# ***Ahsanullah University of Science & Technology***

Department of Computer Science & Engineering



CSE 3216

Microcontroller Based System Design Lab

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**Introduction:** 10-15 years ago when 3d game players were not as available as recent time, we used to play 2D game players mostly. With the enhancement of technology, 3D games became more popular and we lost the taste of those 2D games. So we took a project to make a 2d video games which would bring back the memories of our childhood. Using the basic idea of 2D games and being inspired by the legendary snake game from the black and white era, we're making a 2d video game player with TFT display and Arduino.

**Components :**

**Hardware Components :**

* TFT Screen – use for getting the better GUI.
* Arduino Mega R3 2560 – use as a microcontroller.
* Mini Bread Boards – use to solve the common connections / extra connection between Arduino & other hardware components.
* Buzzer – use for sound effect.
* Male/Female Jumper Wires – use to give connection between two points/ports.
* LEDs – use to indicate status(live/dead)
* Resistances – use with the switch & LEDs.
* Battery – use to supply voltage.
* Push button – use to make the controller (up , right , down , left).

**Software Components :**

* Arduino IDE – for burning code on Arduino Mega R3 2560.
* Proteus –to design the hardware component model.

**Features :**

* The device is portable & hand-compatible.
* Visualization of playing games on a TFT display which helps to get better GUI.
* Basically a 2d game. Snake game , 2 axis movement.
* Built in easy , medium & hard difficulties . After playing & playing when the limits of every difficulties exceeds, then difficulties automatically changed & will increase the snake speed.
* On the runtime user get different types of food (normal , Bonus , harmful) which helps to improvement of the score.
* On the runtime when any level is passed successfully then another level will be visible on the screen where only barrier/walls change their place.
* Green led use to indicate the food eating of the snake & red led use to indicate the dead of snake.
* Buzzer helps to give the eat bonus-food sounds (Highly) & to give the snake dead-sounds (slightly).
* Controlled by the push switch (up , down , left , right).

**Future Plans :**

* **Gesture control** – We will try to implement a hand gesture idea in future to control the game which works like a joystick . Our target will be to control the game using a one finger gesture. We will use the Accelerometer sensor which gives the value of the 2D axis so that when we move (up, down, left, right) our finger then it works like as the manual joystick.
* **Add More Game** – We will try to add Different types of game in future so that it will get full features & model of a video game player . Also a user will get different taste from different game.

**Conclusion:** Basically it is a demo of a video game player which we used in our childhood. This game player will help to pass boring time & specially child gets enjoyment from this tiny Machine.