Dino Run Proposal

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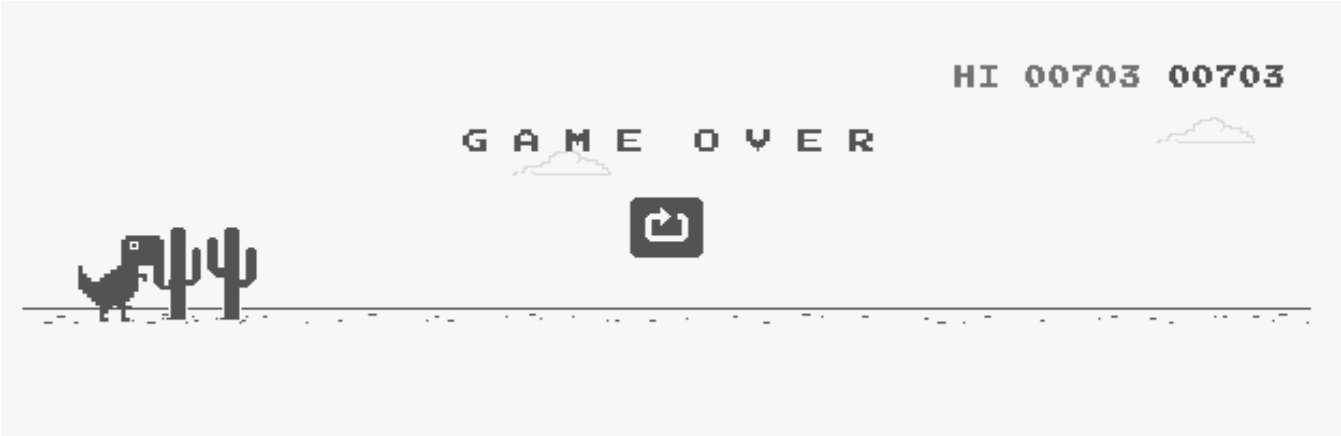

Project Overview: In this project we will aim to recreate the Dino Run game on the FPGA. The game will consist of basic character movement, obstacle detection, and a running score system. We will use an up arrow key to make the dino jump and a down arrow to make the dino duck. The game will end when the character collides with an obstacle. The game will run entirely on fpga hardware and a VGA display.

Design Outline:

2D Side-scrolling
○ The character should stay in the center of the screen while scrolling.

Hit-box Detection
○ The obstacles include cactuses and pterodactyls. Dino should have proper interaction when hitting the obstacles.

Movement
○ Dino should be able to duck and jump whenever the action key is pressed.

Animation
○ The score should be updated dynamically based on distance covered.
○ Animation should speed up after a certain score is reached to increase difficulty.

I/O Device:

Video Output: VGA

Audio Output: 3.5mm audio jack
Controller Input: Keyboard

Milestones and Plan -

- Step 1:
    - Set up the VGA output to display static
    - Implement dino moving and jumping
- Step 2:
    - Add obstacles
    - Detect collisions with the obstacles and end game
- Step 3:
    - Display Score
    - Test, optimize, add any additional functionality (replay button, high score, etc)

References:

1) https://en.wikipedia.org/wiki/Dinosaur_Game
2) https://pragyasapkota.medium.com/everything-we-know-about-chrome-dino-game-396151c176c7