**Interfacing between PIR sensor and NRF24L01 RF Trans- receiver**

**Arduino Code:-**

This code sends message "ROOM1" on RF when the PIR sensor is detected

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#include <SPI.h>

#include "nrf24l01.h"

int inputPin = 2; //PIR input pin

void print\_AllRegisters(); // declaration function for printing all registers.

#define \_CH 1 // Channel 0..125

#define \_Address\_Width 5 // 3..5

#define \_Buffer\_Size 5 // 1..32

// Function defines the reciever side

void NRF24L01\_Receive(char Buf[\_Buffer\_Size]) {

NRF24L01\_CE\_HIGH();

delayMicroseconds(130);

while ((NRF24L01\_Get\_Status() & \_RX\_DR) != \_RX\_DR);

NRF24L01\_CE\_LOW();

NRF24L01\_Read\_RX\_Buf(Buf, \_Buffer\_Size);

NRF24L01\_Clear\_Interrupts();

}

// Function defines the transmission side

void NRF24L01\_Send(char Buf[\_Buffer\_Size]) {

NRF24L01\_Write\_TX\_Buf(Buf, \_Buffer\_Size);

NRF24L01\_RF\_TX();

// loop to verify successful transmission.

while ((NRF24L01\_Get\_Status() & \_TX\_DS) != \_TX\_DS);

NRF24L01\_Clear\_Interrupts();

}

// Data recieving status on LPC 2148.

void Led\_Blink(void) {

digitalWrite(LED\_BUILTIN,HIGH); // LED OFF

delayMicroseconds(50000);

digitalWrite(LED\_BUILTIN,LOW); // LED ON

delayMicroseconds(50000);

}

void setup (void) {

// Output is recieved at these pin.

NRF24L01\_CSN\_OUT();

NRF24L01\_CE\_OUT();

pinMode(SS,OUTPUT);

Serial.begin(115200); //set baud rate to 115200 for usart

digitalWrite(SS, HIGH); // disable Slave Select

SPI.begin ();

SPI.setClockDivider(SPI\_CLOCK\_DIV8);//divide the clock by 8

NRF24L01\_CE\_LOW(); // transmission mode

NRF24L01\_CSN\_HIGH();

pinMode(inputPin, INPUT);

pinMode(LED\_BUILTIN,OUTPUT);

}

void loop (void) {

char Buf[\_Buffer\_Size] = "ROOM\0";

Led\_Blink();

char Address[\_Address\_Width] = { 0x11, 0x22, 0x33, 0x44, 0x55 };

NRF24L01\_Init(\_TX\_MODE, \_CH, \_1Mbps, Address, \_Address\_Width, \_Buffer\_Size);

print\_AllRegisters();

delay(1000);

while (1) {

if(digitalRead(inputPin) == HIGH) // PIR sensor is detected

{

//Send the message "ROOM1" on detection of PIR signal

Serial.println("Human Activity is detected in Room - 1");

NRF24L01\_Send(Buf);

Serial.println("Data sent");

}

}

}

void print\_AllRegisters()

{

unsigned char data1;

unsigned char data2[5];

Serial.println("========================== Configurations are ======================== ");

NRF24L01\_ReadRegBuf(CONFIG, &data1, 1);

Serial.print("CONFIG REG = ");

Serial.println(data1);

NRF24L01\_ReadRegBuf(EN\_AA, &data1, 1);

Serial.print("EN\_AA REG = ");

Serial.println(data1);

NRF24L01\_ReadRegBuf(EN\_RXADDR, &data1, 1);

Serial.print("EN\_RXADDR REG = ");

Serial.println( data1);

NRF24L01\_ReadRegBuf(SETUP\_AW, &data1, 1);

Serial.print("SETUP\_AW REG = ");

Serial.println(data1);

NRF24L01\_ReadRegBuf(SETUP\_RETR, &data1, 1);

Serial.print("SETUP\_RETR REG = ");

Serial.println(data1);

NRF24L01\_ReadRegBuf(RF\_CH, &data1, 1);

Serial.print("RF\_CH REG = ");

Serial.println(data1);

NRF24L01\_ReadRegBuf(RF\_SETUP, &data1, 1);

Serial.print("RF\_SETUP REG = ");

Serial.println(data1);

NRF24L01\_ReadRegBuf(STATUS, &data1, 1);

Serial.print("STATUS REG = ");

Serial.println(data1);

NRF24L01\_ReadRegBuf(OBSERVE\_TX, &data1, 1);

Serial.print("OBSERVE\_TX REG = ");

Serial.println(data1);

NRF24L01\_ReadRegBuf(RX\_ADDR\_P0, data2, 5);

Serial.println("RX P0 Address reg = ");

Serial.print(data2[0]);

Serial.print(data2[1]);

Serial.print(data2[2]);

Serial.print(data2[3]);

Serial.print(data2[4]);

NRF24L01\_ReadRegBuf(RX\_ADDR\_P1, data2, 5);

Serial.println("RX P1 Address reg = ");

Serial.print(data2[0]);

Serial.print(data2[1]);

Serial.print(data2[2]);

Serial.print(data2[3]);

Serial.print(data2[4]);

NRF24L01\_ReadRegBuf(RX\_ADDR\_P2, data2, 5);

Serial.println("RX P2 Address reg = ");

Serial.print(data2[0]);

Serial.print(data2[1]);

Serial.print(data2[2]);

Serial.print(data2[3]);

Serial.print(data2[4]);

NRF24L01\_ReadRegBuf(RX\_ADDR\_P3, data2, 5);

Serial.println("RX P3 Address reg = ");

Serial.print(data2[0]);

Serial.print(data2[1]);

Serial.print(data2[2]);

Serial.print(data2[3]);

Serial.print(data2[4]);

NRF24L01\_ReadRegBuf(RX\_ADDR\_P4, data2, 5);

Serial.println("RX P4 Address reg = ");

Serial.print(data2[0]);

Serial.print(data2[1]);

Serial.print(data2[2]);

Serial.print(data2[3]);

Serial.print(data2[4]);

NRF24L01\_ReadRegBuf(RX\_ADDR\_P5, data2, 5);

Serial.println("RX P5 Address reg = ");

Serial.print(data2[0]);

Serial.print(data2[1]);

Serial.print(data2[2]);

Serial.print(data2[3]);

Serial.print(data2[4]);

NRF24L01\_ReadRegBuf(TX\_ADDR, data2, 5);

Serial.println("TX Address reg = ");

Serial.print(data2[0]);

Serial.print(data2[1]);

Serial.print(data2[2]);

Serial.print(data2[3]);

Serial.print(data2[4]);

}