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| **Iotronics Techlab Pvt Ltd.** | |
| **Aim:** | The aim of this project is to create an expression display using an 8x8 LED matrix |
| **Requirements:** | Automation kit |
| **IDE:** | Arduino IDE |
| **Connection Diagram:** |  |
| **Working** | The project aims to display different expressions on the 8x8 LED matrix |
| **Procedure:** | **1: Planning and Setup**   * Identify the expressions you want to display and the corresponding sensor inputs. * Gather all the required components and ensure they are functioning properly. * Set up your workspace with necessary tools and equipment.   **2: Circuit Connection**   * Connect the Arduino Uno to the 8x8 LED matrix according to the pin configuration. * Connect the selected sensors and actuators to the Arduino Uno following the provided datasheets or pinout diagrams. * Ensure all connections are secure and properly insulated.   **3: Programming**   * Open the Arduino IDE and create a new sketch. * Write the code to initialize the sensors. * Test each component individually to ensure they are working as expected. * Integrate the code for displaying expressions on the LED matrix.   **4: Testing and Debugging**   * Upload the code to the Arduino Uno board. * Test the project by interacting with the sensors and observing the displayed expressions. * Debug any issues encountered during testing by reviewing the code and checking the circuit connections. |
| **CODE:** | #include <LedControl.h>  int DIN = 11;  int CS =  10;  int CLK = 13;  byte e[8]=     {0x7C,0x7C,0x60,0x7C,0x7C,0x60,0x7C,0x7C};  byte d[8]=     {0x78,0x7C,0x66,0x66,0x66,0x66,0x7C,0x78};  byte u[8]=     {0x66,0x66,0x66,0x66,0x66,0x66,0x7E,0x7E};  byte c[8]=     {0x7E,0x7E,0x60,0x60,0x60,0x60,0x7E,0x7E};  byte eight[8]= {0x7E,0x7E,0x66,0x7E,0x7E,0x66,0x7E,0x7E};  byte s[8]=     {0x7E,0x7C,0x60,0x7C,0x3E,0x06,0x3E,0x7E};  byte dot[8]=   {0x00,0x00,0x00,0x00,0x00,0x00,0x18,0x18};  byte o[8]=     {0x7E,0x7E,0x66,0x66,0x66,0x66,0x7E,0x7E};  byte m[8]=     {0xE7,0xFF,0xFF,0xDB,0xDB,0xDB,0xC3,0xC3};  LedControl lc=LedControl(DIN,CLK,CS,0);  void setup(){   lc.shutdown(0,false);       //The MAX72XX is in power-saving mode on startup   lc.setIntensity(0,15);      // Set the brightness to maximum value   lc.clearDisplay(0);         // and clear the display  }  void loop(){      byte smile[8]=   {0x3C,0x42,0xA5,0x81,0xA5,0x99,0x42,0x3C};      byte neutral[8]= {0x3C,0x42,0xA5,0x81,0xBD,0x81,0x42,0x3C};      byte frown[8]=   {0x3C,0x42,0xA5,0x81,0x99,0xA5,0x42,0x3C};        printByte(smile);        delay(1000);      printByte(neutral);        delay(1000);  printByte(frown);      delay(1000);        printEduc8s();      lc.clearDisplay(0);      delay(1000);  }  void printEduc8s()  {    printByte(e);    delay(1000);    printByte(d);    delay(1000);    printByte(u);    delay(1000);    printByte(c);    delay(1000);    printByte(eight);    delay(1000);    printByte(s);    delay(1000);    printByte(dot);    delay(1000);    printByte(c);    delay(1000);    printByte(o);    delay(1000);    printByte(m);    delay(1000);  }  void printByte(byte character [])  {    int i = 0;    for(i=0;i<8;i++)    {      lc.setRow(0,i,character[i]);    }  } |
| **Result/Output** |  |