Group 61

Beata Johansson   991122-6026
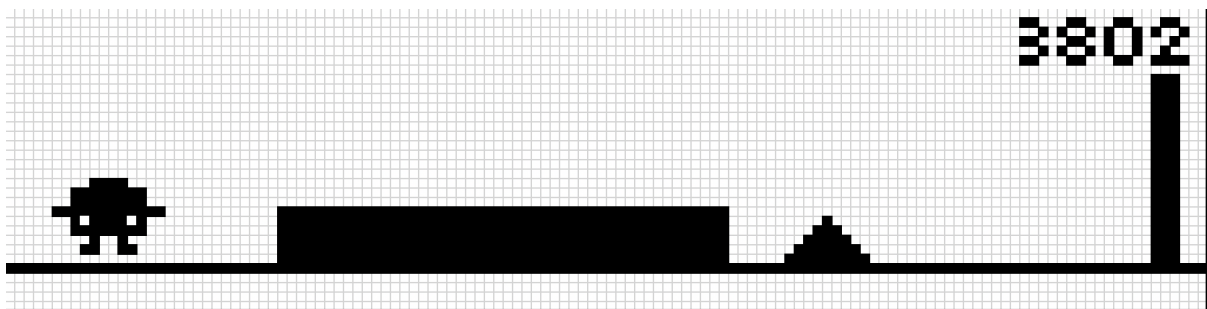Simon Larspers Qvist   970415-0292

Running Dinosaur Game

Advanced project

Objective and Requirements

Similar to how the dinosaur game works in Google Chrome when no internet is available. A character, might be a dinosaur or something else, will run horizontally on the screen and avoid different obstacles, such as cacti or birds. The game should gradually increase in difficulty, by making the track move faster over time. It should also save the score of how long the player survived, and save it to a high score list. The current score should also be shown during gameplay.

Main requirements

Components on I/O-shield:
    Organic LED Graphic Display
    Pushbuttons
Game Features:
- Main menu
    - Start game
    - View high score board
- The track should contain obstacles:
    - Obstacles on the ground like the triangle in the picture above.
    - Horizontal block to run on top of.
    - To make the character run in both X and Y directions we have breakable obstacles that the player dashes through.
- Game ends when the character touches an obstacle.
- Highscore that makes use of the microcontroller timer.

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If we have time:
- Flying obstacle that moves in a limited part of the screen X-Y directions
- Add sound
- Warning blinking lights for certain obstacles
- Add obstacles to duck for

Solution

Based on the Main requirement section above, we can divide the project into several parts: implementation of the start page, the game logic, and highscore page.

Start page

Use buttons to navigate the menu. User input needs to be handled for this. Depending on what menu choice is made different things need to happen on the screen, such as starting the game or showing the high score board. For the High Score board we display X highest scores and their initials on the screen.

The main game

Generate the next section of the track before it is shown and continuously do this as well as printing it out and shifting the track to the left. For the track we need to randomize obstacles (with some kind of intervall so they are possible to avoid) and place them. The track will only move on the X-axis.

Handle user input, to move the character. This affects the screen immediately and should not affect the continuous printout of the track. For one button press the player character should jump, and for another it should dash forward to break an obstacle. The character will be able to move on both the X and Y-axis. If we have time we might also implement the ability to duck from some obstacles.

High score

After a game, the player will be able to insert their initials, via the buttons on the chipkit. Save the initials and the time to the High Score board. We will use a timer to count the current score.

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Verification

Play some times more than the maximum on the high score board, so that we can see that it updates correctly. Intentionally crash into all the different obstacles, to see that they work as intended. Try pressing the wrong buttons, to verify that they do not disrupt the game, as well as shift the switches. Try inserting the same initials for different scores, this should work, the same player can play more than once and players might have the same initials as someone else.