CS210 Miniproject – 2 Report

Project Title: Block Smasher

Video Demo: <https://www.youtube.com/watch?v=OTu4ny8CNes>

I have developed a game in C language which I have successfully tested over a DE1-SOC board. Functionality of “graphics display through VGA port ”, “push buttons” as well as “Seven segment display” of the board have been utilized.

Introduction:

The game is a single player game which consists of a ball, a slider and multiple randomly placed blocks. The larger blocks have blocks of smaller size embedded in them which show up on the screen when the larger block is destroyed.

The ball in the game should not hit the bottom level else the user loses. The user has to block the ball from hitting the ground level by controlling the slider which can move only in the horizontal direction. The slider blocks the path of the ball and makes it rebound following a perfectly elastic collision. The other blocks in the game follow the same law too. When the ball hits a large block, a smaller block appears in its place which is worth lesser points. The game frame also consists of an undestroyable wedge which adds to the difficulty of the game. Note that the side and the upper walls are free to have collision.

Controls: (Using the Push Buttons)

The slider can be controlled by using the push buttons on the board. The KEY0 on the board moves the slider to the right and the KEY1 moves it to the left. Pressing both or neither of them keeps the slider motionless.

The scoring system: (Using the Seven segment display)

When the ball hits a larger block, it gets destroyed and the user gains 100 points. A new, smaller block appears in its place which is worth 50 points. The game stores the maximum score of a particular session and displays it whenever a new game is about to start. The current score is also displayed on the seven segment display while the user is playing the game.

Key Features:

1. Implemented a perfectly elastic collision following all the laws of physics so that it looks more impactful.
2. Implemented DFS algorithm in destroying the blocks so that it follows a visually amazing pattern when destroyed.
3. Smooth Slider and Ball motion using efficient C algorithm.
4. Scoring system which records and displays High-Score of each Session on the seven segment display.