

Extra Credit #5

Out: June 6, 2023

Due: with [Homework #5](#) (Finals Week)

Value:unlimited

Hexer Game Features

Below are a number of additional features you may add to your Hexer game for extra credit. Each feature is described and the number of extra credit points for the feature is given. You, of course, may also add other features for extra credit. All extra credit features must be demoed when [Homework #5](#) is demoed and the code is to be handed in at that time.

Blinking Display (20 points)

Add the ability to blink the display. This could be used, for example, to indicate a winning (or losing) game or that time is running out.

Display Animation Effects (40 points)

Add display animation effects such as scrolling messages to the game. This could be used, for example, to display an introductory message or a winning (or losing) animation or message.

PWM Sound (50 points)

Output sound using PWM instead of a square wave. This could be used to output tones or more complex sounds (such as songs or words) stored in program memory or on the SD card.

Timed Game(30 points)

Allow games to have time limits. The display would show the remaining time for the game and the player loses when the timer times out.

Game Timer (30 points)

Add a game timer. The display would show either the number of moves or the elapsed time for the game..

Pause Game (50 points)

Add a way to pause the game. This would cause the current game state to be stored to the SD card (or in the internal EEROM). The game could then be resumed later by recalling it. Note that the game should be recallable even after the system has had a loss of power and restarted.

Game Play Music (40 points)

Play music while the game is being played. The tune should have notes of different durations and play repeatedly until the game is over.

Winning (Losing) Game Music (20 points)

Play a tune for winning (and possibly losing) the game. The tune should stop when the START game button is pressed.

Support Version 1 or Version 2 SD Cards (30 points)

Allow either version 1 or version 2 SD cards to be used.

Support CRC on SD Cards (40 points)

Use a CRC when reading and writing the SD card. Note that demoing this is tricky.

Event-Driven Main Loop (100 points)

Write the main loop to be event-driven. Note that this will require rewriting the switch debouncing code to generate events.

Extra Credit #5 Resources

- [Homework Q&A](#)

Last updated June 06, 2023 11:01 AM by glen@caltech.edu

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