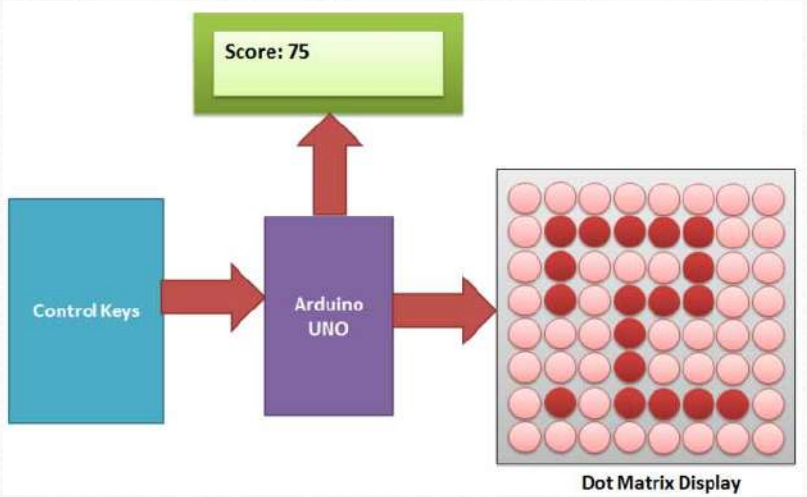
EW-1 PROJECT

Group-25

SNAKE GAME

Playing the game

- When we power up the circuit, first we show a welcome message and then a “Press Start To Play” hint on the LCD.
- After this, LCD shows the score as zero and dot matrix display shows two dots as snake and a single dot as food.
- Now user need to press the middle button to start the game and snake start moving in upward direction by default.

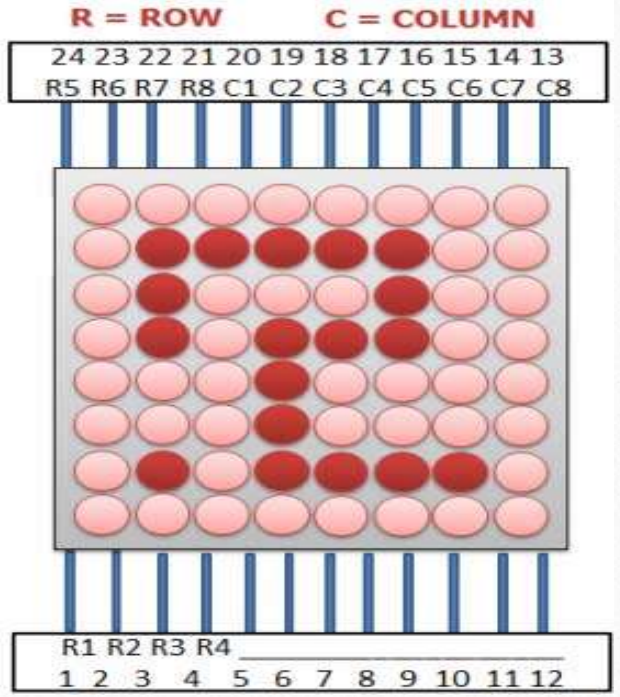


Playing the game

- Here we have used five keys (push buttons) namely Left key, Right key, Up key, Down key and Start key.
- Whenever the snake reaches to the food dot or eats the food, score increases by 5 points each time and the Snake length is increased by one dot (LED) each time, also snake speed become faster than before.
- And whenever snake would strike at any wall or reach at the end of LED matrix, then it would end the game ("Game Over"). Then user needs to start game again by pressing start key.

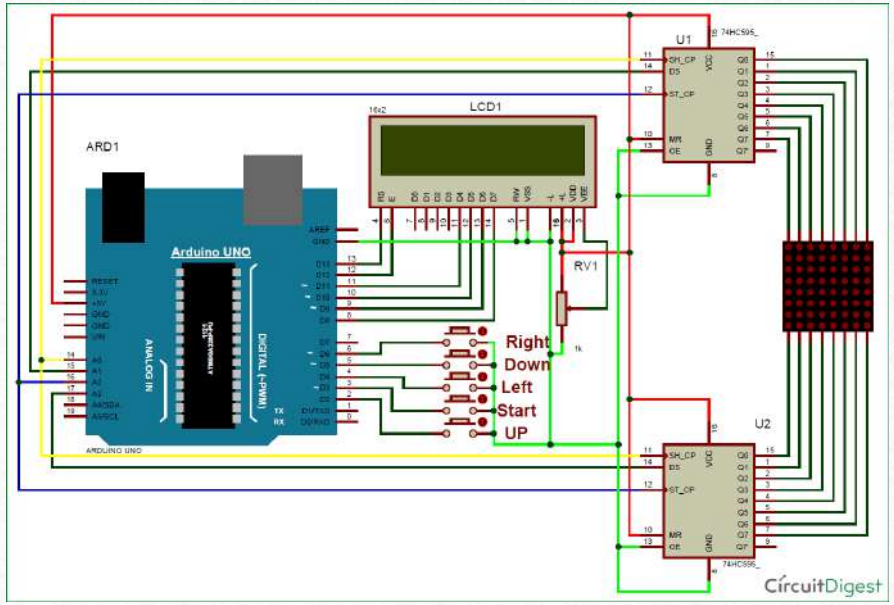
Components required

- Arduino UNO
- 8x8 LED Dot Matrix Display
- Shift Register 74HC595
- 16x2 LCD
- POT 5K
- Push Buttons
- Connecting wires
- Bread Board
- Power Supply



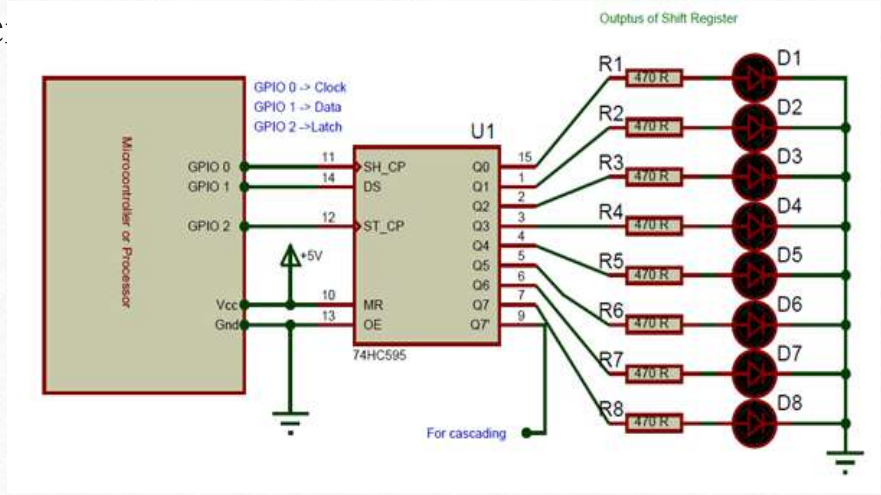
Circuit working

- First we connect the Arduino with the push buttons and also connect the pins of Arduino to 16X2 LCD display.
- Push buttons help to control the movements, starting and stopping of the game. LCD displays the score.
- The potentiometer connected to the Arduino helps to control the speed of the movement of snake.
- The most important connection of this circuit is the connection of the 8X8 LED display on which the game is played to the shift registers.



Shift registers

- We use two 74595 parallel in/ parallel out registers. One of them controls the row movement and othe controls the column movement.
- Control pins of the registers are connected to the Arduino.
- We connect the DS pin of registers to Arduino which takes the serial input from Arduino to know where the location of the snake is and then manoeuvre it to move the required direction once we press the push buttons.



Programming the Arduino

- To write this Arduino snake game code, first of all we include header files and define pins for LCD. And then define some pins for direction buttons and data pin for shift registers.
- Then we initialize all the things that we have used in the program. In the *setup* function we initialize LCD, giving direction to input output pins, pull-up the bits and showing welcome message on LCD.
- And then we start game in *loop* function.
- Then we program the code for controlling the game using push function.
- Finally we display the game over message on the LCD.

Work done till now & division of work

- We have collected the components and are waiting for the 8x8 LED matrix.
- We've gone through the circuit connections and have started working.
- Division of work-
- Harshwardhan Prasad- Programming+research+theory
- USS Sasanka- Circuit+collection of material+presentation