Homework Assignment #2

Monday April 8th @ 5PM

1.Important Information

- **This is an individual assignment**. Any evidence that code was shared between individuals will be treated as academic misconduct.
- All code should have meaningful comments. A 5 point penalty will be levied against each problem that is not commented sufficiently.
- Any code that does not assemble/compile will **receive no points**
- All code is to be written in C using the Keil uVision IDE.
- You may use any code that you have developed as a part of an ICE.
- All non-ICE code that is submitted must be written, in its entirety, by you. Submitting code that is not original work of the team/individual will be treated as academic misconduct.
- The maximum point total for the assignment is 50 points

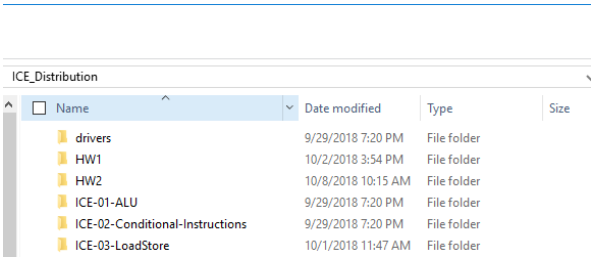
2.Problem Overview

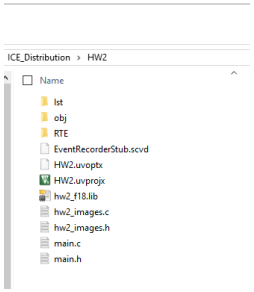
This homework will require you to animate the movement of a small image on the LCD screen of ECE353 development platform.

3.Provided Libraries

This homework will require you to successfully complete ICE-11 as it will make use of the LCD peripheral libraries that are a part of that exercise. Please verify that your version of the LCD peripheral library if functional before moving forward.

You should extract the HW2.zip contents into the same directory as your ICE exercises.





4.Behavioral Requirements

In hw2_images.c, you have been provided with an image of a flying saucer. You will write an application that parses an array of strings that control the direction and speed of the flying saucer. Table1 describes a list of valid CONTROL commands. If a string starts with an unsupported command, ignore it.

Table 1: Valid Commands

Command	Description
UXX…X	If the first character of the string is a U, it indicates that the flying saucer should move UP by the specified number of pixels.
DXX…X	If the first character of the string is a D, it indicates that the flying saucer should move DOWN by the specified number of pixels.
LXX…X	If the first character of the string is a L, it indicates that the flying saucer should move LEFT by the specified number of pixels.
RXX…X	If the first character of the string is a R, it indicates that the flying saucer should move Right by the specified number of pixels.
PXX…X	If the first character of the string is a P, this sets the pause duration in between image renders.

Table 2 illustrates some example commands.

Table 2: Commad Examples

Command	Description
U10	Move the saucer UP by 10 pixels, pausing the saucer after each pixel.
D100	Move the saucer DOWN by 100 pixels, pausing the saucer after each pixel.
L1	Move the saucer LEFT by 1, pausing the saucer after each pixel.
R1250	Move the saucer RIGHT by 1250 pixel, pausing the saucer after each pixel.
P200000	Sets the wait period in between image renders to be 200,000 iterations of an empty FOR loop.
P8000	Sets the pause period in between image renders to be 8,000 iterations of an empty FOR loop.

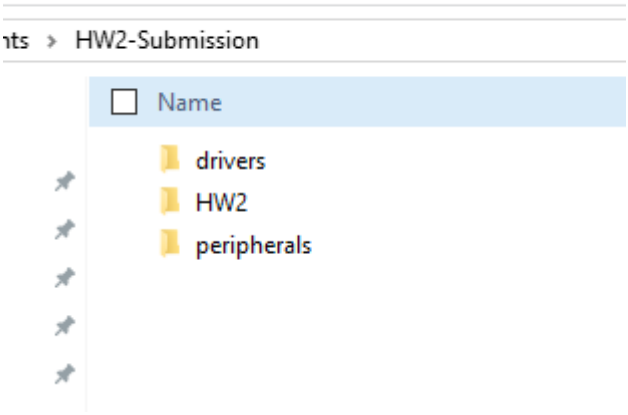
If any portion of the saucer encounters any edge of the screen, the movement of the saucer should stop and the next control command should begin execution. For example, the command 'R1250' indicates that the image should move to the right by 1250 pixels. The width of the screen is only 240 pixels. As soon as the right most edge of the saucer image reaches the 240th pixel, the image will stop moving right and your code should examine the next command.

Use the lcd_draw_image function that you have completed as part of ICE-11 to render images.

When converting an ASCII string that represents a number into a numerical value, try using the atoi command supplied by the C library stdlib.h. It will save you a bunch of time.

5.Assignment Submission

You will submit your entire project, including all source files, as a **ZIP** archive to the drop box on the course web site. The image below illustrates which directories you are required to submit.



Make sure that you have modified main.c with your name before you submit the code.

6.Grading Rubric

As mentioned before, any evidence that code was shared between individuals will be treated as academic misconduct. You should always submit what you have done instead of submitting nothing. Late submission will result in 10 point deduction per day for this assignment.

Points	Description
10	Flying saucer displaying properly
10	Can move image as specified
10	Image stops moving on horizontal edge of the display
10	Image stops moving on vertical edge of the display
5	P command working properly
5	Documentation style (commenting)
50	