

Score 000

Time 3:48

level 001



## The Project

In our 3 week project we were going to make a program on a FPGA using VHDL and C programming language.

The VHDL was used to create hardware components, while the C program used the created hardware.

We decided to make the classic game Breakout.

## The Game

The game looks like the picture to the left. The paddle is controlled via a keyboard to reflect the ball towards the blocks above.

The bottom line of blocks needs to be hit multiple times to get destroyed. Every time they are hit they change color.

If you clear the level or the timer runs out you move on to the next level. Every level has a higher score per block and faster ball



## Design

The paddle and the ball are created in VHDL and the C program moves them around.

The blocks are generated in C code.

The text and counters are shown by selecting letters stored in a VHDL memory and placing them on different parts of the screen and updating them in the C code.

The whole game is presented on a computer screen connected to the FPGA.

## The Conclusion

In the end we had a running game. We had not only fulfilled our minimum implementation, but also most of our extensions.

The only thing we think could be added to the game is a high score.

Overall we are very satisfied with the end product and have achieved more than expected for a very small group.