Simon Says Color Game

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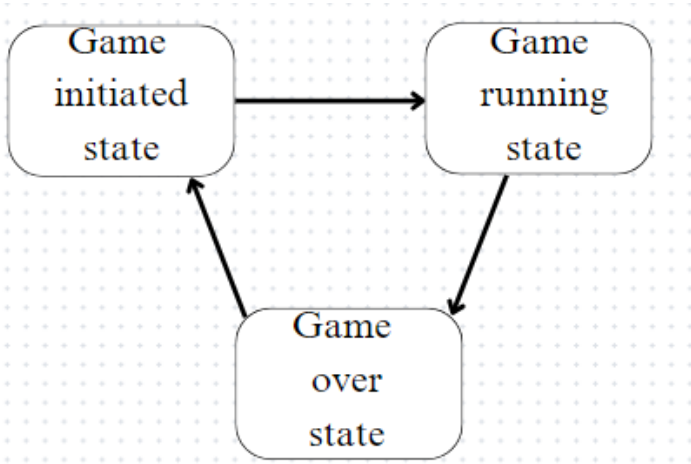
Introduction

This project, developed for the Digital Logic and Design (DLD) course, aims to implement the classic memory game “Simon Says”. Featuring a VGA output display, the interactive game challenges players’ memory and pattern recognition skills by simulating a sequence of four colored lights (blue, green, yellow, red) on the screen that users must replicate. Replicating the wrong color sequence results in the player losing the game.

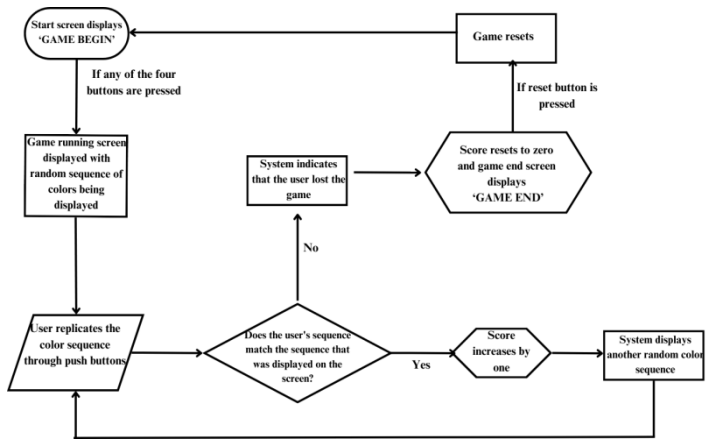
We utilized the BASYS-3 FPGA board for integrating game logic, VGA for displaying the game, push buttons for recording player input responses, and a speaker for playing sound during the game.

The game design follows the logic of a Mealy machine, where the output is dependent on both the current state and current inputs.

FSM State Transition Diagram

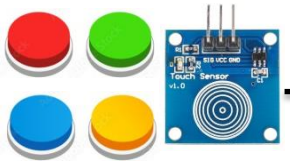


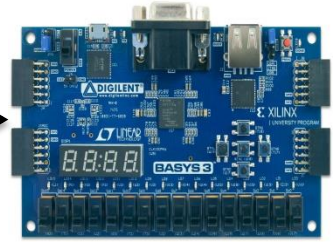
User Flow Diagram



System Diagram

Input:
Push buttons/touch sensor

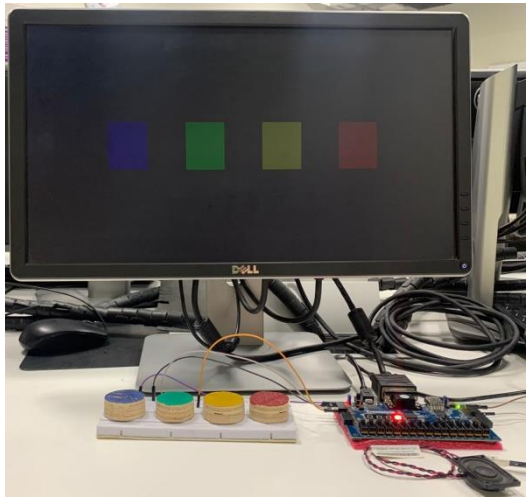




BASYS-3 FPGA board

Output:
VGA display & sound

Result



Hardware Resource Utilization