EW – 1 PROJECT

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TOPIC – SNAKE GAME ON ARDUINO

TABLE NO 4 NILIGIRI 114

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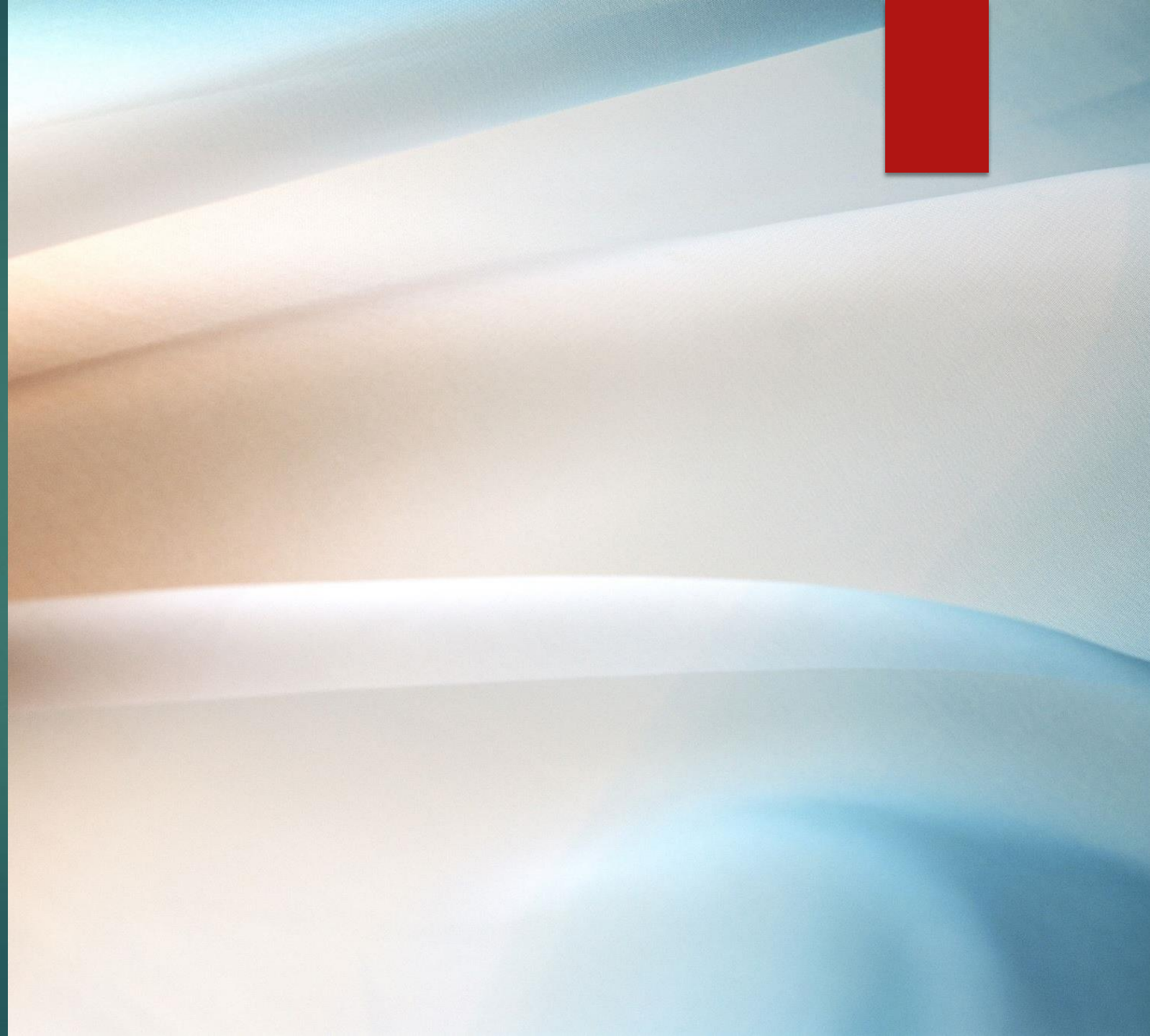
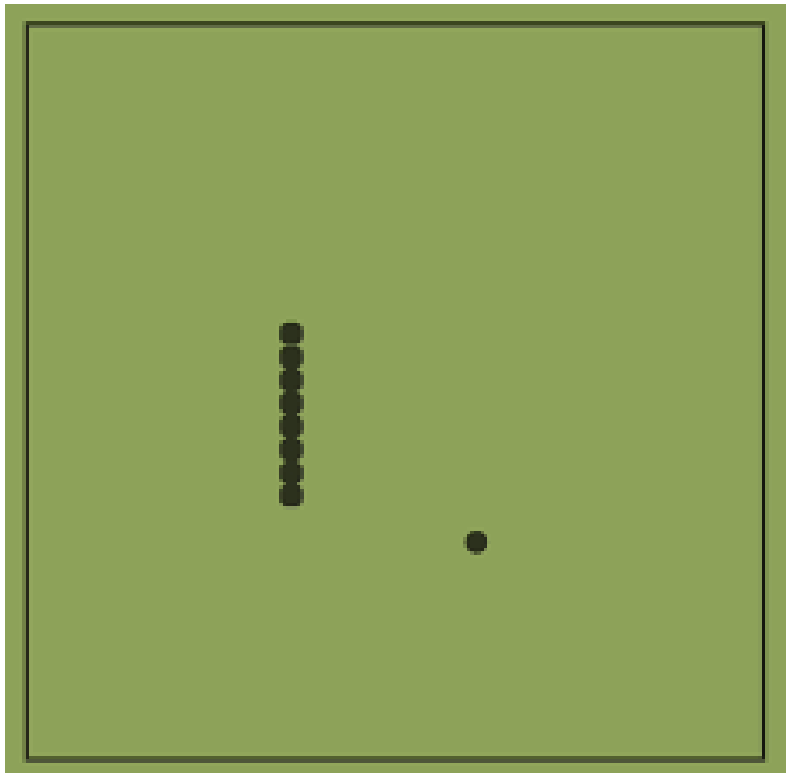


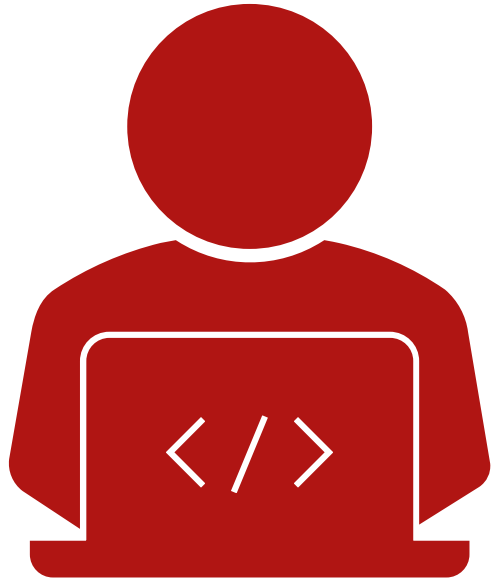
Our Project Details

- Make a classic arcade game “Snake Game” using Arduino and display on the LCD screen.
- Generates apple at random position and the length of the snake increases as it eats one.
- The snake moves in a continuous direction and can be steered using a joystick.
- As the snake eats more food, the game may increase the speed to make it more challenging.
- If it collides with itself or the walls, the game is over. But since our display is small, we are passing the snake through the wall.



Our Motivation to do this project…

- We were given an option to change our project, but we did not and proceeded to do it because we wanted to test our coding and algorithm skills, face new challenges (which we did), chance to acquire new skills, deepen our understanding of the working of Arduino and various functions related to it.
- This project is a great opportunity for us because it helps us in understanding the working with microprocessors like Arduino. Working with it now will help us understand how to use it in different projects in the future, making it a great learning experience for us.
- Also, who doesn't enjoy playing a game which was made by them!



Components Used

- 16 * 2 LCD
- JUMPER WIRES
- I2C MODULE
- ARDUINO UNO AND USB CABLE
- JOYSTICK
- PUSHBUTTONS (MIGHT NEED THEM IN FUTURE)
- BREADBOARD

Proposed Solution

Testing the components recieved

Make a pseudo code

Write a code according to it

Scoring system and

Developing gameplay

LCD output & game status.

Additional features (restart, pause, poison apple, increasing pace of the game).

Final tweaks and project submission

Things we have done so far…

- Tested the LCD, Joystick and other components which we used.
- Looked up online about the working and understanding of the LCD and I2C module.
- Worked on the code and tinkered on it for a lot of time.
- Made tinkercad also, but it doesn't have the required header file included on the software. So made it using hardware and works as expected and can add more interactive features.
- Implemented the restart option after the game
- Tried adding scoring system, but facing a few difficulties in the game flow.

```
// head in current direction
if (direction == 0) snakeY[0]--; // Up
else if (direction == 1) snakeX[0]++; // Right
else if (direction == 2) snakeY[0]++; // Down
else if (direction == 3) snakeX[0]--; // Left

// going out of screen on left and right side and up and down side
(snakeX[0] < 0) snakeX[0] = LCD_COLS - 1;
(snakeX[0] >= LCD_COLS) snakeX[0] = 0;
(snakeY[0] < 0) snakeY[0] = LCD_ROWS - 1;
(snakeY[0] >= LCD_ROWS) snakeY[0] = 0;



oid placeFood() {
  foodX = random(0, LCD_COLS);
  foodY = random(0, LCD_ROWS);
```

Our direction moving forward…

- Make the snake transition smooth.
- Generate the snake at random position instead from the top left corner every time.
- Add the code for restart, pause, high score and present score.
- Increase the pace of the snake as its length increases(once we are provided with 20*4 LCD. Expecting we receive it.)
- Add features like “poison apple” which spawns randomly along with the food and disappear after a while and eating it immediately ends the game.