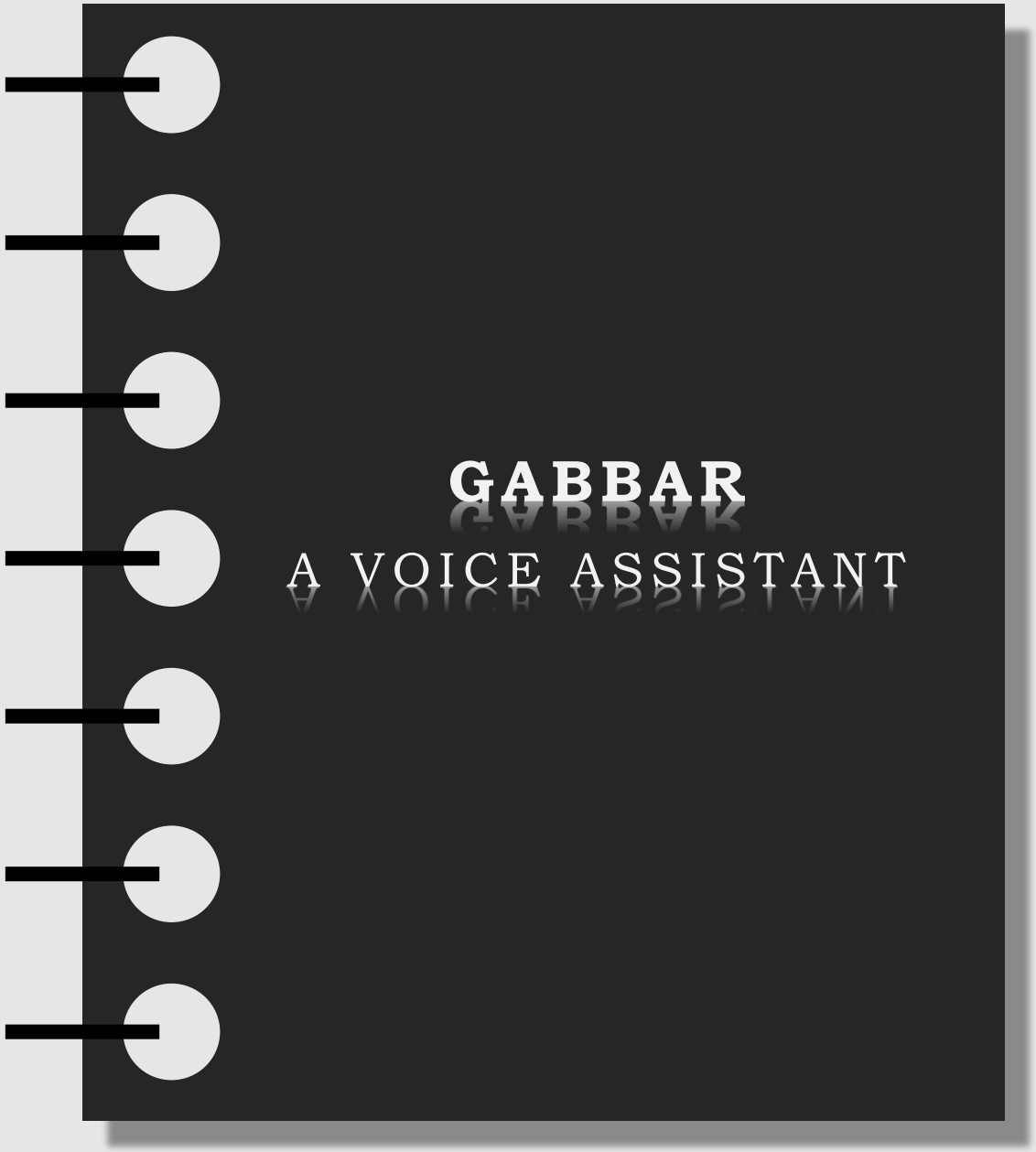
GABBAR
A VOICE ASSISTANT

TEAM MEMBERS
BATCH 07
(6CSE7)

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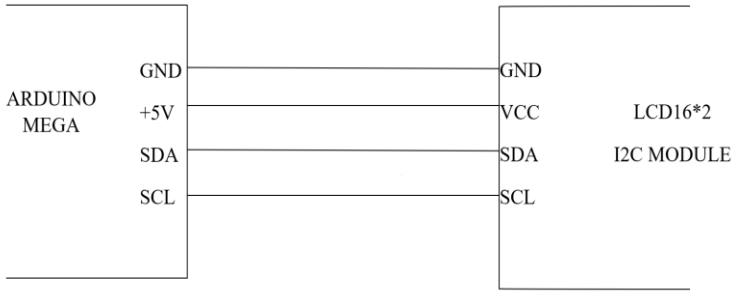
TOPICS TO BE DISCUSSED

1. Circuit Diagram
2. Block Diagrams
3. Segregated Codes
4. Master Code
5. The Process
6. Model Connections
7. Working
8. Output

LCD 16*2

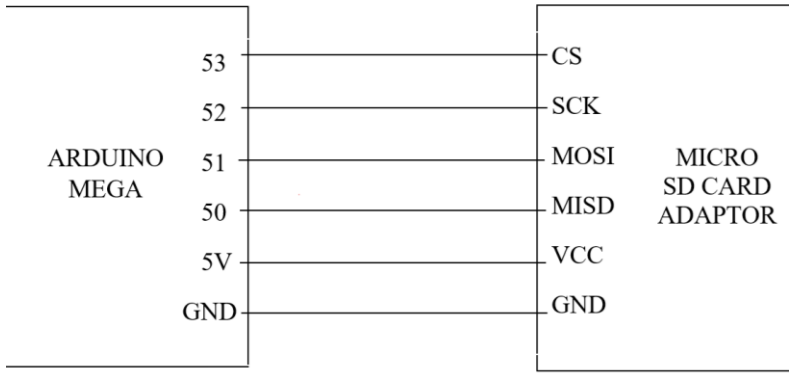
LCD 16*2 I2C MODULE CONNECTIONS + PROGRAM




```
 //libraray to communicate with I2C lcd
#include <Wire.h>

//library for lcd use
#include <LiquidCrystal_I2C.h>

//declaring global variable lcd with 16 columns and 2 rows
LiquidCrystal_I2C lcd(0x27, 16, 2);

void setup()
{
Serial.begin(9600);
  lcd.begin();                    //initializing the lcd
  lcd.backlight();                //turning on the lcd's backlight

  lcd.setCursor(0,0); lcd.print("Gabbar");
  lcd.setCursor(6,0);           //0th row, 6th column
  lcd.print("is back");

 lcd.setCursor(5,0);            //Start from 0th row 5th Block
 lcd.print("GABBAR");
lcd.setCursor(4,1);             //1st row, 4th Block

 lcd.print("IS BACK!");
}

void loop() {
 //Insert the Code
}
```

SD CARD

SD CARD MODULE CONNECTIONS + PROGRAM

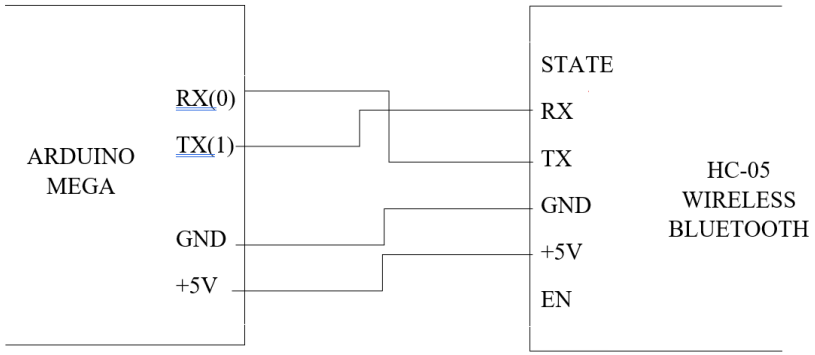



```
// need to include the SD library
#include <SD.h>
#define SD_ChipSelectPin 53 //pin10 for Arduino Pro Mini
#include <TMRpcm.h>          //  Lib to play wav file
#include <SPI.h>       // SPI library for SPI Communication

// create an object to be used in this sketch
TMRpcm tmrpcm;
```

```
void setup(){
//pin for song output only pin with PWM can be used
  tmrpcm.speakerPin = 11;
  Serial.begin(9600);

// see if the card is present and can be initialized
  if (!SD.begin(SD_ChipSelectPin)) {
  Serial.println("SD fail");   //prints SD Fail if not initialized
    return;                    // don't do anything more if not
  }

  else{
//prints SD ok if initialized properly
  Serial.println("SD ok"); }

//the sound file "music" will play each time the arduino powers up, or is reset
 tmrpcm.play("music.wav");

tmrpcm.volume(2);                    //set volume to 2
}

void loop(){
//Insert the Code
}
```

BLUETOOTH MODULE CONNECTIONS + PROGRAM

HC-05 BT




```
#define relay1 2    //Connect relay1 to pin 2
#define relay2 3    //Connect relay2 to pin 3
#define relay3 4    //Connect relay3 to pin 4
#define relay4 5    //Connect relay4 to pin 5
String voice;

void setup()
{
  Serial.begin(9600);
  pinMode(relay1, OUTPUT);      //Set relay1 as an output
  pinMode(relay2, OUTPUT);      //Set relay2 as an output
  pinMode(relay3, OUTPUT);      //Set relay3 as an output
  pinMode(relay4, OUTPUT);      //Set relay4 as an output
  digitalWrite(relay1, HIGH);     //Switch relay1 off
  digitalWrite(relay2, HIGH);     //Swtich relay2 off
  digitalWrite(relay3, HIGH);     //Switch relay3 off
  digitalWrite(relay4, HIGH);     //Swtich relay4 off
}

void loop()
{
//Check if there is an available byte to read
  while (Serial.available()){
    delay(10);                    //Delay added to make things stable
    char c = Serial.read();       //Conduct a serial read

    //Exit the loop when the # is detected after the word
    if (c == '#') {break;}
    voice += c;                   //Shorthand for voice = voice + c
  }

  if (voice.length() > 0)
  //////////////////////////////////////////////////////////////////
  {
    //Voice Command to ON Relay 01
    if(voice == "*turn on light"){
    digitalWrite(relay1, LOW);   //Relay 01 ON
      }
    //Voice Command to ON Relay 02
    else if(voice == "*turn on LED"){
    digitalWrite(relay2, LOW);   //Relay 02 ON
      }
```

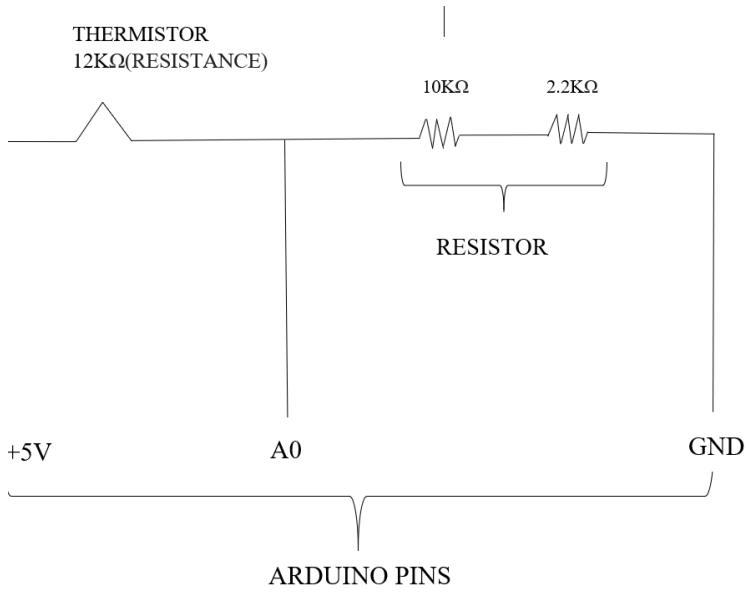
HC-05 BT

```
//Voice Command to ON Relay 03
 else if(voice == "*turn on alarm") {
     digitalWrite(relay3, LOW);                    //Relay 03 ON
   }
 //Voice Command to ON Relay 04
   else if(voice == "*turn on fan") {
digitalWrite(relay4, LOW);                         //Relay 04 ON
   }

 ////////////////////////////////////////////////////////////////

 //Voice Commands to turn OFF Relay Channels

   else if(voice == "*turn off light") {
     digitalWrite(relay1, HIGH);                   //Relay 01 OFF
   }
   else if(voice == "*turn off LED") {
     digitalWrite(relay2, HIGH);                   //Relay 02 OFF
   }
   else if(voice == "*turn off buzzer") {
     digitalWrite(relay3, HIGH);                   //Relay 03 OFF
   }
   else if(voice == "*turn off fan") {
     digitalWrite(relay4, HIGH);                   //Relay 04 OFF
   }

 ////////////////////////////////////////////////////////////////
```

```
//Voice Command to turn all Relays ON

   else if(voice == "*turn all devices on") {
     switchallon();                                //All Relays ON
   }

//Voice Command to tuen all Relays OFF
   else if(voice == "*turn all devices off") {
     switchalloff();                               //All Relays OFF
   }

 voice="";                          //Reset the variable after initiating
  }
}

////////////////////////////////////////////////////////////////////////////

void switchalloff()                 //Function for turning OFF all relays
{
  digitalWrite(relay1, HIGH);
  digitalWrite(relay2, HIGH);
  digitalWrite(relay3, HIGH);
  digitalWrite(relay4, HIGH);
}
void switchallon()                  //Function for turning ON all relays
{
  digitalWrite(relay1, LOW);
  digitalWrite(relay2, LOW);
  digitalWrite(relay3, LOW);
  digitalWrite(relay4, LOW);
}
```

```
int Vo;
float R1 = 12100;
float logR2, R2, T;
float c1 = 1.009249522e-03, c2 = 2.378405444e-04, c3 =
2.019202697e-07;

void setup() {
Serial.begin(9600);
}

void loop() {

  Vo = analogRead(A0);
  R2 = R1 * (1023.0 / (float)Vo - 1.0);
  logR2 = log(R2);
  T = (1.0 / (c1 + c2*logR2 + c3*logR2*logR2*logR2));
  T = T - 273.15;
  int f = (T * 9.0)/ 5.0 + 32.0;

  Serial.print("Temperature: ");
  Serial.print(T);
  Serial.println(" C");
  Serial.print(f);
  Serial.println(" F");

}
```

TEMPERATURE SENSOR CONNECTIONS + PROGRAM



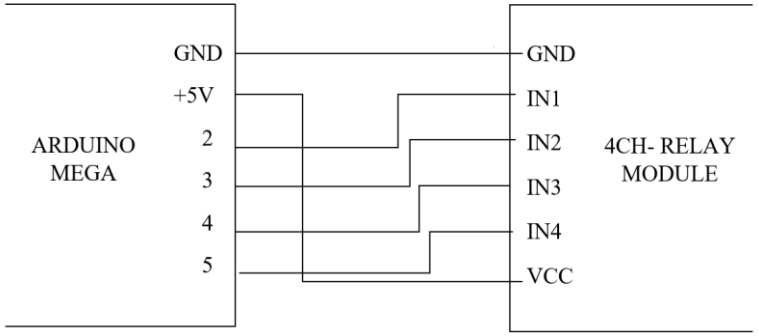
THERMISTOR

RELAY MODULE

- Uses Arduino, Raspberry Pi, and other microcontroller to switch high voltages and high current loads.
- Compatible with both 3.3V and 5V

RELAY INPUT	DEVICE CONNECTED
IN1	BULB
IN2	SPEAKER
IN3	THERMISTOR
IN4	FAN

4CH-RELAY MODULE CONNECTIONS



RELAY

MASTER CODE

MASTER CODE FOR GABBAR

```
//GABBAR - A Voice Assistant [B7-6CSE07]

#include <Wire.h>
#include <LiquidCrystal_I2C.h>
#include <SD.h>
#include <TMRpcm.h>
#include <SPI.h>

#define SD_ChipSelectPin 53

TMRpcm sound;
LiquidCrystal_I2C lcd(0x27,16,2);

String voice;

void setup()
{
  Serial.begin(9600);

  sound.speakerPin=11;

  lcd.init();                                  //initialize
  lcd.backlight();                             //turns on backlight
  lcd.setCursor(5,0);
  lcd.print("GABBAR");
  lcd.setCursor(4,1);
  lcd.print("IS BACK!");

for(int i=2;i<=8;i++){
   pinMode(i,OUTPUT);
  }

  for(int i=2;i<=5;i++)  {
   digitalWrite(i,HIGH);
  }
  digitalWrite(7,HIGH);              //5V for thermistor sensor
  digitalWrite(8,HIGH);              //5V for sd card module

   if (!SD.begin(SD_ChipSelectPin))  {
   Serial.println("SD fail");
   return;                                  // Return If not
   }

  else {
   Serial.println("SD ok");
  }
   sound.play((char*)"intro.wav");
}

void loop()
{
//Check if there is an available byte to read
  while (Serial.available()){
  delay(10);                                 //Delay added to make thing stable
  char c = Serial.read();                 //Conduct a serial read
 //Exit the loop when the # is detected after the word
    if (c == '#') {break;} voice += c; //Shorthand for voice = voice + c
  }
```

MASTER CODE

```
if (voice.length() > 0)
 ////////////////////////////////////////////////////////////////
 {
  //Voice Commands to turn Relay ON
  if(voice == "*Gabbar lights on"){
    digitalWrite(2, LOW);              //Relay 01 ON
    lcd.clear();
    lcd.setCursor(3,0);
    lcd.print("LIGHTS ON");
    delay(1000);
    }

   else if(voice ==  "*Gabbar let's party")
    digitalWrite(3, LOW);              //Relay 02 ON
    sound.play((char*)"mehbooba.wav");
    sound.volume(5);
    lcd.clear();
    lcd.setCursor(0,0);
    lcd.print("PLAYING MEHBOOBA");
    delay(1000);
    for (int positionCounter = 0; positionCounter < 16;
    positionCounter++) {
    // scroll one position left
    lcd.scrollDisplayLeft();
    // wait a bit
    delay(250);
    }
    lcd.print("PLAYING MEHBOOBA");
   }
```

```
else if(voice ==  "*Ham Kare to Kare kya bole to Bole kya") {
//Voice Command to ON Relay 03
     digitalWrite(3, LOW);                    //Relay 02 ON
     sound.play((char*)"modi.wav");
     sound.volume(5);
     lcd.clear();
     lcd.setCursor(0,0);
     lcd.print("WAH MODIJI WAH!!");
    delay(1000);
   }

   else if(voice =="*Gabbar show the temperature")
   {
    digitalWrite(4, LOW);                    //Relay 03 ON
    lcd.clear();
    temperature();
   }

   else if(voice == "*Gabbar turn on fan") {
   digitalWrite(5, LOW);                     //Relay 04 ON
    lcd.clear();
    lcd.setCursor(1,0);
    lcd.print("FAN TURNED ON");
    delay(1000);
  }

   ////////////////////////////////////////////////////////////////
```

MASTER CODE

```
//Voice Command to turn Relay OFF
else if(voice == "*Gabbar turn off light") {
      digitalWrite(2, HIGH);                    //Relay 01 OFF
    lcd.clear();
    lcd.setCursor(3,0);
    lcd.print("LIGHTS OFF");
    delay(1000);
        }

  else if(voice =="*Gabbar stop")
  {
    digitalWrite(3, HIGH);                      //Relay 02 OFF
    sound.stopPlayback();
    lcd.clear();
    lcd.print("MUSIC STOPPED");
  }

  else if(voice == "*Gabbar clear temperature") {
    digitalWrite(4, HIGH);                      //Relay 03 OFF
    lcd.clear();
    lcd.setCursor(4,0);
    lcd.print("CLEARED");
    delay(1000);
        }

  else if(voice == "*Gabbar turn off fan") {
    digitalWrite(5, HIGH);                      //Relay 04 OFF
    lcd.clear();
    lcd.setCursor(1,0);
    lcd.print("FAN TURNED OFF");
      }
  ////////////////////////////////////////////////////////////////////
```

```
//Voice Command to turn all Relays ON
else if(voice == "*Gabbar turn all devices on") {
      switchallon();                    //All Relays ON
      lcd.clear();
      temperature();
      sound.play((char*)"mehbooba.wav");
      sound.volume(5);
    }

//Voice Command to OFF all Relays
   else if(voice == "*Gabbar turn all devices off") {
      switchalloff();                   //All Relays OFF
      sound.stopPlayback();
      lcd.clear();
      lcd.setCursor(3,0);
      lcd.print("POWER DOWN");
      delay(1000);
    }

  voice="";                     //Reset the variable after initiating
  }
}

////////////////////////////////////////////////////////////////////

void switchalloff()             //Function for turning OFF all relays
{
  for(int i=2;i<=5;i++)
  {
    digitalWrite(i,HIGH);
  }
}
```

MASTER CODE

```
void switchallon()                    //Function for turning ON all relays
{
 for(int i=2;i<=5;i++)
 {
  digitalWrite(i,LOW);
 }
}

void temperature()
{
int Vo;
float R1 = 12200;
float logR2, R2, T;
float c1 = 1.009249522e-03, c2 = 2.378405444e-04, c3 =
2.019202697e-07;

  Vo = analogRead(A0);
  R2 = R1 * (1023.0 / (float)Vo - 1.0);
  logR2 = log(R2);
  T = (1.0 / (c1 + c2*logR2 + c3*logR2*logR2*logR2));
  T = T - 273.15;
  int f = (T * 9.0)/ 5.0 + 32.0;

  lcd.setCursor(0,0);
  lcd.print("Temp:");
//0th row, 6th column coz the previous5 is already occupied for "Temp:"
  lcd.setCursor(6,0);
  lcd.print(T);
  lcd.setCursor(11,0);
  lcd.print(" C");

}
```

PROCESS

CONVERTING MP3 FILE TO WAV FILE

1. Visit this Link : https://audio.online-convert.com/convert-to-wav
2. Upload the MP3File which needs to be converted to WAV
3. Do the Following Changes
    a) Bit Resolution →8 Bit
    b) Sampling Rate → 16000 Hz
    c) Audio Channels → Mono
    d) PCM Format → PCM Unsigned 8 bit
4. Trim the Audio if needed
5. Start Conversion
6. The required file will be downloaded in WAV File

ARDUINO PROCEDURE

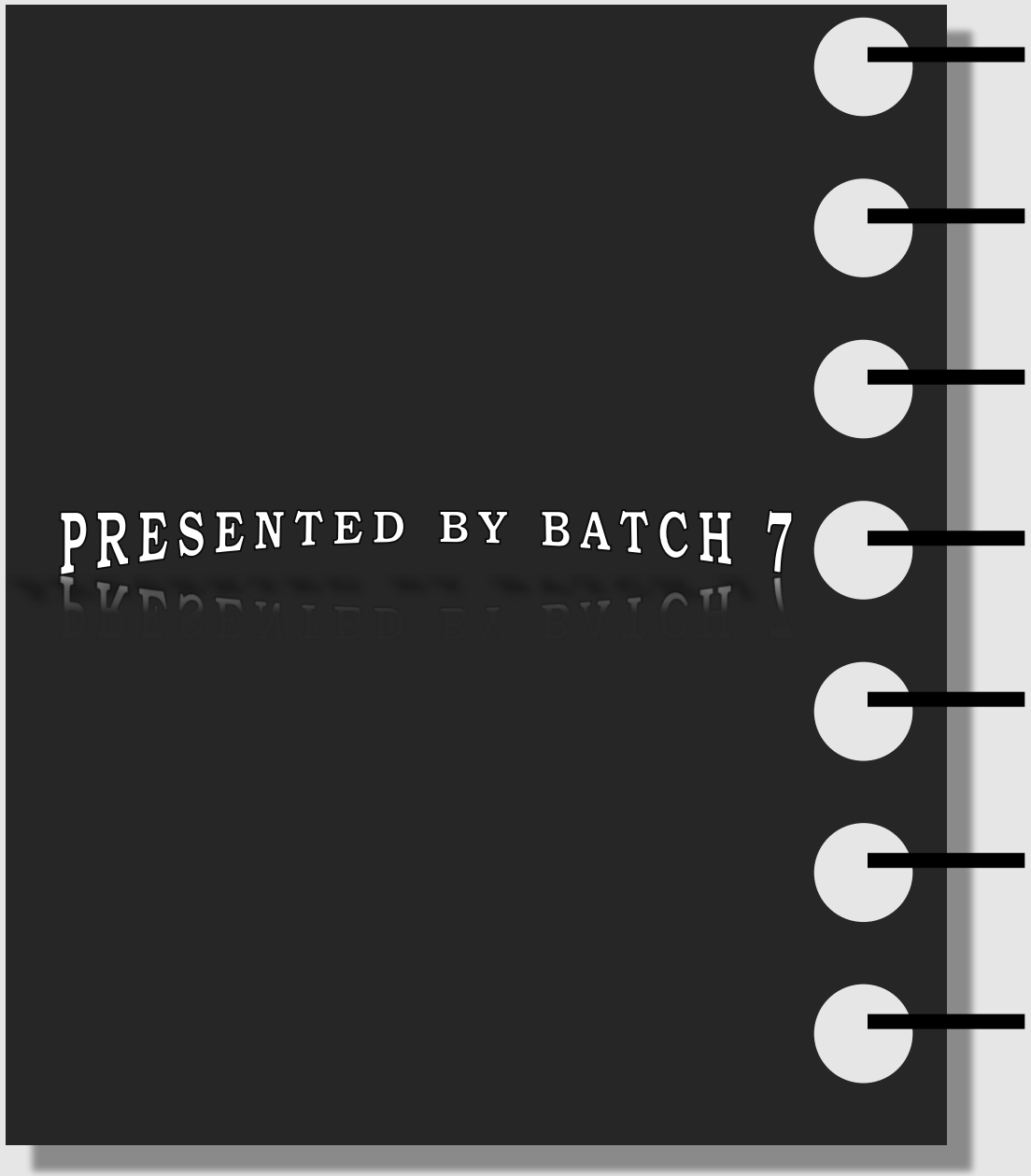
1. Connect Arduino Mega to PC/Laptop via USB
2. Install Arduino IDE from Google or Microsoft Store
3. Install Required Libraries necessary to Run the Code
4. In Our Case : Wire, SD, SPI, LiquidCrystal I2c, TMRpcm
5. Write the required Code
6. Compile the Code
7. Solve the Errors if any
8. Since the Board What we have used here is Arduino Mega we need to make some changes in IDE so that we can upload the code smoothly
9. Go to Tools-> Board->Select *"Arduino Mega or Mega 2560"*
10. Go to Tools-> Processor -> Select *"ATmega2560(Mega 2560)"*
11. Go to Tools->Programmer->Select *"ArduinoISP"*
12. Go to *Tools* ->*Port*->Choose *Com3* in our case
13. Upload the Code to the Arduino Board
14. Now we can see that Arduino has stored our program and is Working according to our need.

VOICE COMMANDS FOR GABBAR

Command	Working
Gabbar Turn Off Light	Turns Off Bulb
Gabbar Stop	Music Stops In Speaker
Gabbar Clear Temperature	The Displayed Temperature In LCD Gets Cleared
Gabbar Turn Off Fan	Fan Turns Off
Gabbar Turn All Devices On	Turns All All Devices Bulb, Speaker, Temperator Sensor, LCD, Fan
Gabbar Turn All Devices Off	All Devices Shut

COMMAND	WORKING
Gabbar Lights On	Turns On Bulb
Gabbar Let's Party	Starts Playing Song In Speaker
Gabbar Show The Temperature	Displays Room Temperature In LCD
Gabbar Turn On Fan	Fan Starts Rotating

COMMAND



THANK YOU!