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**University of Turkish Aeronautical Association (UTAA)**

**Faculty of Engineering Computer Engineering**

**Department CENG208, Microprocessors, Spring 2020**

**Home Security System**

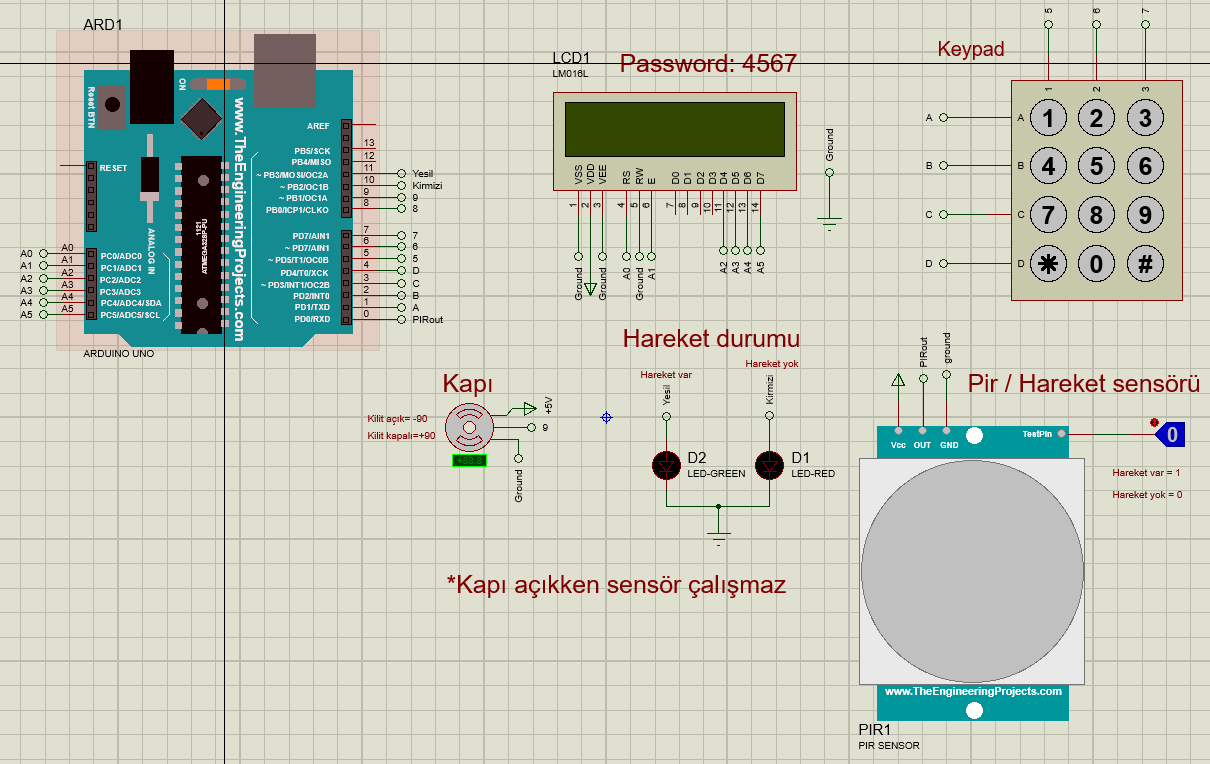
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**Overview**

This project is generally a prototype of a security system. It has a password system which is works in order to simulate a safety guard. The motion sensor and the password system work in a harmony. When the given password is true the motion sensor stops working but if the system is on the locked mode the motion sensor will keep working

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**CODE**

**#include <Keypad.h>**

**#include <String.h>**

**#include <LiquidCrystal.h>**

**#include <Servo.h>**

**Servo myservo;**

**int pos=0; // LCD Connections**

**LiquidCrystal lcd(A0,A1,A2,A3,A4,A5);**

**const byte rows=4;**

**const byte cols=3;**

**char key[rows][cols]= { //Creating keypad**

**{'1','2','3'},**

**{'4','5','6'},**

**{'7','8','9'},**

**{'\*','0','#'}**

**};**

**byte rowPins[rows]= {1,2,3,4}; //Defining key row**

**byte colPins[cols]= {5,6,7}; //Defining key columns**

**Keypad keypad= Keypad(makeKeymap(key),rowPins,colPins,rows,cols);**

**String password="4567"; //Setting password**

**int currentposition=0; //current posistion used for returning starting position**

**int redled=10; //Setting led to 10th pin**

**int greenled=11; //Setting led to 11th pin**

**String epass = ""; //Password that we get from keypad keys**

**bool kapi=false; //Status of gate**

**void setup() {**

**displayscreen();**

**Serial.begin(9600);**

**pinMode(redled, OUTPUT);**

**pinMode(greenled, OUTPUT);**

**myservo.attach(9); //Servo attached to 9th pin**

**myservo.write(180);**

**lcd.begin(16,2);**

**}**

**void loop() {**

**if(kapi==false){ //This used for starting the simulation as door closed**

**pirsensor();**

**if(currentposition==0) {**

**displayscreen();**

**}**

**int l ;**

**char code=keypad.getKey(); //Getting digits from keypad**

**if(code!=NO\_KEY) {**

**epass = epass + code;**

**lcd.clear();**

**lcd.setCursor(0,0);**

**lcd.print("Password:");**

**lcd.setCursor(10,0);**

**for(l=0; l<=currentposition; ++l) {**

**lcd.print("\*");**

**}**

**++currentposition;**

**if(epass.length()==4){ //If the pressed number of digits equals to 4 it checks for the correctness**

**if (epass[0]==password[0]&&epass[1]==password[1]&&epass[2]==password[2]&&epass[3]==password[3]) // Compares the password and pressed password digit by digit**

**{**

**kapi=true;**

**unlockdoor();**

**currentposition=0;**

**epass="";**

**}**

**else { //If the pressed password is wrong**

**incorrect();**

**currentposition=0;**

**epass="";**

**}**

**}**

**}**

**}**

**else{ //If the gate is open**

**char code=keypad.getKey();**

**if(code=='\*'){**

**kapi=false;**

**lcd.clear();**

**lcd.setCursor(3,0);**

**lcd.print("RELOCKING...");**

**for(pos = 0; pos <= 180; pos +=5) { // goes from 0 degrees to 180 degrees**

**myservo.write(pos); // tells servo to go to position in variable "pos"**

**}**

**delay(1000);**

**lcd.clear();**

**lcd.setCursor(6,0);**

**lcd.print("LOCKED");**

**delay(1000);**

**displayscreen();**

**currentposition=0;**

**}**

**}**

**}**

**//Loop Ends//**

**//\*\*\*pirsensor function\*\*\*//**

**void pirsensor(){**

**int pirState=digitalRead(0);**

**if(pirState==LOW){ //Motion off**

**digitalWrite(greenled,LOW);**

**digitalWrite(redled, HIGH);**

**}**

**else if(pirState==HIGH){ //Motion on**

**digitalWrite(greenled,HIGH);**

**digitalWrite(redled,LOW);**

**}**

**}**

**//\*\*\*Unlockdoor function\*\*\*//**

**void unlockdoor() {**

**delay(900);**

**lcd.clear();**

**lcd.setCursor(1,0);**

**lcd.print("Access Granted");**

**lcd.setCursor(5,1);**

**lcd.println("Welcome");**

**for(pos = 180; pos>=0; pos-=5) { // Goes from 180 degrees to 0 degrees**

**myservo.write(pos); // Tells servo to go to position in variable "pos"**

**delay(5);**

**}**

**digitalWrite(greenled,LOW);**

**digitalWrite(redled, LOW);**

**delay(500);**

**}**

**//\*\*\*Incorrect function\*\*\*//**

**void incorrect() { //If the pressed password is wrong this function will be executed**

**delay(500);**

**lcd.clear();**

**lcd.setCursor(1,0);**

**lcd.print("Code");**

**lcd.setCursor(6,0);**

**lcd.print("Incorrect");**

**lcd.setCursor(15,1);**

**lcd.println(" ");**

**delay(2000);**

**lcd.clear();**

**displayscreen();**

**}**

**//\*\*\*displayscreen function\*\*\*//**

**void displayscreen() { //Starting screen**

**lcd.setCursor(0,1);**

**lcd.println("Write password");**

**lcd.setCursor(0,0);**

**lcd.println("To open the door");**

**}**