

Snappers - An Educational Shooting Game

CSEE 4840 Project Proposal - February 2012

Yuhan Dai

Electrical Engineering Department
yd2233@columbia.edu

Lianyi Ding

Electrical Engineering Department
ld2504@columbia.edu

Dian Wang

Electrical Engineering Department
dw2504@columbia.edu

Chi Zhang

Electrical Engineering Department
cz2244@columbia.edu

i. Abstract

The main goal of the project is to implement a video game **Snappers** which was originally developed by Mikhail Eliseev in 2011. The project will be implemented on Altera Cyclone II FPGA with the development of the game strategies done in a combination of both hardware (in VHDL) and software (in C).

ii. Introduction

The game we intend to design in this project is a single player video game and we have this game application running on one machine. The object of a typical game would be to clean the snappers (which can be designed into any different configuration compare with the original game) in the screen. We will be mapping the position of snappers, the players' hit times and we have a screen somewhat similar to the original game base. The application will be a C program that will control the application layer of the design and VHDL describes the necessary hardware for it. The players will learn how to play by following the tutorial instruction. It requires thinking, determination and trial-and-error. Here is the original sample of this game:



iii. Design Of The Game

We plan to implement the following interfaces and features for the game:

- Two changes to hit on the snappers and snappers will explode after one or more hits.
- Each explosion will produce four bullets in horizontal and vertical

directions and each bullet will have the same effect as one hit on the snappers.

- Snappers with different colors will need different times of hit to explode
- Implementation of design controls for respective players using the PS2 keyboard as that would be easier to control for the players

iv. Actions and Milestones

Action 1/Milestone 1

The very beginning step will be setting up the peripherals of the project and hardware. After that we have to establish the model of snappers (of different levels), bullets and the background.

Action 2 /Milestone 2

In this stage the VHDL programming part will be studied in detail. Then we will implement some basic features of this game, for example: exploded snappers can reject bullets and when the bullets meet snappers, the snappers will explode after enough hits.

Action 3/Milestone 3

The goal of this action is to add other features such as sound and animation effect (if possible). And there will be tutorial instruction and several levels of this game.

Action 4/If time permit

Adding features:

Ethernet-based game between two players over two different machines: two players begin to play at the same time, and compare the results. The player finish more levels wins. If the levels are the same, then compare the time used. The player that uses less time wins.