

Project Proposal: Breakout game on DE1-SOC

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Introduction

In our Breakout Game, as shown in the below picture, there are many rectangular bricks on the upper side of the screen and one ball that could bounce around. One piece of brick will disappear if it is hit by the ball. The player can control a paddle at the bottom to bounce the ball back until it eliminates all bricks. If they miss the ball, the player will lose one hp, and there will be up to three hp each round. We will build this 2D Breakout Game using Verilog and C language on our FPGA board.



Method

Our project's main idea is to combine software and hardware.

1. Hardware design

Receive the player's input and render the output for display. Hardware Components include three parts.

- DE1-SOC board
- VGA monitor- display color graphics for the video game(game's output)
- Keyboard- control the left and right movement of the paddle (game's input)

2. Software design

Software contains the main logic of the game. Send output to the hardware and operate based on the received hardware input. Software Components include two parts.

- Game control implementation- control the whole game
- Game's physical logic implementation- paddle, ball, bricks, score

Schedule

Time	Task
02/28 - 03/16	Hardware design & Design Document
03/07 - 03/ 20	Hardware Components Implementation
03/21 - 04/ 03	Breakout game in Software part Implementation
04/04 - 04/ 23	Debugging at the hardware/software interface
04/24 - 05/02	Final report