MINI PROJECT REPORT ON :

SMART BRIDGE

Project work carried out by :

1st sem   [**AI&DS** Department]

G-25 HARSHITHA K

G-26 JOANNA MARIA LEO

G-27 K DHANUSH

Guidance: Dr.Niranjan L

ABSTRACT

The objective of this project is to monitor the flood situation and lift the bridge in case of danger in the form of buzzer sound. A smart bridge is one that senses some significant condition of its environment or behaviour and then automatically reacts to that condition.

INTRODUCTION

Floods lead to a vast loss of life and property in many countries. But in developing countries the lack of proper technology leads to more loss of life and property due to floods. Bridges are important in the modern world. Bridges add beauty to the roads. Bridge failures are one of the most important infrastructure problems in the world. It often leads to catastrophic consequences, loss of life, restricted commerce. Whenever there is a disaster there is loss of lives, damage to the public property.

COMPONENTS

1. Arduino uno and cable.

2. 2x servo motor.

3. Soil moisture sensor.

4. Bread board.

5. Jumper wires.

6. Foam sheet.

7. 743 liquid.

PROCEDURE:

Here are the basic steps to create this project:

1.Build the bridge: Construct the bridge using appropriate materials and make sure it can move up and down based on the input from the servo motor.

2.Install the servo motor: Install the servo motor on the bridge and connect it to the Arduino.

3.Connect the moisture sensor: Connect the moisture sensor to the Arduino and position it near the water to detect changes in water level.

4.Write the code: Write a program for the Arduino that will read the moisture sensor data and control the servo motor to adjust the height of the bridge accordingly.

5.Test the system: Test the system by increasing the water level and making sure that the bridge adjusts its height automatically.The basic idea is that the moisture sensor will detect when the water level increases, and the Arduino will control the servo motor to adjust the height of the bridge. As the water level decreases, the bridge will move back down to its original position.Note that the specifics of the project will depend on the size and design of the bridge, as well as the type of servo motor and moisture sensor used. It is also important to consider safety measures, such as

waterproofing the components to protect them from water damage.

CIRCUIT DIAGRAM
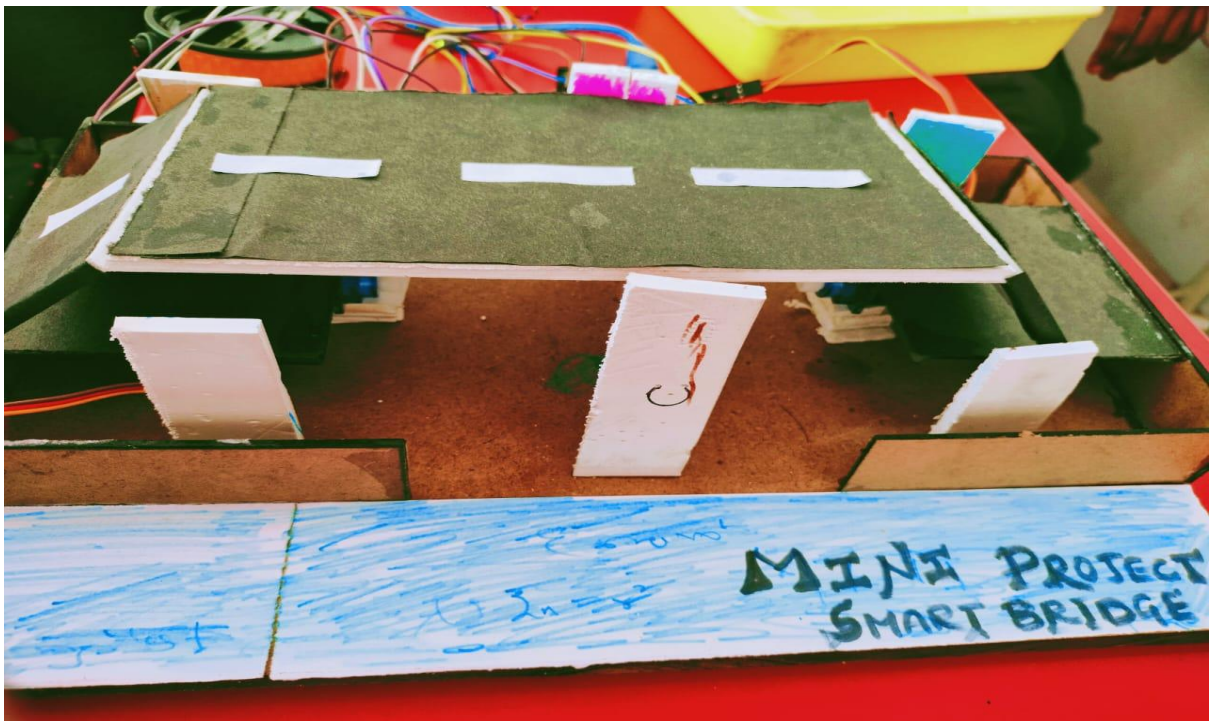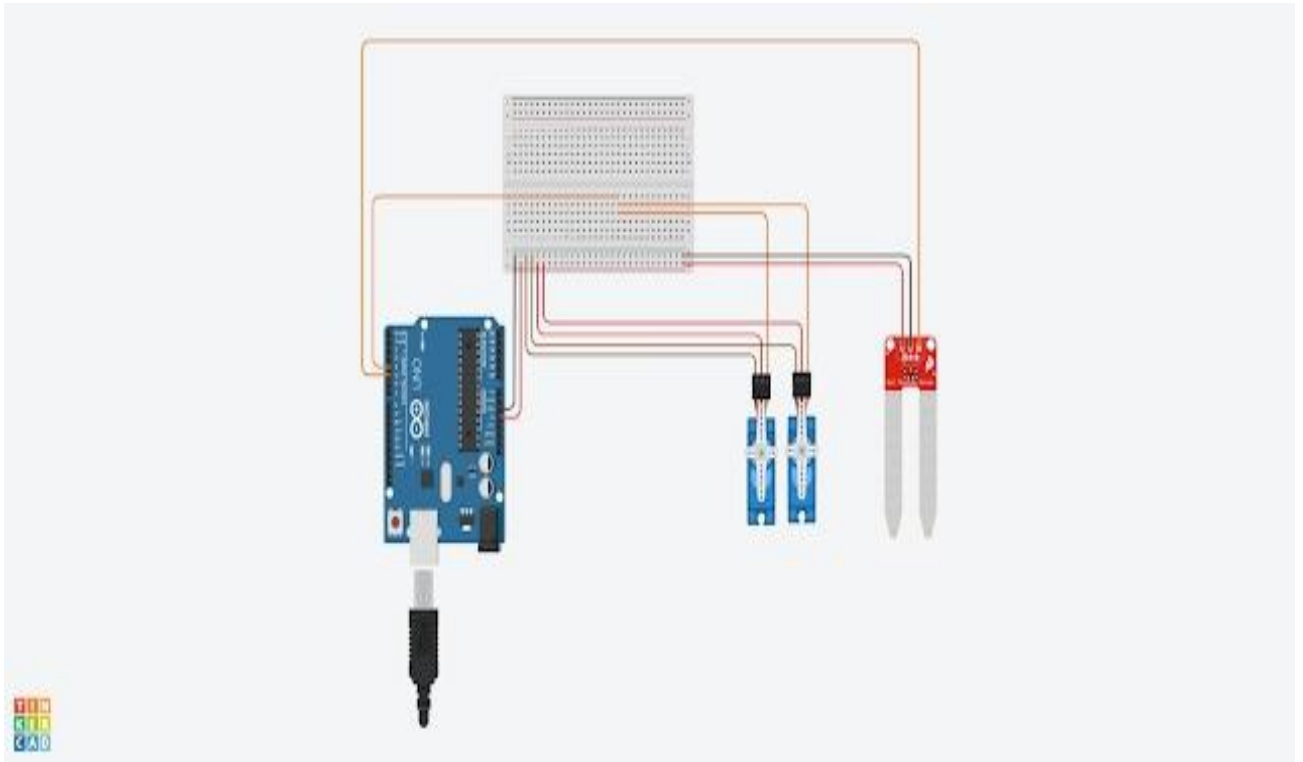
WORKING MODEL OF SMART BRIDGE:
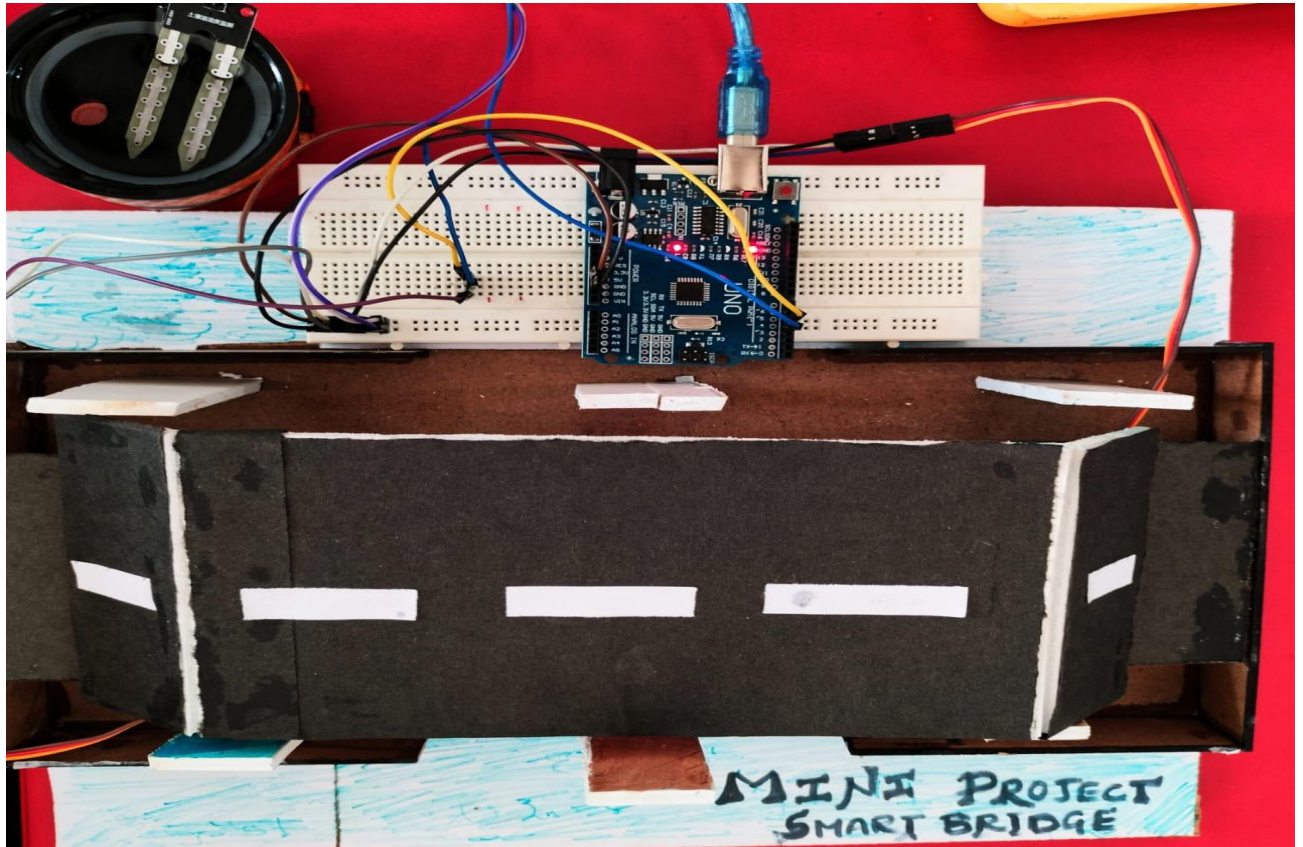
CODE:

```cpp
#include <Servo.h>


#include <Servo.h>


Servo tap_servo;


int sensor_pin = 4;

int tap_servo_pin =5;

int val;


void setup(){

  pinMode(sensor_pin,INPUT);

  tap_servo.attach(tap_servo_pin);



}


void loop(){

  val = digitalRead(sensor_pin);

  Serial.println(val);
```
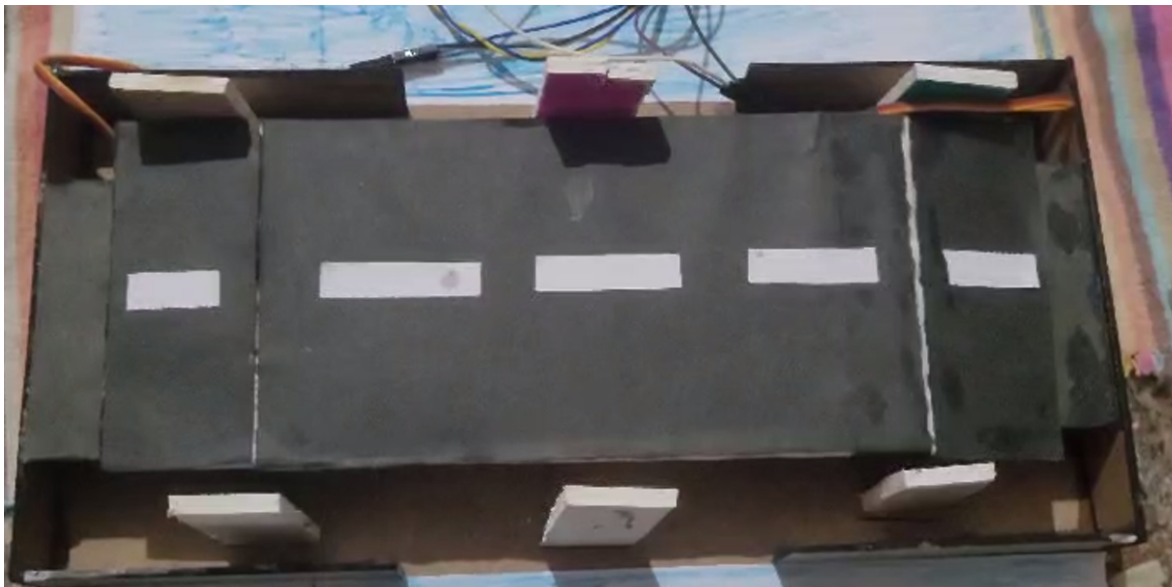
```
if (val==0)

{tap_servo.write(0);

}

if (val==1)

{tap_servo.write(90);

  }

}
```

RESULT:

The testing result of the SMART BRIDGE system is shown below. Hardware implementation of overall SMART BRIDGE is in below figures:

A. Implementation of the setup Initially

B. When Increased water level is detected by Soil Moisture Sensor.The height of the bridge is adjusted automatically based on the water level detected by the soil moisture sensor.

This increased height is maintained till the water level is decreased to the normal position. This would adjust the height of the bridge to ensure safe passage for vehicles and pedestrians. This solution

would provide a more efficient and safer way to deal with changing water levels in bridges.

THE BRIDGE LIFTED IMAGE WHEN THE WATER LEVEL RISES
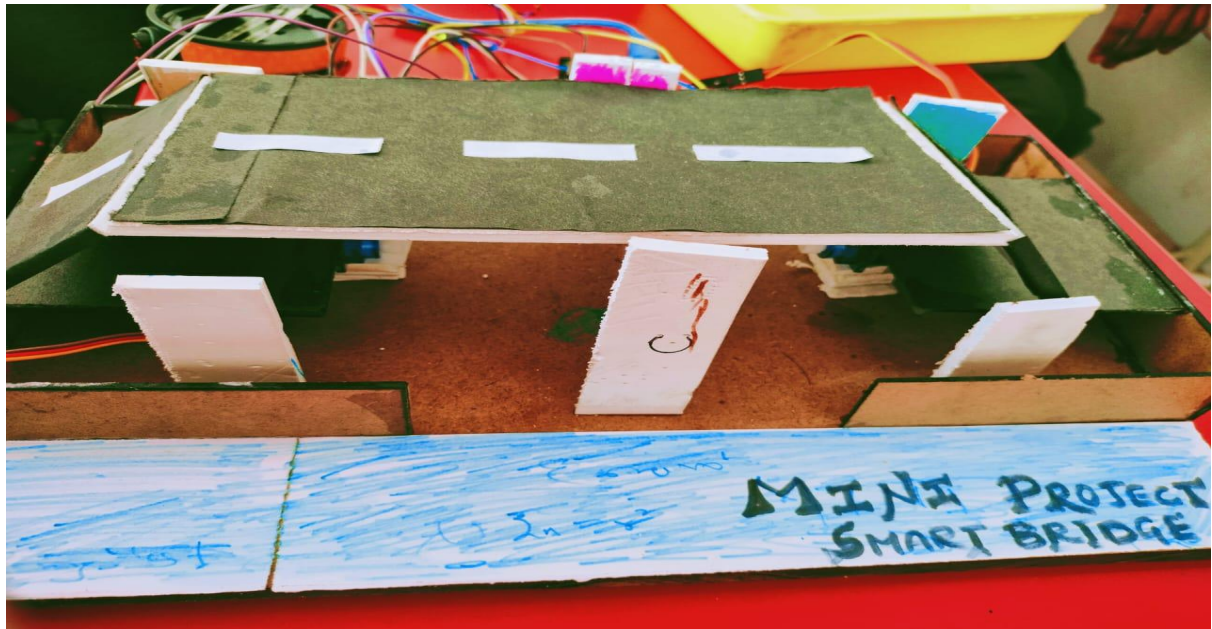
CONCLUSION

An automatic height-adjusting bridge could be built using Arduino, servo motors, and moisture sensors to monitor water levels. When the water level increases, the servo motors would adjust the height of the bridge to ensure safe passage for vehicles and pedestrians. The moisture sensors would continuously monitor the water level, and the Arduino would process the data and send instructions to the servo motors. This solution would provide a more efficient and safer way to deal with changing water levels in bridges.

In conclusion, an automatic height-adjusting bridge would be a great application of Arduino, servo motors, and moisture sensors. This system would help prevent accidents and provide a safer way for people to travel across bridges, especially during periods of heavy rainfall or flooding.

THANK YOU