

ME3241/ME3241E/TME3241 Microprocessor Applications

Assignment 3: GBA Game

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Game: Escape Space!

Objective:

Collect all spaceship parts and board the assembled ship to escape.

Description:

Main Menu

When the game is booted on the emulator, a basic menu shows up. The basic menu allows the player to select the level he wishes to play. He selects the level he wants by toggling 'Left' and 'Right' buttons and enters the level by pressing 'Start'.

Setup and Gameplay

The astronaut spawns at the bottom right hand corner of the screen. The player gets to move the astronaut by using the 'Left', 'Right', 'Up' and 'Down' buttons. Across the game field, there lie all the spaceship parts which the astronaut must collect before escaping (to win). He can collect the spaceship part by hovering over to the part and pressing 'A'. Once the part is collected, the part is automatically built at the bottom left hand corner of the screen. When all the parts are collected and built, to escape, the player has to move the astronaut towards the built spaceship and press 'B' to fly the spaceship. After winning the first level, the player moves on to the next level. After winning the second level, the player will be brought back to the main menu.

The second level has an increased difficulty with faster moving meteors which requires the player to be more careful when moving the astronaut.

At the beginning, the astronaut is given 3 heart points. The astronaut loses a heart point under the following conditions:

- 1) Every 15 seconds
- 2) When the astronaut touches a meteor

Meteors move automatically in the background so long as the game is in play. When the player is out of heart points, the player loses and is brought back to the main menu.

While playing the game, the player can choose to restart the level by pressing 'Start'. Furthermore, he can also end the game and return to the main menu by pressing 'Select'.

Sprites, Timers and Interrupts

To write words like 'Game Over' and 'Lvl 1', I added additional sprites to the original sprites array. Pressing buttons trigger the button interrupt which checks for the button pressed and performs the button functions accordingly. Timer interrupts are used to increment the global time variable at every second. When the global time variable hits a multiple of 15, one heart point is lost.

Files

1. Main.c (main program with helper functions)
2. Sprites.h (Contains all information on the sprites used in the game)
3. Gba.h (Contains all information on the registers/interrupts/buttons used in the game)
4. README.pdf (Gameplay documentation)(THIS)

