

SPACEWARS

Intro

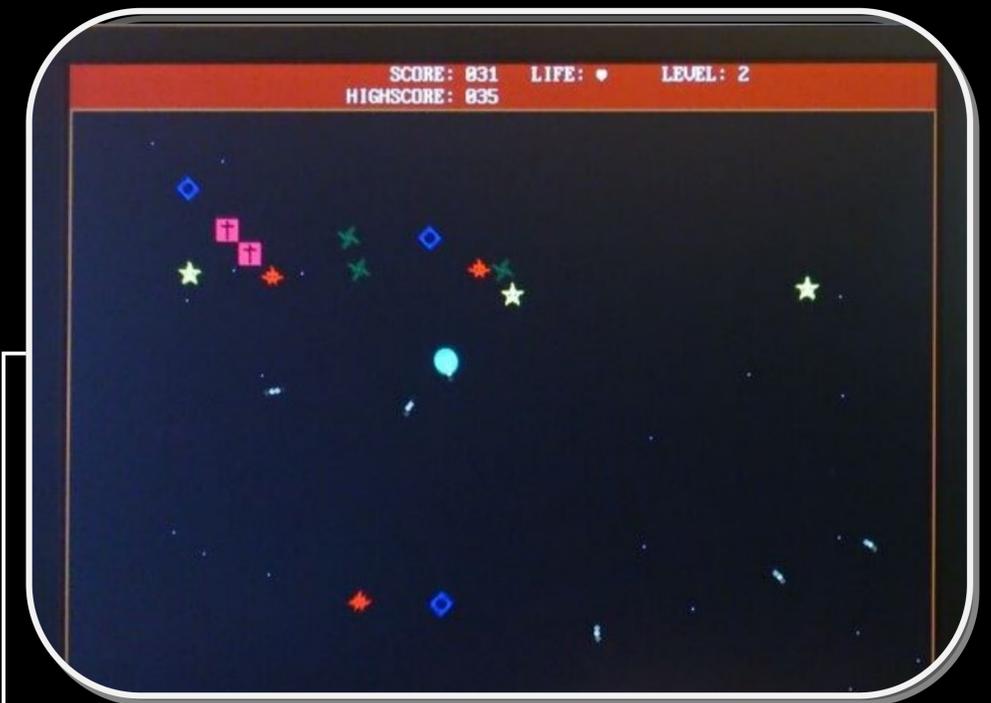
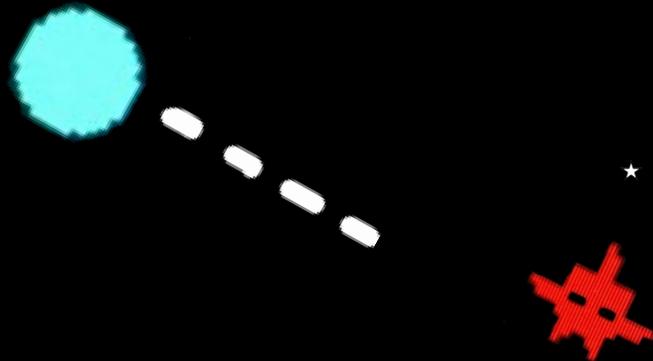
Our main objective was to build a computer and design a small game to run on it. The computer components were partly given to us. We chose to design a game which reminded of another game called "Geometry wars".

Game rules

The player starts as a ball in the middle of the screen, and starts moving forwards. The keyboard controls the direction of the ball. Shots are automatically fired in the direction the player is moving. Your job is to shoot the incoming monsters. If the player shoots a monster he gets a point, if the monster hits the player he loses a life. When 3 lives are lost, the game is over.

Key features

- 640x480 pixel resolution.
- 32K words of memory in total
- 16K used on the game
- Fluid motions
- 8 bit color
- Highly advanced memory mapping



Hardware

The connections between the different components are done in VHDL. VHDL is used to describe the connections inside electronics. When a component is given, we know the signals and how it works. We assemble the components for the whole system to work.

Software

The software for the program is written in C. The C logic keeps track of all the movemoments on the screen, the score, the players life and detecting when a player gets hit by a monster.

HEX	DECIMAL
X0000	0
...	...
X00FF	255
X0100	256
...	...
X01FF	511
X0200	512
...	...
X04FF	1279
X0500	1280
...	...
X3FFF	16383
X4000	16384
...	...
XFFFF	65535

X4000	16384
...	...
X403F	16447
XFE00	65024
...	...
XFE06	65030
XFE18	65048
...	...
XFE1A	65050
XFE1B	65051
XFF00	65280
...	...
XFFFF	65343

TRAP VECTOR TABLE	
INTERRUPT VECTOR TABLE	
SYSTEM RESERVED	
USER PROGRAM	
SPRITE ROM	
I/O ADDRESSES	
UART	
KEYBOARD	
V SYNC	
Vram (Tiles)	

VGA

USB

