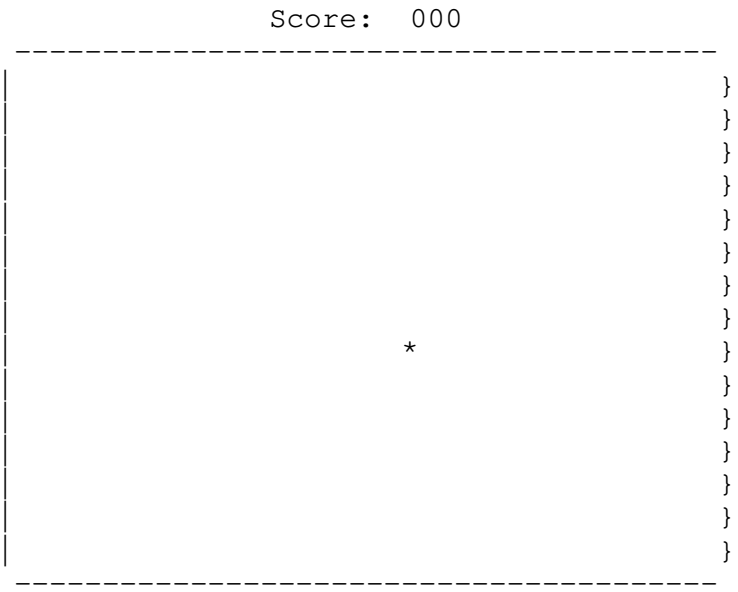
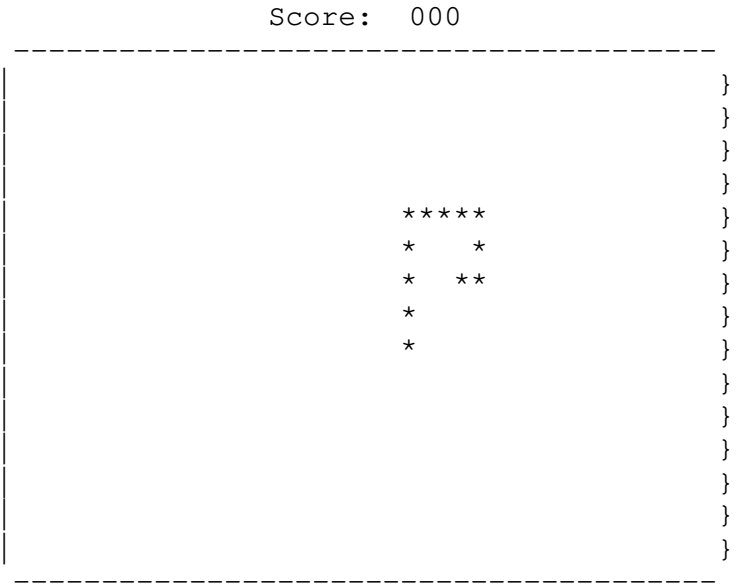
CSE 379
Lab #6
Spring 2020

Objective
In this lab, you will learn how to use the timers on the ARM board. In addition, the UART (along with *PuTTy)* will be used as you have done in the past few labs.

Description
Write an ARM assembly language program which implements a simple version of the Snake Game. When the program starts, a game board, shown below appears. The board is 40 columns wide by 15 rows high (not including the boarder). An asterisk (*) should be present in the center of the board. The initial board is shown below.



When the user hits the *i*, *j*, *k*, or *m*, the game starts and the asterisk starts to move. The direction is controlled by the letters *i*, *j*, *k*, or *m*, which represent the directions up, left, right, and down respectively. Every ¼ second, the asterisk should move one position on the board. As the asterisk moves, it should leave a path of asterisks, as shown at the top of the next page.



If the asterisk hits a wall or crosses its own path, the game ends. As the game is played the score should be displayed which shows the number of asterisks that have been placed on the board. In other words, the score corresponds to the length of the path. When the game ends, the user should be notified that the game has ended.

Startup Code

Startup code for lab #6 will be provided on the course website which has interrupt handlers for the *UART0Handler* and *Timer0Handler* . Use the code provided, NOT the startup assembly file that you've been including in your project when you created a project in your first five labs.

Partners

You will work with a partner in this lab. Your partner *MUST* be the same partner you worked with on lab #5.

Documentation

Your program must be clearly commented, and documentation must also be provided. The documentation must follow the guidelines covered in lecture (found on the *Lectures* webpage of the course website). Your comments should describe what *each* section of your program does. To receive full credit on your documentation, you must submit a draft of your flowchart before you start working on the lab in your regularly scheduled lab time on Wednesday, March 4 or Thursday, March 5.

Submissions

Your source code (C and assembly) must be submitted online using the submit command (submit_cse379 Your source code (C and assembly) and your documentation (as a PDF) must be submitted online using the submit command (*submit_cse379 lab_6_wrapper.c lab_6.s lab_6_library.s lab_6_documentation.pdf*) on *timberlake.cse.buffalo.edu* ***before 11:59 PM on Tuesday, March 25, 2020***. A hardcopy of your documentation is due at the ***beginning of class on Wednesday, March 24, 2020***. Your documentation will be used along with the code you submitted when you perform the debug exercise for Lab #6.