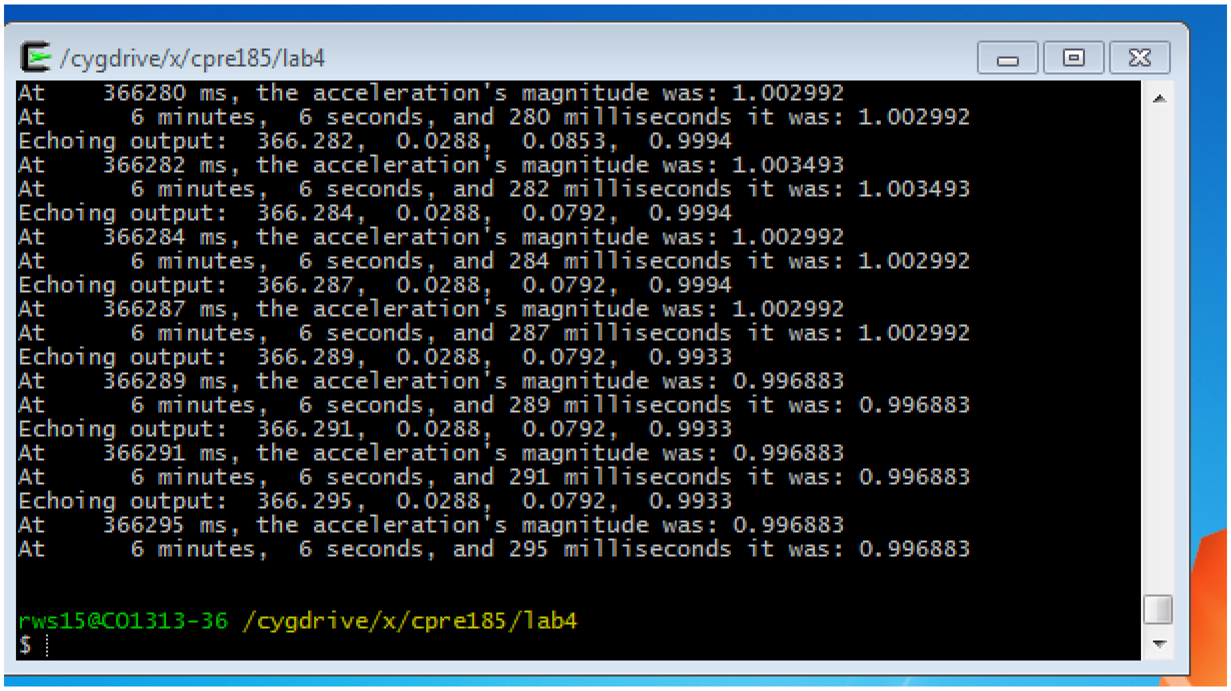
Lab4

```
#include <stdio.h>

#include <math.h>


#define TRUE 1


        double mag(double ax, double ay, double az);

        double minutes(double inMs);

        double seconds(double inMs);

        double millis(double inMs);


int main(void) {

        double t;

        double ax, ay, az;


        while (TRUE) {

                scanf("%lf,%lf,%lf,%lf", &t, &ax, &ay, &az);


/* CODE SECTION 0 */

                printf("Echoing output: %8.3lf, %7.4lf, %7.4lf, %7.4lf\n", t/1000, ax, ay, az);


 /*     CODE SECTION 1 */

                printf("At %9.0lf ms, the acceleration's magnitude was: %lf\n", t, mag(ax, ay, az));

/*      CODE SECTION 2 */

                printf("At %6.0lf minutes, %2.0lf seconds, and %3.0lf milliseconds it was: %lf\n",

                minutes(t), seconds(t), millis(t), mag(ax,ay,az));


        }
return 0;

}


            double mag(double ax, double ay, double az){

                        sqrt(ax*ax+ay*ay+az*az);

            return;

            }


            double minutes(double inMs){

               int min = inMs /(1000 * 60);

                        return (double)min;

            }


            double seconds(double inMs){

               int wholeMin = inMs /(1000 * 60);

               double remainMSecs = inMs - (wholeMin * 1000 * 60);

                        int secs = remainMSecs / 1000;

                        return secs;

            }


            double millis(double inMs){

               int wholeMin = inMs /(1000 * 60);

               double remainMSecs = inMs - (wholeMin * 1000 * 60);

                        int secs = remainMSecs / 1000;

                        double remainMil = remainMSecs - (secs * 1000);

                        return remainMil;

            }
```

LAB4-2

```
include <stdio.h>

#include <math.h>


#define TRUE 1


int main(void) {

        int t;

        double ax, ay, az;


        while (TRUE) {

                int button1 = Esplora.readButton(switch_1)

                int button2 = Esplora.readButton(switch_2)

                int button3 = Esplora.readButton(switch_3)

                int button4 = Esplora.readButton(switch_4)

                if(button1 == LOW){

                        int button1 = 1

                }

                else {

                        int button1 = 0

                }

                if(button2 == LOW){

                        int button2 = 1

                }

                else {

                        int button2 = 0

                }

                if(button3 == LOW){
```

```
                int button3 = 1
            }
            else {
                int button3 = 0
            }
            if(button4 == LOW){
                int button4 = 1
            }
            else {
                int button4 = 0
            }
            t = button1 + button2 + button3 + button4
            printf("%d", t)
            fflush(stdout)
        }
return 0;
}
```



/cygdrive/x/cpre185/lab4

```
At    366280 ms, the acceleration's magnitude was: 1.002992
At      6 minutes,  6 seconds, and 280 milliseconds it was: 1.002992
Echoing output:  366.282,  0.0288,  0.0853,  0.9994
At    366282 ms, the acceleration's magnitude was: 1.003493
At      6 minutes,  6 seconds, and 282 milliseconds it was: 1.003493
Echoing output:  366.284,  0.0288,  0.0792,  0.9994
At    366284 ms, the acceleration's magnitude was: 1.002992
At      6 minutes,  6 seconds, and 284 milliseconds it was: 1.002992
Echoing output:  366.287,  0.0288,  0.0792,  0.9994
At    366287 ms, the acceleration's magnitude was: 1.002992
At      6 minutes,  6 seconds, and 287 milliseconds it was: 1.002992
Echoing output:  366.289,  0.0288,  0.0792,  0.9933
At    366289 ms, the acceleration's magnitude was: 0.996883
At      6 minutes,  6 seconds, and 289 milliseconds it was: 0.996883
Echoing output:  366.291,  0.0288,  0.0792,  0.9933
At    366291 ms, the acceleration's magnitude was: 0.996883
At      6 minutes,  6 seconds, and 291 milliseconds it was: 0.996883
Echoing output:  366.295,  0.0288,  0.0792,  0.9933
At    366295 ms, the acceleration's magnitude was: 0.996883
At      6 minutes,  6 seconds, and 295 milliseconds it was: 0.996883

rws15@CO1313-36 /cygdrive/x/cpre185/lab4
$ 
```