Template for Project submission

The project document should have
1. Problem statement developed from need statement as per template given
2. block diagram / concept diagram explaining mechanical structure and general working of model handwritten diagrams / model using tinkercad / linkage is expected
3. Sensors , actuators and its control achieved using arduino type controller and its code Simulation of circuit on tinkercad

Timeline: Finalization of theme: Jan 26, 2022
          Problem statement and submission of Gantt Chart: Jan 26, 2022
          Concept Diagrams / Structure: Feb 03, 2022
          Simulation of control: Mar 8, 2022

      Final Submission: Mar 8, 2022

Part 1:

Timeline and Gantt Chart (Distribution of work and Planning including Part 1)

Roll Number	Name of Student	Role played
16010521077	Sagar Gangwani	Designer
16010521075	Fahad kazi	Salesperson
16010221038	Eshan Trivedi	Salesperson
16010321116	Krish Desai	Customer
16010521072	Gunamshu	Customer

Need Statement:

Table 1: List of The sample Questionnaire to design the problem

Questions such as	This question helps the designer to
1. Why is this a priority in today's time?	**Identify client's objective**
2. What challenges do you think will come as you try to purchase the product?	

3. What will be the total cost of this technology?	
4. What's your approximate budget for this project?	
5. What will be the safety requirements if we buy this product?	
1. What if there's a power failure in our society?	
2. Is there any limit to pin code length?	**Identify constraints**
3. We tend to forget house keys now and then, and also it can be easy to forget the pincode for the lock. Is there any alternative solution for this problem	
1. What will be the use of this system's circuit?	
2. Where can this product be used? And does it ensure authorised access to highly secured places?	**Establish functions**
3. How can this project be used to control the switching of loads through password?	

Table 2 The information obtained through basic research and Survey

Observation and Justification of requirements.	Requirements Specifications
1. Because when we pass the phone the door responds.	The lock should have NFC tag
2. It is observed that people tend to forget house keys now and then, and also it can be easy to forget the pincode for the lock. By using an application to grant a temporary key to people at a specific time and date.	The lock should have a temporary key
3. To record everything that happens in front of the lock with high quality.	The lock should a camera record full HD
4. This is because of safety purposes. Infrared motion is emitted by humans and animals in the form of heat. When an infrared energy surge occurs, an alarm is triggered.	The lock should contain infrared motion detectors(PIR)
5. To transfer commands from the user to the device from long distances.	The lock should have WI-FI.
6. It is used so that the battery does not run out faster.	The lock should have remote control that takes less energy

1.1 Establish client's objectives
1) In today's world everything has become very digitized. We can even witness modern currency being digitized nowadays. The ease of technology has increased so much that it has also eventually given rise to crime rate.Which is a thing to worry for us. So to compete in this world we need to be up to date with regards to many things. Which also includes a password based door lock system.
2) The total cost of our product is 3000/-
3) For safety purposes we will also provide you with an alternative key.

1.2 Identify constraints

1) Fail safe locks operate on a principle of that as long as power is supplied, the lock is active and when an unlock is triggered, the power cuts out, and the lock opens. they are generally used for emergency exits, or in a situation where if power is cut out, an exit is still possible.
2) There is no limit to PINCODE of password based door lock systems.
3) It is a low range circuit, i.e. if you forget the password it is not possible to open the door.

1.3 Establish functions
1) The simple circuit can be used at residential places to ensure better safety.
2) It can be used at organizations to ensure authorized access to highly secured places
3) With a slight modification this project can be used to control the switching of loads to password.
4) The main concept behind this project is a door-latch opening using a password entered through a keypad. User can change this password anytime he/she wish using a keypad
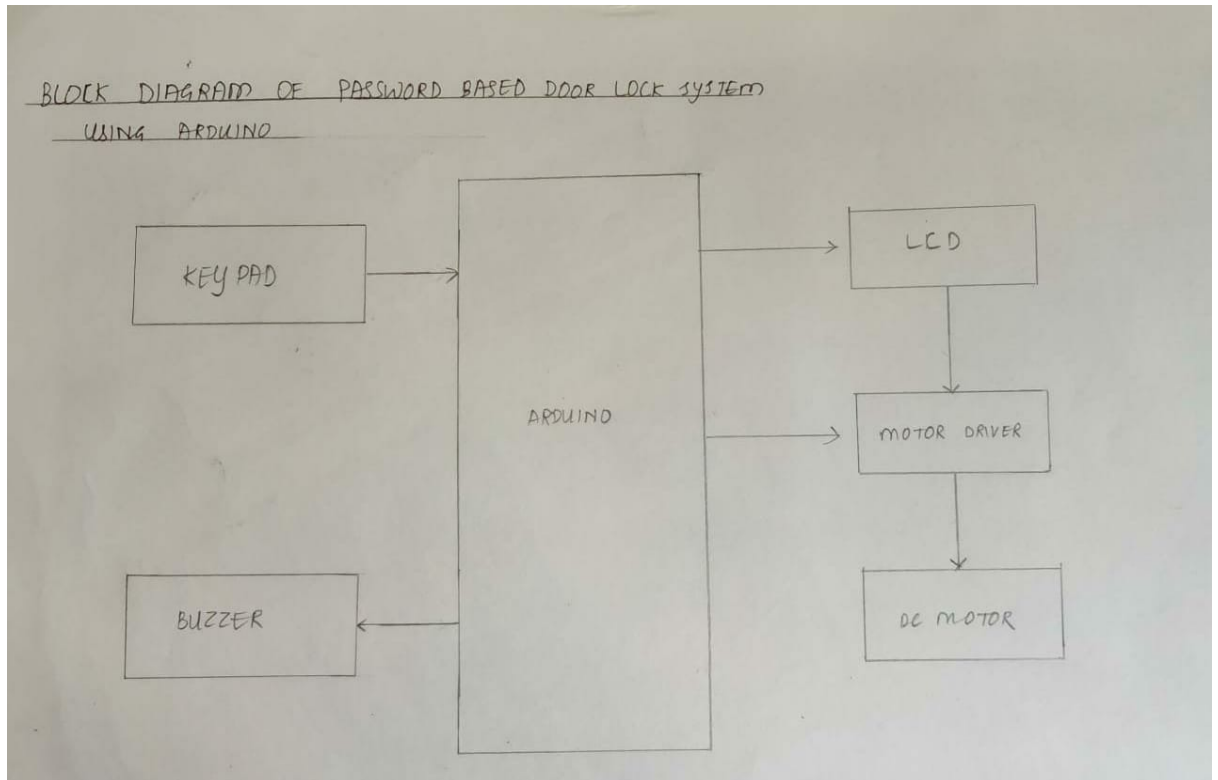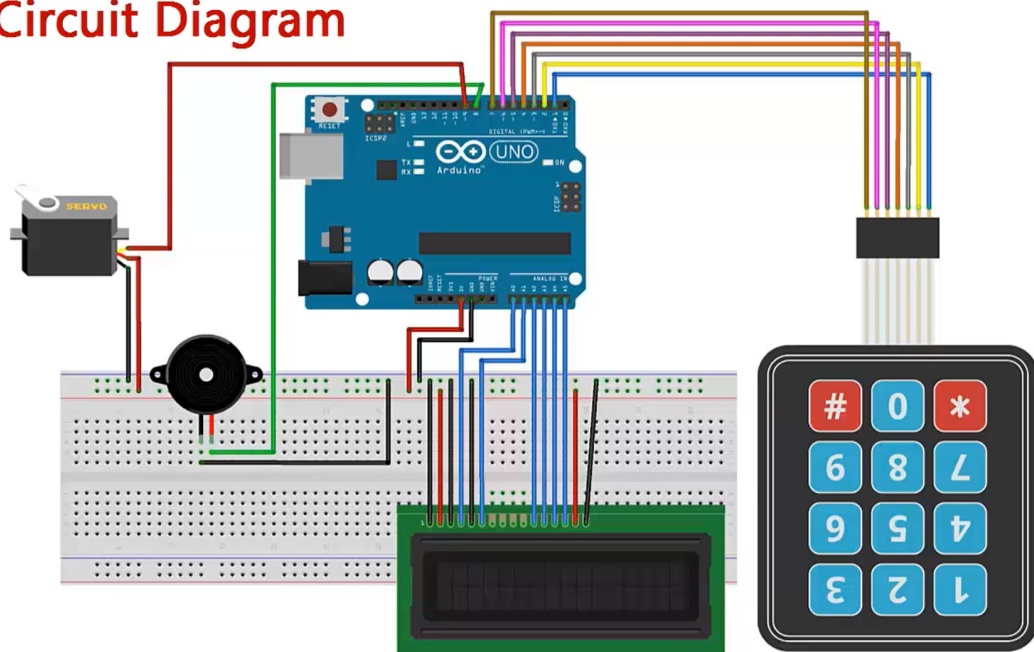
Revised Problem Statement:

Part 2:
Design Specifications
Students can submit either of following in order to explain the design and working of idea

- Block diagram
- 3 D model of design
- mechanism models
- hand drawings/ sketches of ideas
- List of components needed for implementation

BLOCK DIAGRAM OF PASSWORD BASED DOOR LOCK SYSTEM USING ARDUINO

Part 3:
Control logic and Program

Students can submit either of following in order to explain the design and working of idea

- Circuit diagram
- Program / Code
- Simulation video

Part 4:

Learnings and scope of idea

Students can submit either audio or video presentation of the complete project work which will include a combination of Parts 1, 2 and 3 along with learnings from the project and scope of application of the presented idea.