Smart Home

Assignment - 1

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Smart 1 lome

1OT or internet of things is an upcoming technology that allows us to control hardware devices through the internet. Here we propose to use 1OT in order to control home

appliances. thus automating modern homes through the internet. This system uses three loads to demonstrate as house lighting and a

fan. Our user friendly interface allows a user to easily control these home appliances through the internet. For this system we use an

AVR family microcontroller. I his microcontroller is interfaced with a wifi modem to get user commands over the internet. Also we have an LCI > display to display system status. Relays are used to switch loads. The entire system is powered by a 12 V transformer. After receiving user commands over the internet. microcontroller processes these instructions to operate these loads accordingly and display the system status on an L 2D display.

Hardware Specifications

- Atmega Microcontroller
- ESP8266 Wifi Module
- LCD Display
- DC Cooling Fan
- Relay
- Relay Driver IC
- Vtg Regulator IC
- Resistors
- Capacitors
- Transistors
- Cables and Connectors
- Diodes
- PCB and Breadboards
- LED
- Transformer/Adapte;
- Push Buttons
- Switch

IC

IC Sockets

Software Specifications

MC Programming Language: C

IOTGecko

IoT devices for securing your home

- **Wall switches**

- **Voltage Sensors**
- **Air Conditioner**
- **Energy Motors**
- **Smart Door lock**

Coding

```
#include <SPI.h> #incl utle <Wire.h> #include

<IRremote.h> const int relay_1 = 12; const int relay_2 -11;

const int relay_3 = 10; const int relay_4 = 9;

const int mswitch_1 = 8; const int mswitch_2 = 7; const int

mswitch_3 = 6; const int mswitch_4 = 5;

int RECV.PIN = 3;

IRrecv irrecv(RECV_PIN); decode results results;
```

```
int toggleState_1 = 0; int toggleState_2 = 0;

int toggleState_3 = 0; int toggleState_4 - 0;


void selup() {


  Serial .begin(9600); irrecv.enableIRIn():


  pinN Iode(relay_ 1. OUTP L'T);

  pinMode(relay_2. OUTPUT);
```

```
pinMode(relay_3, OUTPUT);

pinMode(relay_4, OUTPUT);


pinMode(mswitch_1, INPUT_PULLUP); pinMode( mswitch_2, IN

PUT_PULLUP); pinMode(mswitch_3, INPUT_PULLUP);

        pinMode(mswitch_4, INPUT PULLUP); )


void relayOnOff (int relay){

            switch(relay){
              case 1:

        if(toggleState_1 ==0){

        digitalWrite(relay_1, HIGH); // turn
on relay 1

        toggleState_i = 1;

        }
```

```cpp
        else{
        digitalWrite(relay_1, LOW); // turn
off relay 1
        toggleState_1 = 0;
        }
        delay(100);
    break;
    case 2:
        if(toggleState_2 == 0){
        digitalWrite(relay_2, HIGH); // turn
on relay 2
        toggleState_2 = 1;
        }
        else{
        digitalWrite(relay_2, LOW); // turn
off relay 2
        toggleState_2 = 0;
        }
```

```
        break;
    case 3:
        if(toggleState_3 == 0){
        digitalWrite(relay_3, HIGH); // turn
on relay 3
        toggleState_3 = 1;
        }else{
        digitalWrite(relay_3, LOW); // turn
off relay 3
        toggleState_3 = 0;
        }
        delay(100);
    break;
    case 4:
        if(toggleState_4 == 0){
        digitalWrite(relay_4, HIGH); // turn
on relay 4
        toggleState_4 = 1;
```

```
                              else{
            digital Write( relay _4, LOW ; // turn
off relay 4

            toggleState_4 = ();

            }

            delayfl (X));
    break;


    default: break;

    }


                                        LOW){
```

```
    relayOnOff(1);
  }
  else if (digitalRead(mswitch_2) == LOW){
   delay(200);
    relayOnOff(2);
  }
  else if (digitalRead(mswitch_3) == LOW){
   delay(200);
    relayOnOff(3);
  }
  else if (digitalRead(mswitch_4) == LOW){
   delay(200);
    relayOnOff(4);
  }

   if (irrecv.decode(&results)) {
     switch(results.value){
```

```
        relayOnOff(1);

break;

case 0xFD8877:

        relayOnOff(2);

break;

case 0xFD48B7:

        relayOnOff(3);

break;

case 0xFD28D7:

        relayOnOff(4);

break;

default: break;

    }

  irrecv.resume();

  }

  }
```