**EEE 320 INTRODUCTION TO INTERNET OF THINGS**

**INTERM APPLICATION HOMEWORKS**

**(30P) Q2.** Perform a basic wireless communication application for board and wireless communication you have chosen, in which you will determine the scope (not exactly the same as in the lesson). One RGB or at least three LEDs should be used in your circuit.

**Purpose of Application:** You are free about the purpose of application. Clearly state the intended purpose (i.e, what you are trying to do for each situation) in your video capture and in this document.

**Circuit Diagram:** You are free to build your circuit for application. Draw your circuit in **Fritzing.**

**Restriction:** There is no restriction. You can use any IDE and programming language you want.

**Simulation:** Simulate on one of the platforms: Proteus, TinkerCad or Wokwi

**Homework Submission:** Record a videowith all the team members for your application. In your video content; explain your program codes line by line, running the simulation successfully, show your program to be compiled successfully, show your program to be loaded to your board, show your circuit to be run successfully for each case.

The following files need to be uploaded to Teams.

1. This word document by completing the ANSWERS section (DO NOT upload as pdf)
2. Your video file (MUST be talked in English)
3. Fritzing circuit file
4. Simulation project file (if proteus) or link (if TinkerCAD or Wokwi)
5. Application project folder created by IDE software. Include your source file

------------------------------------------------ANSWERS-----------------------------------------------

**Project Team :** Suat Deniz

**Board Selected :** Raspberry Pi Pico W

**Wireless Communication Module Selected :** Infrared Module

**Your Software IDE :** Arduino Ide

**Your Programming Language :** Arduino

**Application Purpose:**

1. **Password Authentication**: The application allows users to input a predefined password sequence using a remote control or any device emitting compatible IR signals. The password sequence is defined in the code and consists of a series of IR codes corresponding to button presses.
2. **User Input Handling**: Upon receiving an IR signal, the application checks whether the received IR code matches the expected code in the password sequence. If a match is found, the application proceeds to the next code in the sequence. If the entire password sequence is correctly entered, access is granted.
3. **Access Granting**: When the entire password sequence is successfully entered, the application grants access or permission for a duration of 7 seconds. During this period, the user can perform any desired action that requires authorization.
4. **Feedback Mechanism**: The application provides visual and auditory feedback to the user during the authentication process. A green LED blinks multiple times to indicate successful authentication, while a red LED accompanied by a buzzer signifies failure.
5. **Reset Mechanism**: If an incorrect password is entered, the application resets the input index and prompts the user to enter the password again.
6. **Security and Access Control**: By implementing a password authentication system, the application enhances security and access control for various purposes, such as controlling electronic devices, securing physical spaces, or activating specific functionalities.

Overall, the application serves as a basic example of implementing password-based authentication with an Arduino board and provides a foundation for building more sophisticated access control systems in various projects and applications.

**Fritzing Circuit Diagram:**

**devre, elektronik mühendisliği, elektronik donanım içeren bir resim

Açıklama otomatik olarak oluşturuldu**

**Program codes:**

metin, ekran görüntüsü, yazı tipi içeren bir resim

Açıklama otomatik olarak oluşturuldu

metin, ekran görüntüsü, yazı tipi, sayı, numara içeren bir resim

Açıklama otomatik olarak oluşturuldu

metin, ekran görüntüsü, yazı tipi, sayı, numara içeren bir resim

Açıklama otomatik olarak oluşturuldu

**Simulation (Single screenshot):**

metin, yazılım, ekran görüntüsü, multimedya yazılımı içeren bir resim

Açıklama otomatik olarak oluşturuldu**Photo for your circuit (only 1 photo):**

