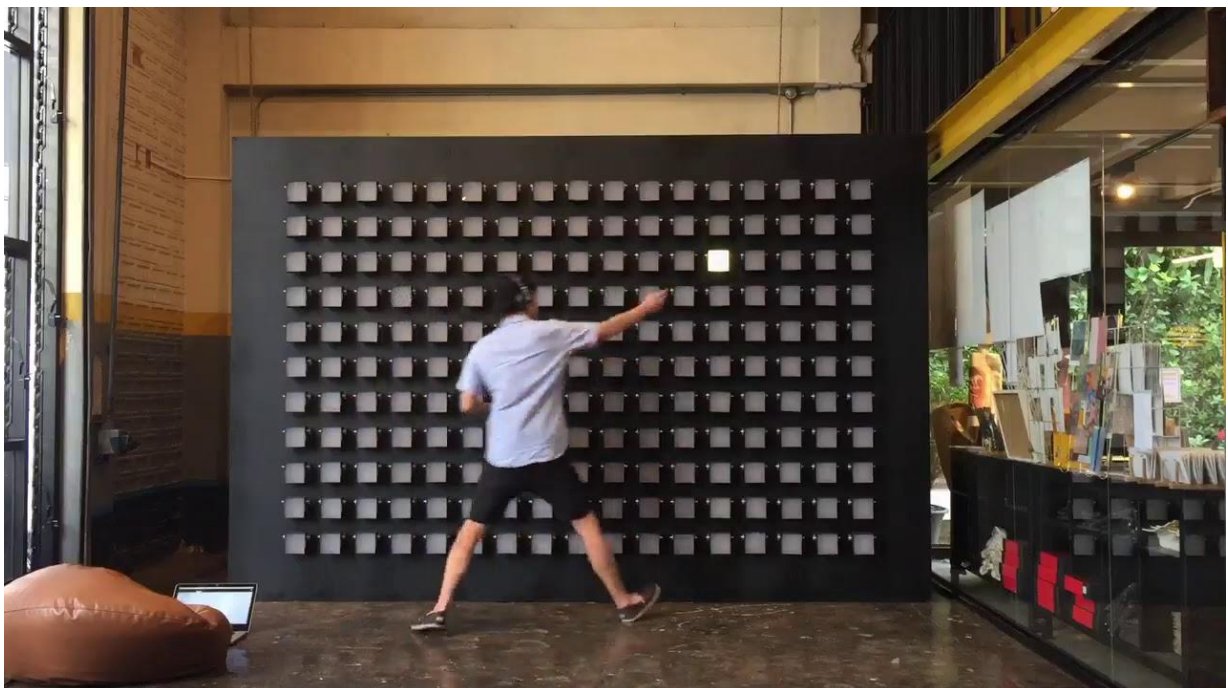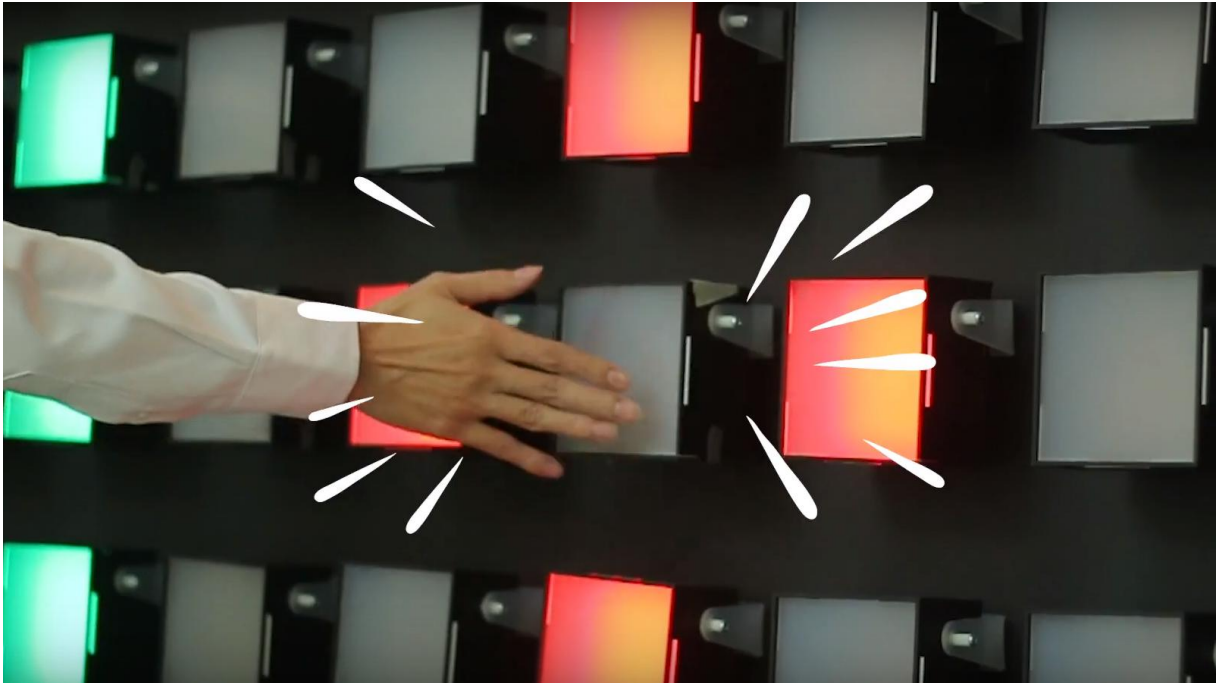| Name : Hasti Hajipara	RollNo : 92100133052

Pixercise

1. About Pixercise Project of other
2. About Piezo Sensor
3. About Our Pixercize Project

➔ **About Pixercise Project of other**

➢ **Pixecise Using LED :**

➔ Discription:

- Here is the another use case of my Click Canvas. Can an interactive wall that was intentional to be use for creativity being use for an exercise and to make it more fun by incoporated game play into it.
- This project was being developing to be use in Bhiraj tower (luxury office rental in Bangkok) as a thank you gift for the rental. The brief is Bhiraj tower want to promote work life balance for the office worker. I coming up with this idea can they said OK.
- The graphic for this project was being designed by Wee Viraporn [Conscious' design director]. He also being my partner on this project.
- The way this game work is to press as much green buttons as possible in 30 seconds. My best score is 36 points. Some office workers manage to break my record for 37 points (DAMN).

- **For more information**   **CLICK HERE**

- **For watch video CLICK HERE**

➔ About Piezo Sensor

1. What is Piezoelectric Sensor?

➢ "Piezo" is Greek for "press" or "squeeze" so a piezoelectric sensor effectively measures compression using the piezoelectric effect.

➢ Piezoelectric Sensor is able to generate an output signal from the strain applied.

➢ Piezoelectric sensor converts physical parameters - for example, acceleration, strain or pressure into an electrical charge which can then be measured. They are highly sensitive and very small in size making them well suited to everyday objects.

2. How it's looks?

3. Specification

➢ A piezoelectric accelerometer has a charge frequency response capacity ranging from 20 Hz to 10 KHz.

➢ A piezoelectric accelerometer can have electromagnetic sensitivity of 0.0009 equiv.gm/gm and base strain sensitivity of 0.008 equiv.gm/micro strain.

➢ Piezoelectric force sensors should display a 5-volt full display signal.

➢ Piezoelectric force sensors should have an operating temperature range from -50 to 350 ºC and should have sensitivity of approximately 105 pC/N.

➢ Piezoelectric pressure sensors should have rise time less than 2.0 micro seconds.

➢ The maximum pressure applied by piezoelectric sensors can be 1,000 psi and the voltage measurement range can be up to 5 volts.

➤ Piezoelectric sensors are designed and manufactured to meet most industry specifications.

4. working principle
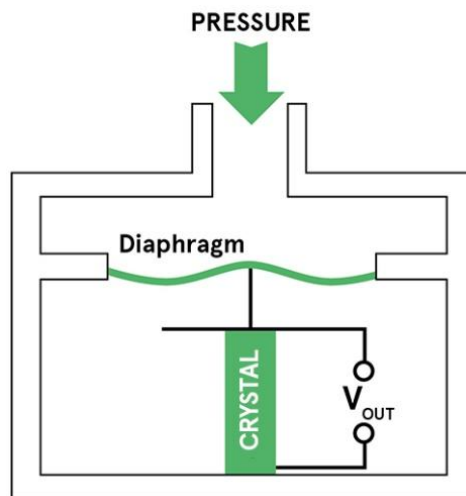
➤ When a force is applied to a piezoelectric material, an electric charge is generated across the faces of the crystal. This can be measured as a voltage proportional to the pressure (see diagram to the right).

➤ There is also an inverse piezoelectric effect where applying a voltage to the material will cause it to change shape.

➤ A given static force results in a corresponding charge across the sensor. However, this will leak away over time due to imperfect insulation, the internal sensor resistance, the attached electronics, etc.

➤ As a result, piezoelectric sensors are not normally suitable for measuring static pressure. The output signal will gradually drop to zero, even in the presence of constant pressure. They are, however, sensitive to dynamic changes in pressure across a wide range of frequencies and pressures.

➤ This dynamic sensitivity means they are good at measuring small changes in pressure, even in a very high-pressure environment.

5. Sensor Circuit
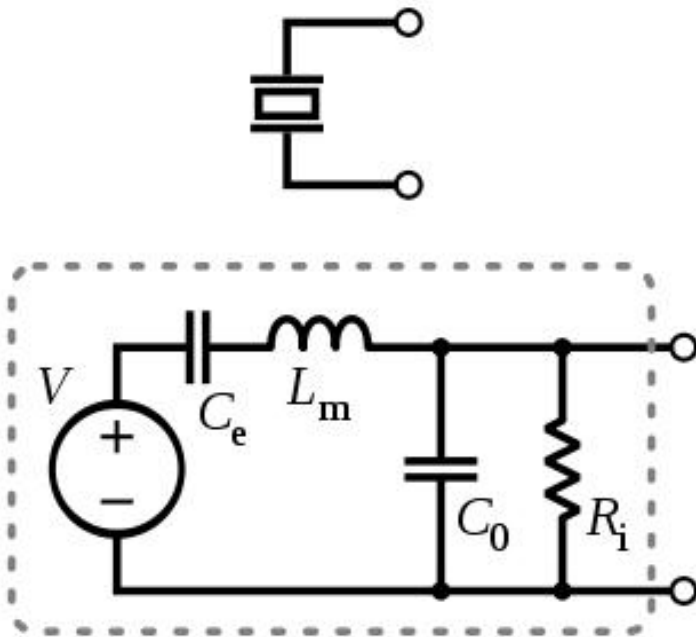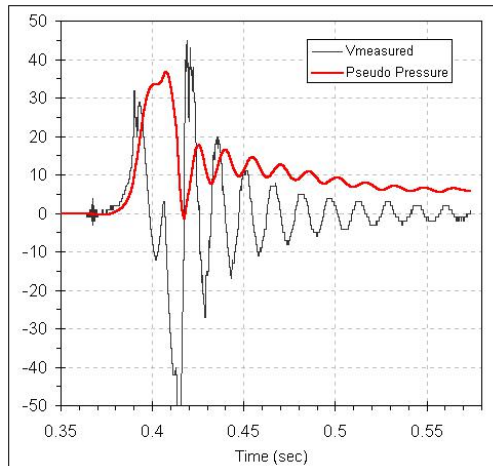

6. Pin diagram of piezoelectric sensor.

Red: +

Black: -

7. Graph

➢ When we tap on piezo, it will generate Graph like this...

➢ And after some time Graph become straight..

8. Piezo Sensor Applications

➢ Piezo sensors are used for many applications, some of them are within everyday objects. For example;

- Intruder alarms
- PIN pads
- Medical devices
- Key fobs
- Alarm Clocks
- Fire alarms
- Carbon monoxide detectors
- Microwave ovens
- Ultrasonic pet training collars
- Ultrasound equipment
- Within microphones

9. USE of Piezo

➢ Piezo sensors are used within many sensors and devices. They are used to convert a physical parameter; for example acceleration or pressure, into an electrical signal.

➢ Piezo sensors are used to measure the change in pressure, acceleration or strain by converting them into electrical charge. They offer very high sensitivity which makes them very well suited to applications within patient monitoring.

➔ **Our small Pixercise Project using Piezo:**

➢ Description :

1. We make the small demonstrations of the big project name pixercise.
2. Pixercise is one device that measure our hand and fingers strength.
3. Pixercise is working as a game so we feel relaxed to play this game.

➢ How pixercise Work?

1. In this circuit, we use five piezo sensors and five LEDs.
2. One LED and one piezo connect with each other.
3. LED is glow random in fixed time duration.
4. touch only that piezo which LED is glowing
5. When time is over at that time all LEDs are glowing we see our score in the serial monitor.
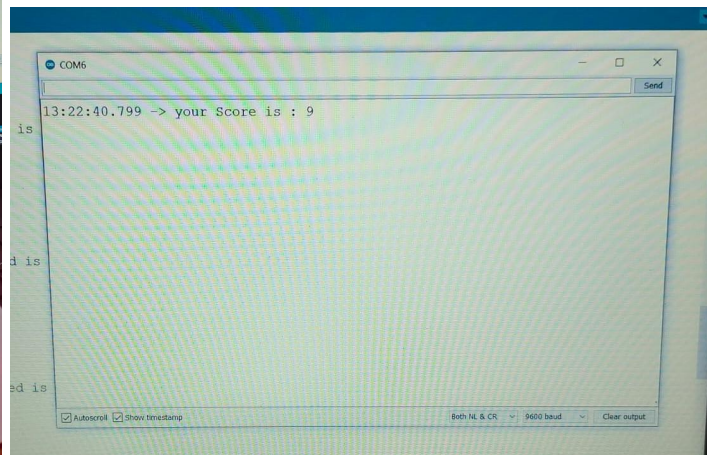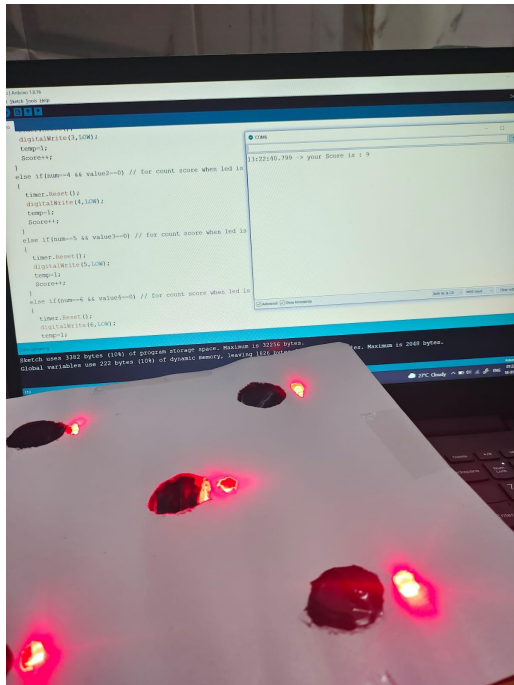
➢ Schematic Diagram
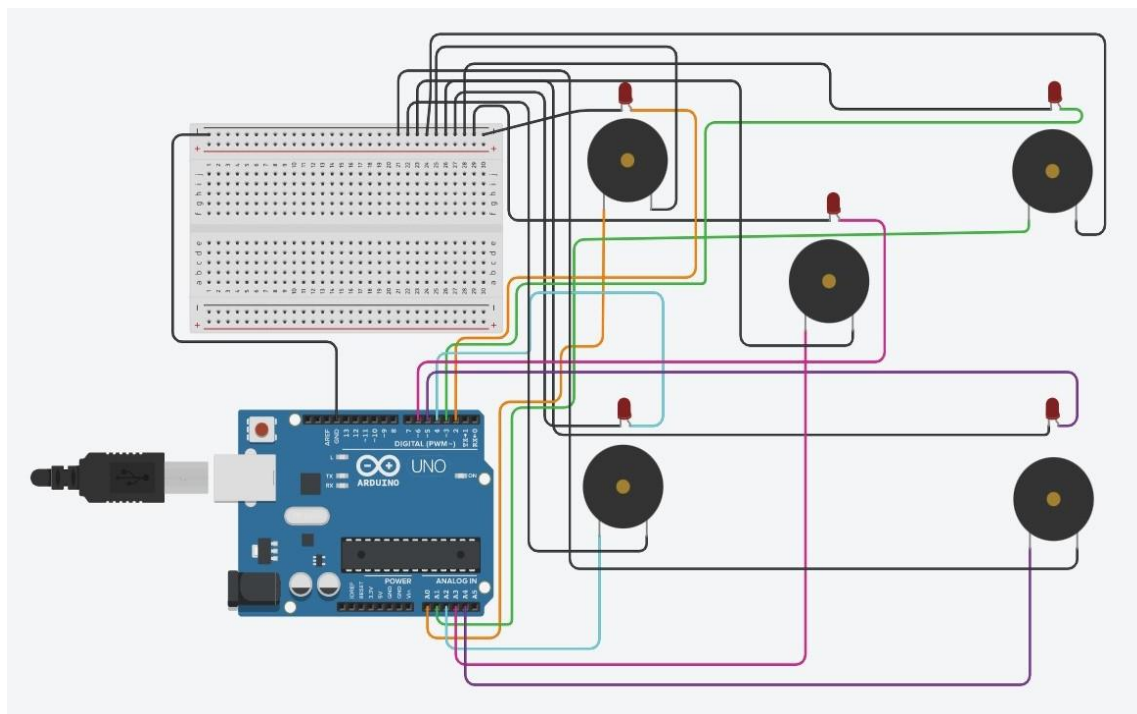
➢ **Pixercize :**
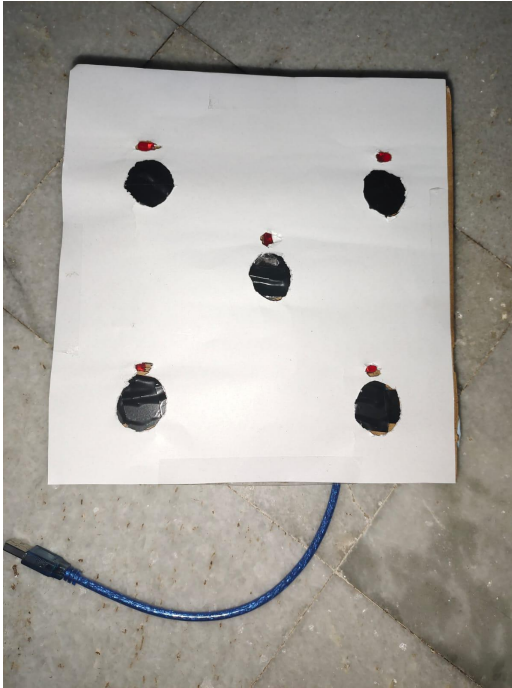
➢ **Output :**

➢ **For code and Video CLICK HERE**

10.　　Our Project Journey:

➢　This project is very interesting for me because when Parmar sir talk to us that making this type of project at that time we don't know what we can do in this project.

➢　We saw on Google or YouTube about this project but no project is available with Arduino.

➢　Only one site name Arduino tutorial makes this pixercise but not saw that how it's make,Only photos are available and why they make pixercise only this Information is Available.

➢　So we decided that this project done by only our own.

➢　In FSSI sensor documentation Vedant explained the piezo sensor so we know about piezo sensor and how it works.

➢　So in our project, we use the piezo sensor in place of the button and also use LED.

➢　Then In Code, we try to write a code but in class, we only understand code, and then copy-paste,we never write code by our self .

➢　So it is difficult for us because code is not available on the net.

➢　Finally, facing many difficulties we write a code and complete our project.

➢　So I learn many new things from this project.

Conclusion:

➢　I Learn lots of new thing after making this project .

➢　Like about Pixercise,About Piezo sensor,schematic of our project in Thinkercad etc.

➢　I learn that How I can solve many Problems and difficulty during make a project.

➢　I learn that pixercise is work like a game.

➢　I Learn that I can do whatever I want on my own

THANK YOU