ECE243
Project Name: Minesweeper Game implemented on DE1-SOC FPGA board

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I/O devices: Audio output, VGA display, PS2 Keyboard(input), Seven-Segment Display

Methods used: Interrupt-Driven, Polling and Double Buffering

Description:
The game features a 9x9 board on VGA with a red rectangular box indicating the current location on the grid. When the system is idle, it will display a static picture on VGA, and the user will press 'K' on the keyboard to initialize the game. Next, the user will choose a difficulty level (easy, medium, or hard) by pressing the corresponding keys (1, 2, or 3) on the keyboard to enter the game. At the same time, a counter will start counting the time and display it on the Seven-Segment display. Background music will also play simultaneously. During gameplay, the user will use 'W' to move up, 'A' to move left, 'D' to move right, and 'S' to move down to select a specific coordinate on the board. The user can use the "Space" key to sweep the chosen coordinate or press "Enter" on the PS2 keyboard to mark a flag. Additionally, the user can unflag a specific coordinate by repressing "Enter" on a flagged coordinate. Upon completing a game, there will be a short animation using double buffering to indicate whether the player has won or lost.

Attribution Table

Name	Individual	Integration
Jinghang	All back-end game logic, Audio_ISR, Major refinements on PS2 Keyboard and VGA display	√
Bob	VGA display, static and double buffering Seven-Segment display PS2 Keyboard Set up Interrupt-driven Timer and Audio	√