

Car Racing Game

Jing Shi js4559; Yifan Li yl3250; Siwei Su ss4483; Mingxin Huo mh3452

Introduction

For this final project, our group would like to implement a Car Racing Game based on the SoCKit board and Linux system. We try to imitate the existing simple car games and based on the basic design we would upgrade our car game by adding other special elements. The object of this game is to survive as long as possible and get to the finish line in the shortest possible time while avoiding the obstacles on the tracks.

To demo what we finally want to accomplish, we refer to existing car racing game, which is showed in the following picture.



<http://image.baidu.com>

As labeled in the picture, the main screen of Car Racing game consists of following listed elements

Elements	Introduction
Player's car	The car that player can control
Opponents	The cars that compete with the player controlled by computer. Act like obstacle for player.
Road	The racing road which can change dynamically, limiting the border for player.
Infor Label	The information label like ready, go, lap, rank, and countdown.
Speed	Showing the current speed of player's car
Background	The background picture making the game more real.

Functions

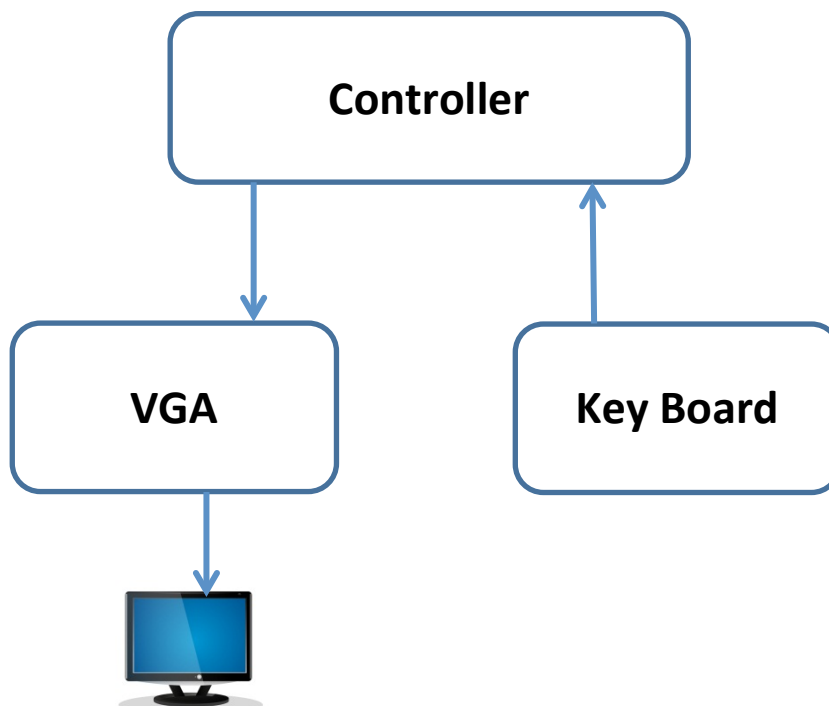
According to above introduction and normal car game component, our car game should implement following basic functionalities.

	Accelerate/decelerate,	Control the speed of the car
Key Board	Turn left/right	Control the speed of the car
	Road changes dynamically	Rendering the road to create the border of the road
VGA screen rendering controlled by program	Moving opponents	Dynamically move the opponents' car to create the obstacles
	Information label	Show the interactive messages
	Speed Panel	Show the speed

Software and Hardware

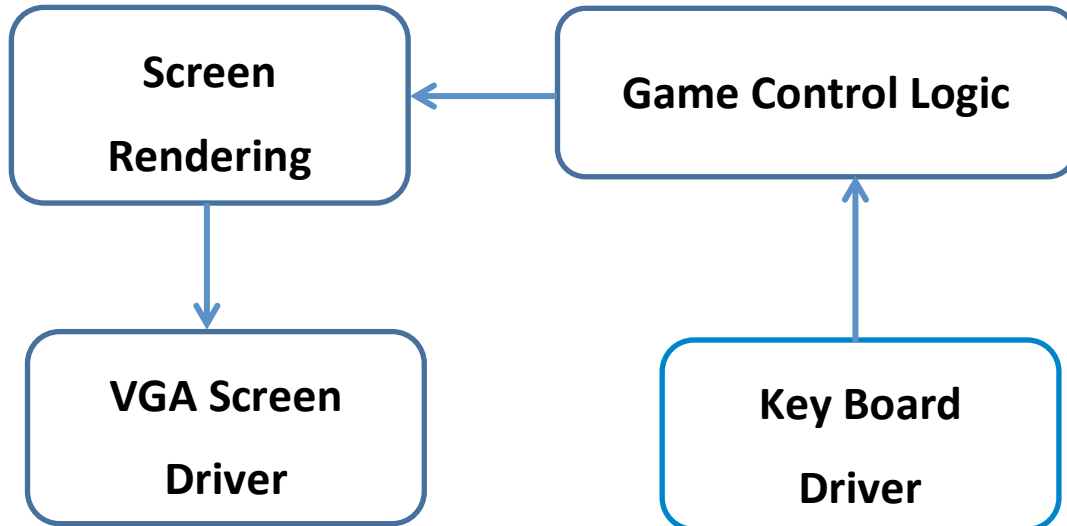
Hardware

The overall design of our car game in terms of hardware is demonstrated in the following picture.



Software

In terms of software, the car racing game can be showed as:



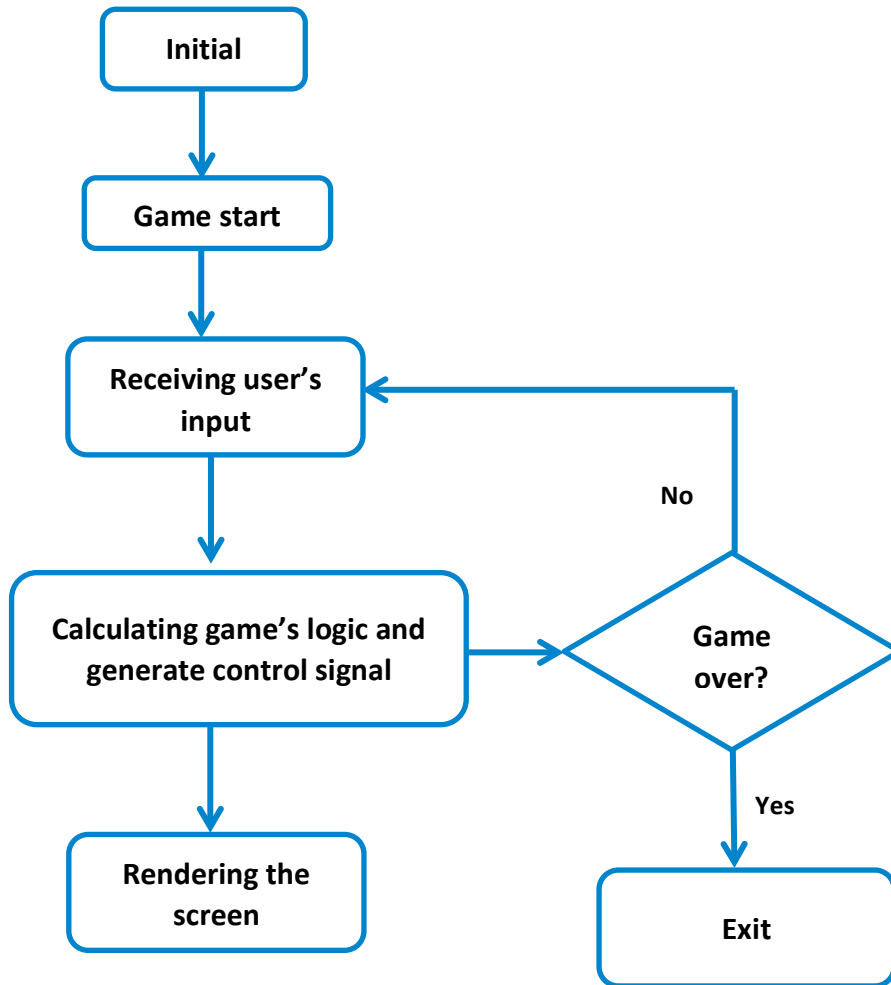
Hardware and Software interface

The basic hardware modules are keyboard and VGA screen, therefore, the interface is to connect this two modules with software. To achieve this, we should implement the two hardware drivers.

Driver	Basic implemented function
Keyboard	Detect accelerate, decelerate, turn left and turn right
VGA screen driver	Draw line, car, text message, figure with different colors.

Flowchart

The fundamental running order of car racing game is simply demonstrated as following flowchart.



Future works

When implement all those basic functions stated above, we can focus on improving the other aspects of this Car Racing Game. For examples, we would like to add music and some audio effect to make this game feel more real. Also we can improve the playability by implementing some extra score calculation or bonus, for instance, a bonus is given when the player drives the car to a certain distance, and then the bonus icon will be displayed on top right of the screen. Moreover, we can make a score ranking to attract players to compete with each other.