PROJECT PROPOSAL

CENG3006, Introduction to Embedded Systems
Spring 2020 - 2021

SNAKE GAME

Team Members: Fatma Karadağ (ftmakrdg48@gmail.com)
Ayşe Ceren Çiçek (cerencicek4899@gmail.com)
Peteksu Karpuz (Peteksukarpuz95@gmail.com)
Gizem Pesen (pesengizem@gmail.com)

Team Name: Ad Astra

Abstract

Our main goal in this project is to design a fun snake game that can be controlled with a joystick. In the design part, we will connect the joystick, 8*8 led matrix, and other auxiliary materials to the Arduino. We will use c programming language to implement the game. At the end of the project, the player will be able to play a game where he/she can control the snake with a joystick. With this project, we will learn Arduino basics, how to connect a thumb joystick in a circuit and taking readings from it, how an 8*8 Led Matrix display works, and importantly how embedded systems works.

1 Introduction

Snake is the common name for a video game concept where the player maneuvers a line that grows in length, with the line itself being a primary obstacle. The concept originated in the 1976 arcade game Blockade. Snake game became the favorite game of all children of an era. One of the reasons why the snake game is so popular; Nokia was putting the game on most of their phones using the 'Snake' name. The subject of this project is to simulate this game on a led matrix with Arduino and let the player control snake with a joystick.

2 Proposed Embedded System

In this project, we will use an 8x8 Led matrix display for displaying the snake and its food dot, Joystick for giving directions and starting the game, and finally an Arduino UNO to control the whole process.

Codes will be written in the C programming language. The player controls a dot, square, or object on a bordered plane. As it moves forward, it leaves a trail behind, resembling a moving snake. The user needs to start the game and the snake starts moving on the display. The player

attempts to eat items by running into them with the head of the snake. Whenever the snake reaches the food dot or eats the food, the score increases each time. Each item eaten makes the snake longer and increases the speed of the snake. If the snake strikes at any wall or reaches the end of the LED matrix, then it would end the game ("Game Over"). Then the user needs to start the game to play again.

3 Embedded System Kits

- Arduino Uno
- USB A-B cable
- Breadboard
- Thumb Joystick
- 8 x 8 LED Matrix
- Max 7219 Dot Matrix Module Connecting wires

4 Detailed Project Plan

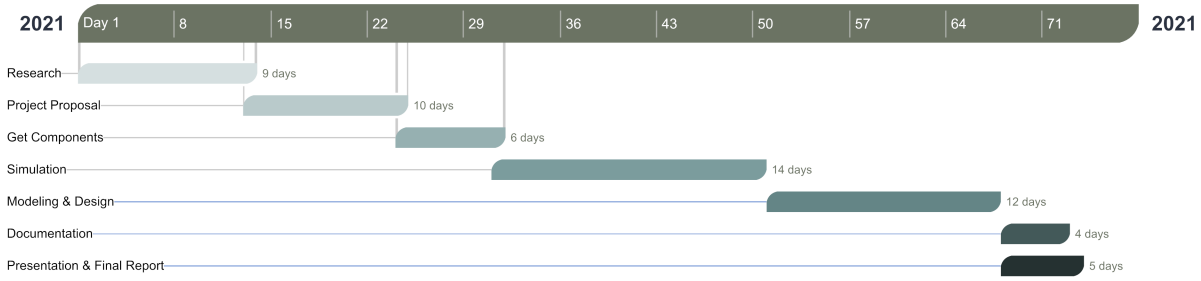

Figure 1: Project Plan
(These dates might change due to the course schedule.)

References

[1] Snake Game Wikipedia

[2] Information about Arduino

[3] Detailed information of Arduino Uno