Guide to Arduino UNO Home Automation System

Introduction:

Welcome to the world of electronics and home automation! In this guide, we will walk you through creating a simple home automation system using Arduino UNO. Don't worry if you're new to this – we'll make it fun and easy to understand.

What You'll Need:

1. Arduino UNO board
2. LCD screen
3. Four-channel relay board
4. HC-06 Bluetooth module
5. Jumper wires
6. Breadboard
7. Smartphone with Bluetooth

Step 1: Understanding the Components:

Arduino UNO	Think of it as a brain that controls everything.
LCD screen	This will show us information.
Relay board	It can control things like lights, fans, or other appliances.
Bluetooth module	It lets us control our system using our phone.

Step 2: Connecting the Components:

- Connect the LCD to Arduino (Check online tutorials for wiring).
- Connect the relay board to Arduino using jumper wires.
- Connect the Bluetooth module to Arduino using RX and TX pins.

Step 3: Writing the Code:

- Open Arduino software on your computer.
- Write a simple code to display a message on the LCD.
- Write another code to control the relays using your phone via Bluetooth.

Step 4: Uploading the Code:

- Connect Arduino to your computer using a USB cable.
- Click the "Upload" button in the Arduino software to send your code to Arduino.

Step 5: Testing:

- Power up your Arduino.
- You should see the LCD display a message.
- Use your smartphone to connect to the Bluetooth module.
- Send commands (like turning on a light) from your phone to Arduino.

Step 6: Exploring and Learning:

- Try changing the LCD message or controlling different relays.
- Learn about the different sensors and components you can add to your project.

Tips for Kids:

- Ask questions if something is confusing – that's how we learn!
- Experiment and have fun. Mistakes are part of learning.
- Share your project with family and friends. They'll be amazed!

Conclusion:

Congratulations, young engineer! You've successfully created a basic home automation system using Arduino UNO. Keep exploring and tinkering – there's a whole world of electronics waiting for you to discover. Have fun and keep learning!

Resources:

- Learn Arduino - Introduction to Arduino: https://www.youtube.com/watch?v=iyGWUPBy6oQ
- Interfacing LCD with Arduino: https://www.youtube.com/watch?v=CyPvIPG7s4Y
- Home Automation Using Arduino: https://www.youtube.com/watch?v=OKgTV9uXrLg
- How to Upload Code: https://www.youtube.com/watch?v=1DAK19FPJXo
- Arduino IDE Software: https://www.arduino.cc/en/software

- Arduino Programming Series: https://www.youtube.com/watch?v=PzJayPUPV6A&list=PLV3C-t_tgjGFyXP_-AF37AoIuxM9jzELM

Code:

```
#include<LiquidCrystal.h>

LiquidCrystal lcd(13, 12, 11, 10, 9, 8);

const int Loads[] = {2, 3, 4, 7};

int input = 0;

void setup()
{
  lcd.begin(16, 2);
  Serial.begin(9600);
  Serial.print("Input: ");

  for (int i=0;i<4;i++)
   {
    pinMode(Loads[i], OUTPUT);
   }

  for (int i=0;i<4;i++)
   {
    digitalWrite(Loads[i], HIGH);
   }

 lcd.clear();
 lcd.setCursor(0,0);
 lcd.print("IOT Workshop");
 lcd.setCursor(0,1);
 lcd.print("Welcome Everyone!");
}
```

```
void loop()
{

  if(Serial.available() > 0)
  {
    input = Serial.read();
  }

  switch(input)
  {
    case '0':digitalWrite(Loads[0], LOW);
             lcd.clear();
             lcd.setCursor(0,0);
             lcd.print("BULB 01 (ON)");
             break;
    case '1':digitalWrite(Loads[0], HIGH);
             lcd.clear();
             lcd.setCursor(0,0);
             lcd.print("BULB 01 (OFF)");
             break;
    case '2':digitalWrite(Loads[1], LOW);
             lcd.clear();
             lcd.setCursor(0,0);
             lcd.print("BULB 02 (ON)");
             break;
    case '3':digitalWrite(Loads[1], HIGH);
             lcd.clear();
             lcd.setCursor(0,0);
             lcd.print("BULB 02 (OFF)");
             break;
```

```
    case '4':digitalWrite(Loads[2], LOW);
             lcd.clear();
             lcd.setCursor(0,0);
             lcd.print("BULB 03 (ON)");
             break;
    case '5':digitalWrite(Loads[2], HIGH);
             lcd.clear();
             lcd.setCursor(0,0);
             lcd.print("BULB 03 (OFF)");
             break;
    case '6':digitalWrite(Loads[3], LOW);
             lcd.clear();
             lcd.setCursor(0,0);
             lcd.print("SOCKET (ON)");
             break;
    case '7':digitalWrite(Loads[3], HIGH);
             lcd.clear();
             lcd.setCursor(0,0);
             lcd.print("SOCKET (OFF)");
             break;
    case '8':analogWrite(5, 225);
            lcd.clear();
             lcd.setCursor(0,0);
             lcd.print("LED SET 01");
             lcd.setCursor(0,1);
             lcd.print("HIGH Brightness");
             break;
    case '9':analogWrite(5, 100);
             lcd.clear();
             lcd.setCursor(0,0);
```

```
             lcd.print("LED SET 01");
             lcd.setCursor(0,1);
             lcd.print("LOW Brightness");
             break;
    case '10':analogWrite(6, 255);
             lcd.clear();
             lcd.setCursor(0,0);
             lcd.print("LED SET 02");
             lcd.setCursor(0,1);
             lcd.print("HIGH Brightness");
             break;
    case '11':analogWrite(6, 150);
             lcd.clear();
             lcd.setCursor(0,0);
             lcd.print("LED SET 02");
             lcd.setCursor(0,1);
             lcd.print("LOW Brightness");
             break;
    Default: digitalWrite(Loads[0], HIGH);
             digitalWrite(Loads[1], HIGH);
             digitalWrite(Loads[2], HIGH);
             digitalWrite(Loads[3], HIGH);
             lcd.clear();
             lcd.setCursor(0,0);
             lcd.print("ALL THINGS OFF");
             break;
  }
}
```