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Bitmap Project: Corn Maze Game

Program Overview

In an exercise to utilize the Bitmap Display and Keyboard/MMIO Display Simulator capabilities of MIPS, I created a program that emulates a corn maze game. The program displays a maze with border walls and paths, a tractor icon, ghost icons, and a farmer icon. Each component of the game is created with pixels, color hex codes, and an X-Y coordinate plane. Along with the display of the game components, the program allows the player to enter keyboard input to move the farmer icon throughout the paths. Each move is checked for validity and if the move will lead to an encounter with a maze wall, ghost icon, or the tractor icon. Once the game ends, the program displays a “GAME OVER” message.

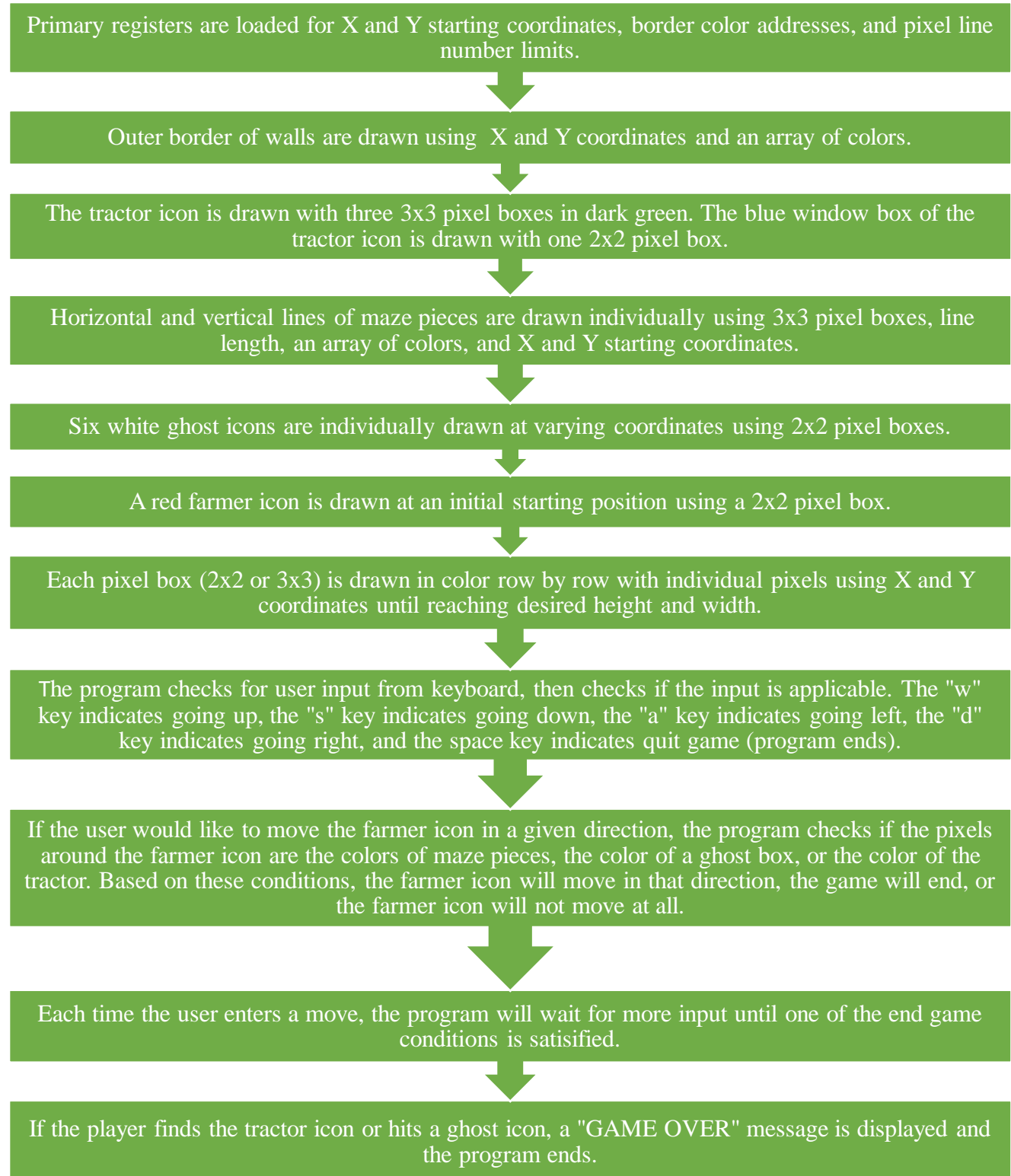
Instructions to Run Program

To run the program, the user can assemble the program in MIPS by clicking the “Assemble” icon in the options bar at the top of the MIPS screen. Once MIPS displays “Assemble: operation completed successfully” in the bottom console, the user can navigate to “Tools” (which is located in the top menu bar of the MIPS screen) and click “Bitmap Display” in the drop-down menu. Once the Bitmap Display window is open, the user must navigate to “Tools” once again and scroll down in the menu to “Keyboard and MMIO Display Simulator”. In the Bitmap Display window, the user must set the unit width in pixels to 8 and the unit height in pixels to 8. The display width in pixels and display height in pixels both must be set to 512. For the base address for the display field, the user must click on the drop-down menu and navigate to “0x10008000 (\$gp)”. The user can click “Connect to MIPS” in the bottom left corners of the Bitmap Display window and Keyboard and MMIO Display Simulator. After doing so, the user can click the green “Run” icon in the options bar and begin playing.

User Need to Knows

When playing the game, users should note that the game is over when trying to get *on top* of a preexisting tractor pixel box or ghost pixel box. If the farmer icon is directly next to, say a ghost box, the game continues as the farmer icon position is not on top of the ghost icon position. To exit the program midgame, users can press the space bar. Users are advised to set the settings exactly as mentioned above in the “Instructions to Run Program” section to have the best experience. When entering input, users should be careful not to overload the input field as it can lead to a crash.

Program Logic Flowchart



Sample Runs of Program

