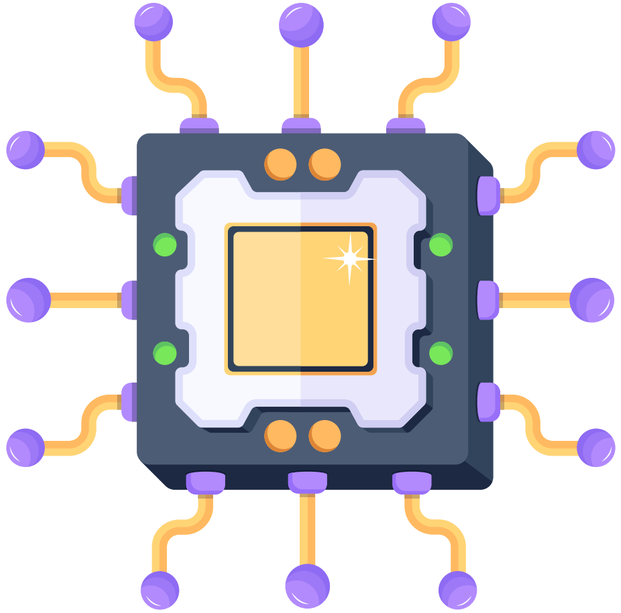


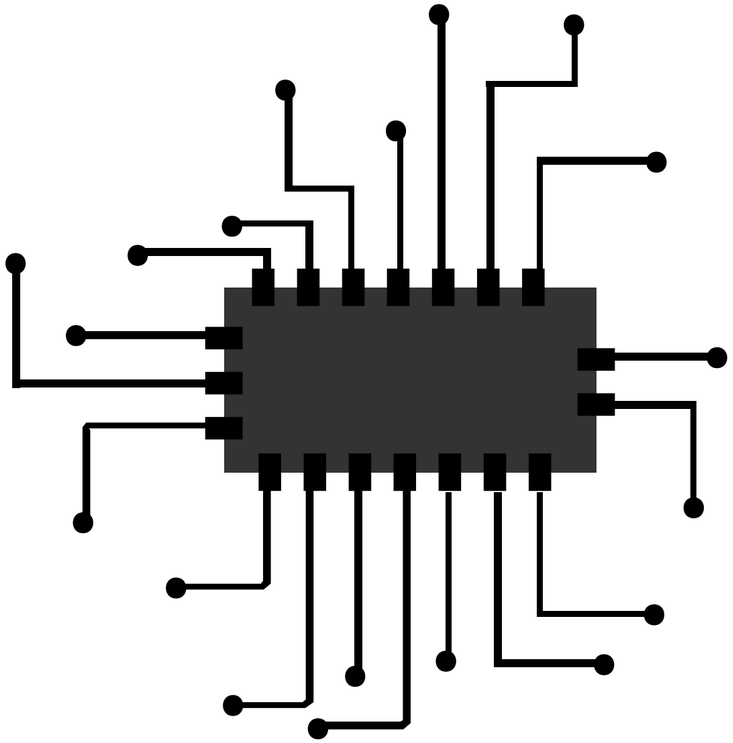
CS210 FPGA PROJECT

Name of Project: Snake & Ladder Game

TeamMembers: Vikash Kumar Verma
Sairam Paila
Vardhan Gacche

CONTENTS

Project Overview



In this Project, We have implemented game- Snake & Ladder on FPGA . The snake & ladder game is an interactive game connected to the DE1-SoC board. On software ground , we have used C language to program the board and in hardware - user interrupts have been used for the interaction.

Apparatus Required

DE1-SoC Board

it is a microcontroller to control all components used in this project.

JP1 Expansion Ports

The General purpose Input/output port used for connection

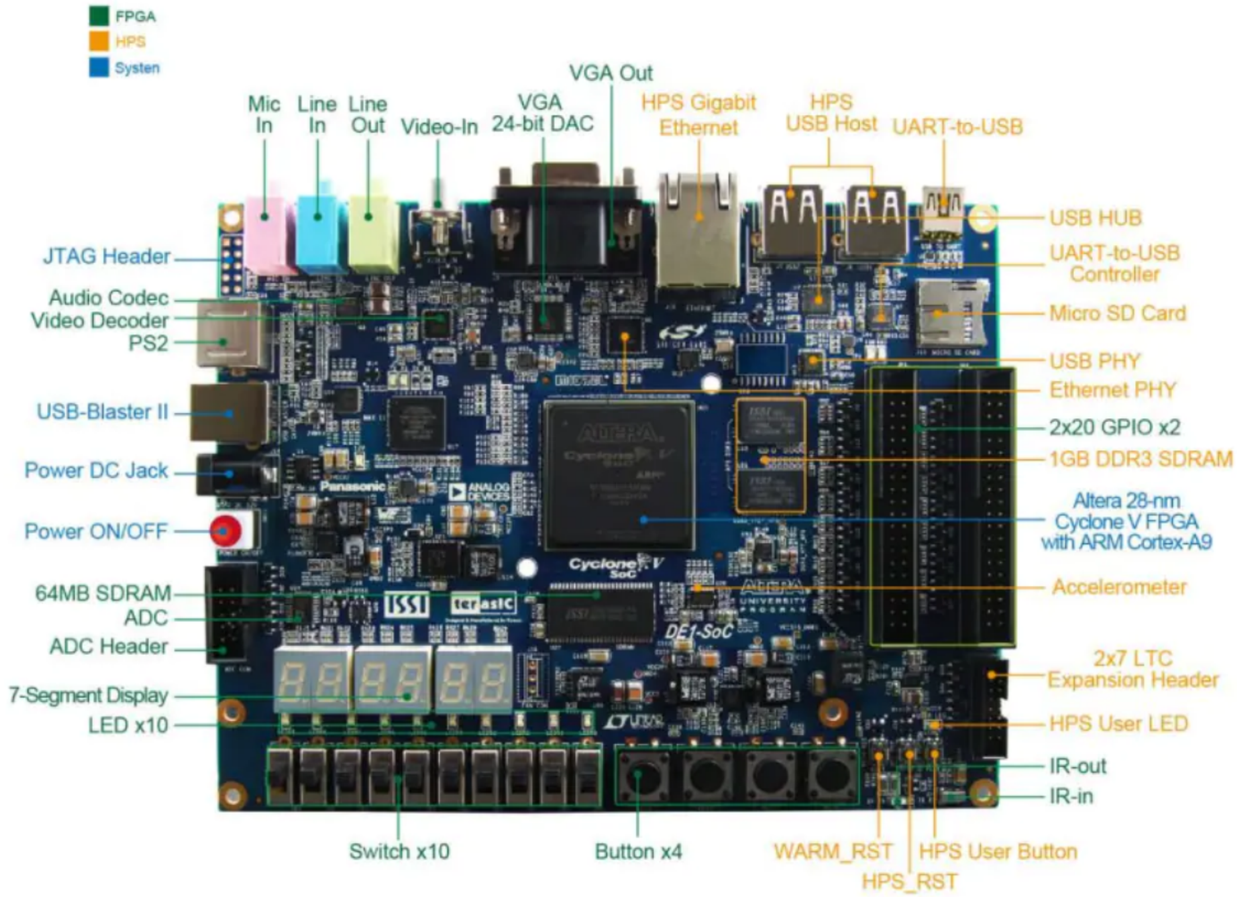
Intel FPGA Monitor Program

The software application to program FPGA board .

Push Buttons

It is used to push buittons for game play and interaction.

DE1-SoC Development Kit



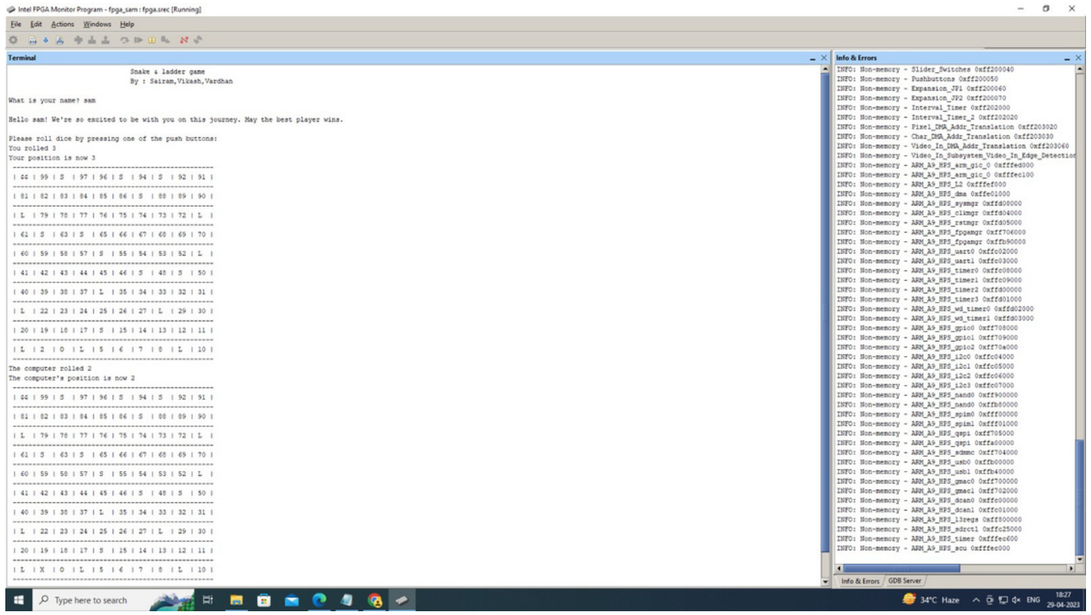
Project Discussion

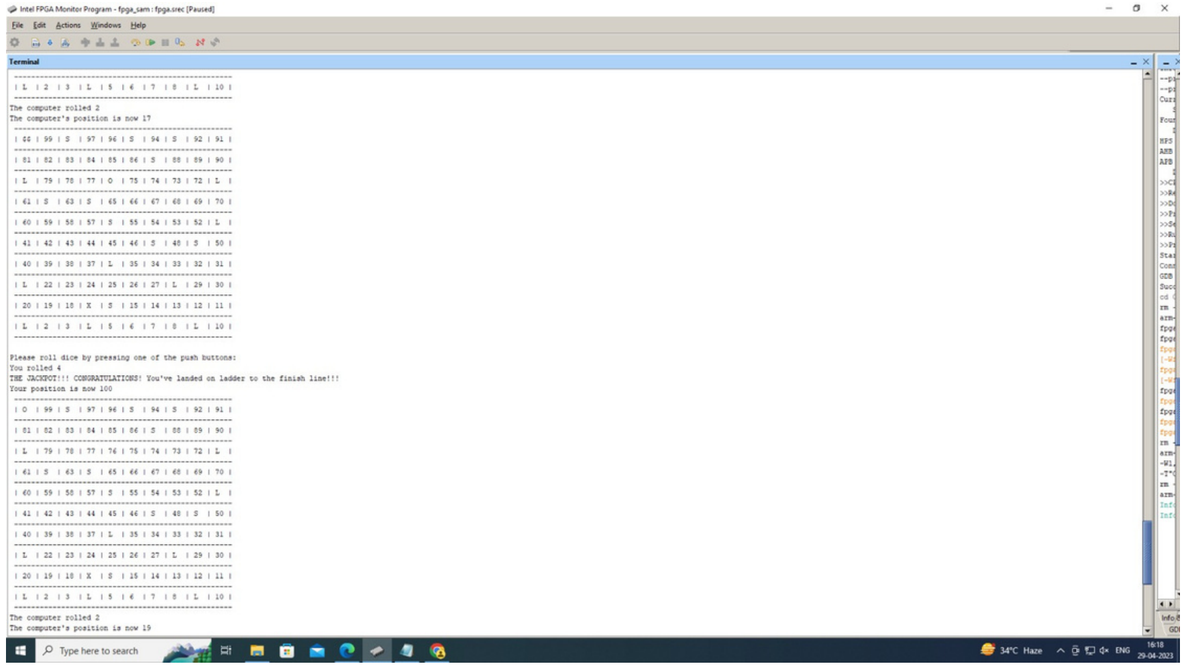
- The game is played on terminal . Its a " computer vs You" game .L denotes Ladder , S- Snake , O- Player's position, X-Computer's position.
- Each player starts from 0 , on each move player rolls dice and his position moves ahead by dice outcome amount . Player gets an additional move if he rolls a "6", else turns are switched. Whoever reaches 100 first wins.
- The ladder positions are -1, 4, 9, 21, 28, 36, 51, 71, 80 while snake positions are -16, 47, 49, 56, 62, 64, 87, 93, 95, 98.
- After each move , the board is printed afresh on terminal showing current player positions, with dice outcome result message.

Project Discussion

- The functions we have used to implement variuos functionalities are :- i) printComputerWon() , printPlayerWon()- to display winning art ii) printSpace() , printBoard() , printBox():- to print board at each instance iii) playRoll() , nextMove() , playerTurn(), ,cpuTurn() , movePlayer(), moveCPU() , rollDice() , init() :- to roll dice so as to generate a random no from 1 to 6 and move positions accordingly iv) config_GIC() , config_HPS_timer(), config_interval_timer() :- configurations for the timers, interrupt service routines, and exceptions.
- To avoid generating repeated dice outcomes , we have initialised random function with seed with time(0).

Images Overview





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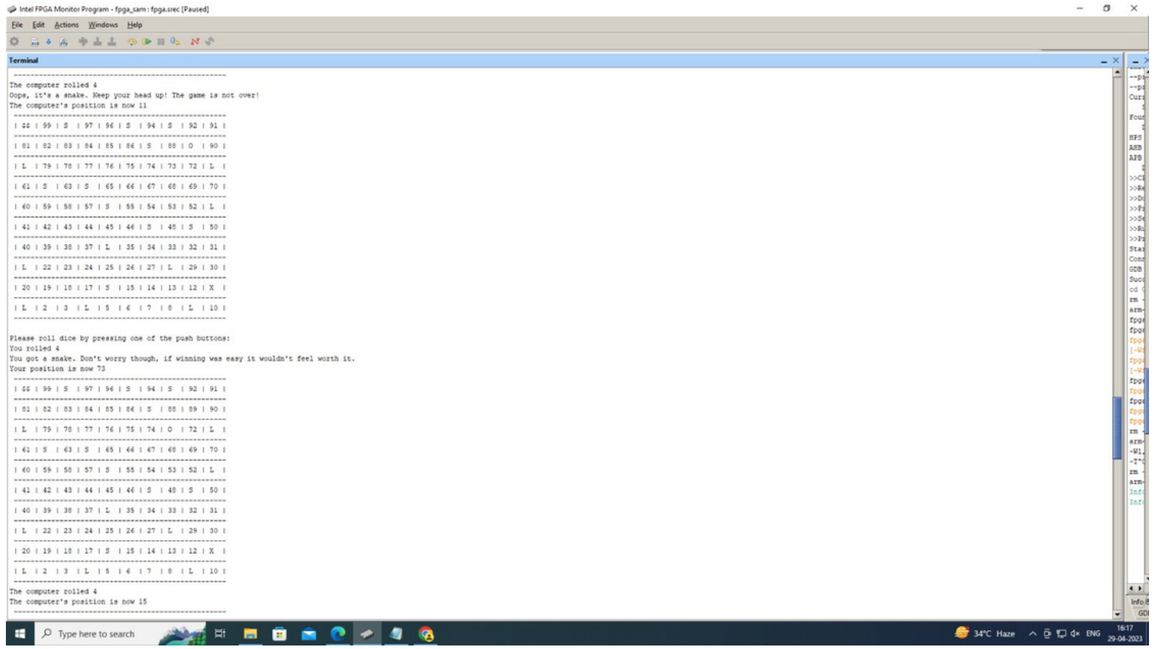

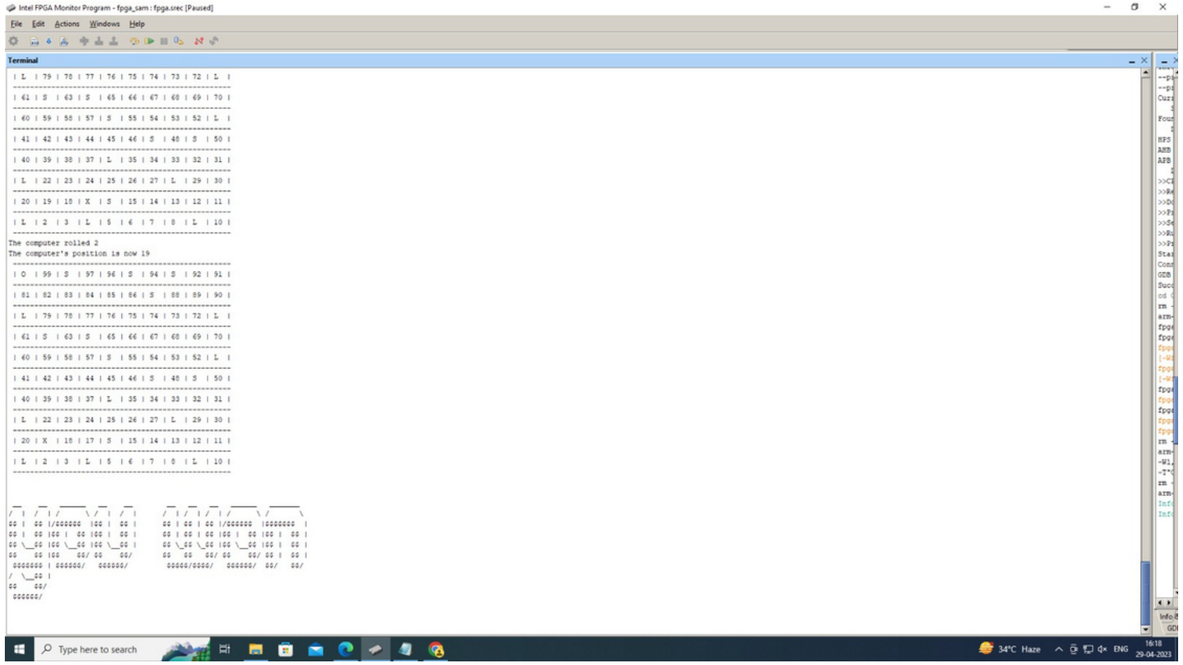

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THANK YOU