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| **Iotronics Techlab Pvt Ltd.** | |
| **Aim:** | To create a system where an LED can be controlled using a keypad input. |
| **Requirements:** | Automation kit , Wireless and iot kit. |
| **IDE:** |  |
| **Connection Diagram:** |  |
| **Working** | * The keypad will be used to input numeric values. * Each numeric value corresponds to a particular LED state. * Arduino will read the keypad input and control the LED accordingly. * LED will light up or turn off based on the input provided through the keypad. |
| **Procedure:** | 1. **Setting up the Hardware:**    * Connect Arduino Uno to the breadboard.    * Connect the LED and resistor in series to the breadboard.    * Connect the keypad to the breadboard.    * Wire the connections between Arduino, keypad, and LED as per the circuit diagram. 2. **Writing the Code:**    * Open Arduino IDE on your computer.    * Start a new sketch.    * Define the pin connections for keypad and LED.    * Write the code to read keypad input and control LED based on the input. 3. **Uploading the Code:**    * Connect Arduino Uno to your computer using a USB cable.    * Select the correct board and port in Arduino IDE.    * Compile the code to check for any errors.    * Upload the code to Arduino Uno. 4. **Testing:**    * Once the code is uploaded, power up the Arduino Uno.    * Use the keypad to input numeric values.    * Verify if the LED responds accordingly to the input.    * Test different numeric values to ensure the system's functionality. |
| **CODE:** | #include <Keypad.h>  const byte ROWS = 4; //four rows  const byte COLS = 4; //four columns  //define the cymbols on the buttons of the keypads  char hexaKeys[ROWS][COLS] = {    {'1','2','3','A'},    {'4','5','6','B'},    {'7','8','9','C'},    {'\*','0','#','D'}  };  byte rowPins[ROWS] = {64, 62, 68, 66}; //connect to the row pinouts of the keypad  byte colPins[COLS] = {65, 63, 69,67}; //connect to the column pinouts of the keypad  //initialize an instance of class NewKeypad  Keypad customKeypad = Keypad( makeKeymap(hexaKeys), rowPins, colPins, ROWS, COLS);  void setup(){    Serial.begin(9600);    pinMode(55, OUTPUT);    pinMode(56, OUTPUT);    pinMode(57, OUTPUT);  }    void loop(){    char customKey = customKeypad.getKey();      if (customKey){      Serial.println(customKey);      if(customKey == '1')      {        digitalWrite(57, 1);      }      else if(customKey == '2')      {        digitalWrite(56, 1);      }      else if(customKey == '3')      {        digitalWrite(55, 1);      }      else if(customKey == '0')      {        digitalWrite(55, 0);        digitalWrite(56, 0);        digitalWrite(57, 0);      }    }  } |
| **Result/Output** | A close-up of a circuit board  Description automatically generated |