REQUIREMENTS DOCUMENT

1. GENERAL INFORMATION

1.1 Purpose

The main motive of this document is to provide documentation to the prospective solution of the project “Security System”, and to exhibit elements and functions that are necessary for this project.

1.2 Scope

The scope of this document is to outline the functional and non-functional requirements along with the hardware requirements as the proposed solution for the Security System.

1.3 Points of Contact

Below is a list of contacts relevant to this project:

Contact Name	Contact Type	Telephone Number	Email
Chenchang Liu	Group member	+49 15228535090	chenchang.liu@tu-ilmenau.de
Amandeep Chouksey	Group member	+49-15215738930	amandeep.chouksey@tu-ilmenau.de

2. FUNCTIONAL REQUIREMENTS

2.1 Summary of Functions

The Security System provides an embedded system based solution with primary functions as follows:

- Monitor a door or window
- Determine the current state of the door/window
- Arm or disarm the system
- Take necessary steps in both armed/disarmed state

2.2 Functional Requirements

In order to accomplish the above articulated needs, the Security System provides the following functionality:

- Status Management
  - Indication of the current state of the door/window
  - Ability to change between states “open” and “locked”

- Weapon System Management
  - Indication of the current state of the weapon system
  - Ability to switch between “armed” and “disarmed”
  - Ability to control the weapon system by using passwords
  - Sharing of all or part of a client record

3. NON-FUNCTIONAL REQUIREMENTS

3.1 Summary of Non-functional Characters

The non-functional requirements describe the system's operation capabilities and constraints that enhance its functionality, including safety, reliability, etc.

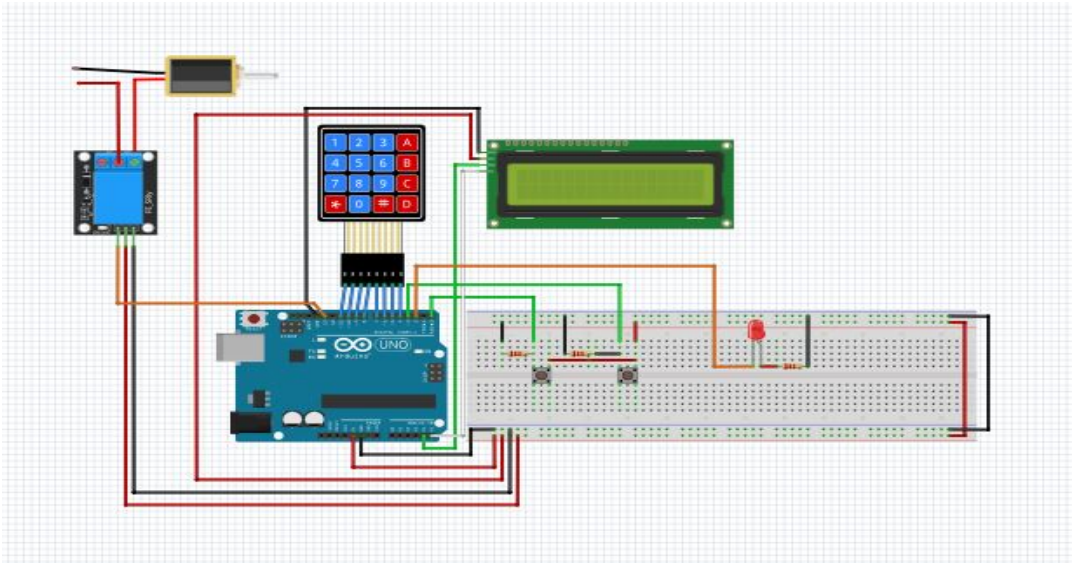
3.2 Non-functional Requirements

- System Security
  - The embedded system hardware design should fulfil the needs of system safety
    - Use of sustainable hardware components
    - Safe power supply for the system
    - Safe operation in components and wire connection
  - The software programming should fulfill the need of system safety
    - Data encryption when using password function
    - Reliable coding to ensure the functionality of the system
- System Complexity
  - Reducing of the total number of wires/components when possible
  - Optimization of the system by using different components

4. HARDWARE REQUIREMENTS

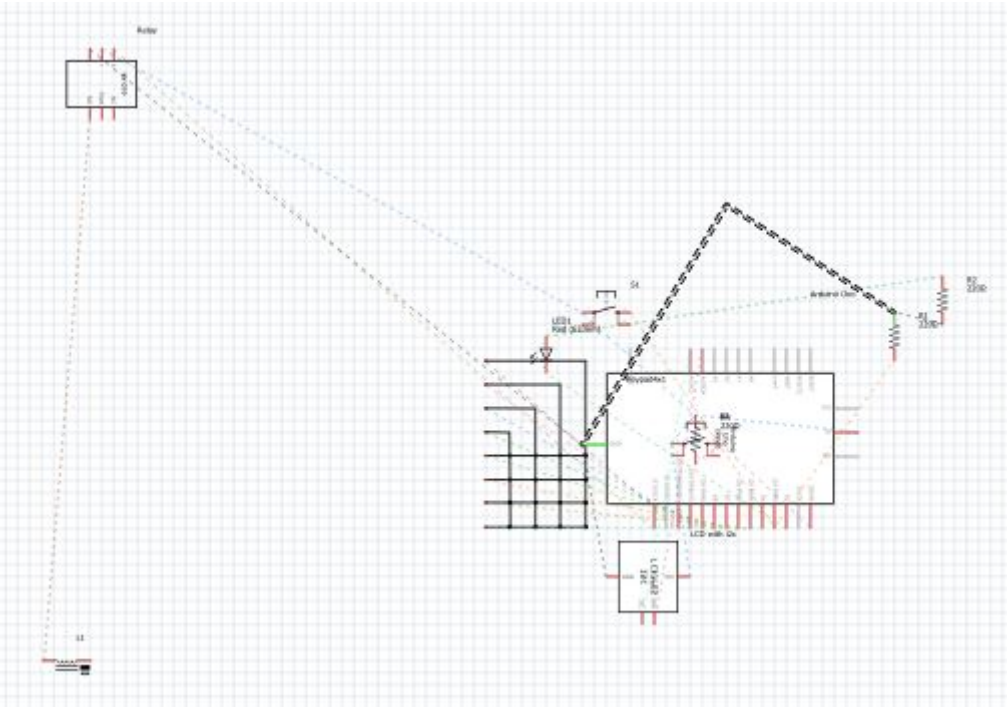
- LCD Display
- Number Keypad
- Breadboard
- Arduino Uno
- Relay Module
- Solenoid
- LED
- Switches
- Wires

5. CIRCUIT REPRESENTATION



Circuit diagram depicting the layout of the Security System

6. SCHEMATIC REPRESENTATION



Schematic diagram depicting the layout of the Security System