A

PROJECT REPORT ON

"Wireless Door Lock System"

SUBMITTED BY

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UNDER THE GUIDANCE OF

PROF. S.K.MURABATTE

DEPARTMENT OF MECHANICAL ENGINEERING

GOVERNMENT POLYTECHNIC MIRAJ

YEAR 2020-2021

DEPARTMENT OF MECHANICAL ENGINEERING

GOVERNMENT POYTECHNIC, MIRAJ.

CERTIFICATE

This is certify that Students of Third Year Mechanical Engineering have satisfactory completed the project work in titled

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"Wireless Door Lock System''

Towards the partial fulfillment of Diploma in Mechanical Enggineering for the academic year 2020-2021. This report represents the bonafide work done by students.

Place : Miraj Date : / /

Principle	HOD	Guide
(Caption .Dr.N.P. SONAJE)	(Prof. S.B. Sonavale)	(Prof.S.L.Deshmukh)

Acknowledgement

Acknowledgement

Gratitude is hardest emotion to express and often one doesn't find adequate words to convey all the one feels.

We take this opportunity to thank beloved Director of our Institute Caption. Dr. N.P.Sonaje sir for being a source of inspiration for students.

We are indeed grateful to Head of Mechanical Engineering Department Prof S.B Sonavale sir for giving us helpful advice and for providing all necessary facilities to carry our project work.

A sense of prevailing satisfaction and achievement envelops the whole feeling of having completed under the guidance of Prof S.k. Murabatte sir. We wish to express our respect, deep sense of gratitude to him for his valuable guidance, keen interest and co-operation without which it would have been impossible to accomplish this project work successfully. It was indeed great experience to work under his guidance.

Also, we would like to express our sincere thanks to all teaching and non-teaching faculty whose unending efforts, advise, motivation and encouragement at every step made this work possible Last but not the least we are thankful to our colleagues and those who helped us directly or indirectly to bring this project up to stage of completion.

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Abstract

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Comfort coupled with safety and simplicity is what man strives for. Our project has been to bring about both. The culmination of our effort has resulted in development of a new "**Wireless Door Lock Sysytem**".

The project present a basic as well as very professional treatment of the subject in a very comprehensive, based on learning effort and understanding capability of today as per their levels. The device is simple and comfortable. Basic calculation ,drawing, designing is included in the project

The salient features of our Door Lock can be listed as the mechanism used is very simple, easy for operation; no skill is required to operate the Door Lock.

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Literature survey

Literature survey

Many automated advanced door locking system has been developed and it's popularly used in many places like commercial buildings and organization. Some of these automated doors locking system are based on RFID (Radiofrequency identification). The RFID card reader detects and checks the user accessibility. When the card is brought near the reader, it identifies the radio frequency of the card and thus verifies the keybut these systems are very expensive. Various control systems are being designed over the years to prevent unauthorized access. The main aim for providing locks for our home, school, office, and building is for security of our lives and property. It is therefore important to have convenient way of achieving this

The system works using keypad to enter a password to the system. If entered password is correct then door is open by motor which is used to rotate the handle of the door lock. System also includes extra features like adding new users and changing old password etc . We surveyed many smart doors locking system. We found that these products are very expensive. Some of the implementation mentioned in the literature survey is very cost effective in implementation but do not provide multi user or multi level functionalities. We identified these requirements and thought to develop a system which is cost effective in implementation and having more advanced features like multi user and multilevel. These features are the need of time and such functionalities will make the system moreuseful.

Problem Identifications

Problem Identifications

Our Project is based on wireless door locking system. We made this model to make it more easy for people to lock door not by physically touching it. We found many problems regarding door locks. If a boy is studying but someone often comes and disturbs him , so he can't study with concentration. By using this model he can lock the door by sitting anywhere. We have been taking several measurement in order to attain it to live a worry free life. In this Project we proposed a smart locking system which is designed to work based on the internet of things to prevent unauthorized access and trespassing. We surveyed many smart doors locking system. We found that these products are very expensive. Some of the implementation mentioned in the literature survey is very cost effective in implementation but do not provide multi user or multi level functionalities. We identified these requirements and thought to develop a system which is cost effective in implementation and having more advanced features like multi user and multilevel. These features are the need of time and such functionalities will make the system more useful.

Introduction

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Our project title is Wireless Door Lock System. In this project we are going to make a Wireless Door Lock System .

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Need of project

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The goal of this project was to provide an easy and convenient method for unlocking a front door by removing the need for the old-fashioned key. We start by evaluating the need for such a system by sending a survey and analyzing the results. We follow the Software Development Life Cycle to set the project objectives and implement the design. Our project helps in building an economical and a low-budget wireless lock using the bluetooth available in a smartphone. There are several advantages of the biometric lock. Firstly, it is secure, unapproved individuals won't have any probability of accessing the framework. Besides, there is no requirement for a key. The main thing which will be required is a smartphone phone with the required hardware and software.

Thus “Android Based Smart Door Locking System” is a modern successor of the conventional door locking system.This system is very costeffective and easy to install and is designed under different modes which makes it useful.

Selection of material and parts

Selection of material and parts:

Selection of material:

Selection of proper material for Door Lock System components is one of most important step in process of machine design. The best material one which will serve the desired objective at minimum cost. For our purpose the required material should have good properties which not give support to vibration and another problem. This requirement following factor should be considered while selecting the material.

A) Availability material.
B) Suitability of material for working conditions in service.
C) The cost of material

We select following material:-

1) Arduino Uno

Arduino Uno Board It's actually the control board [Fig2] which communicates with the Android Apps and triggers the door strike based on the command received from Android Apps.

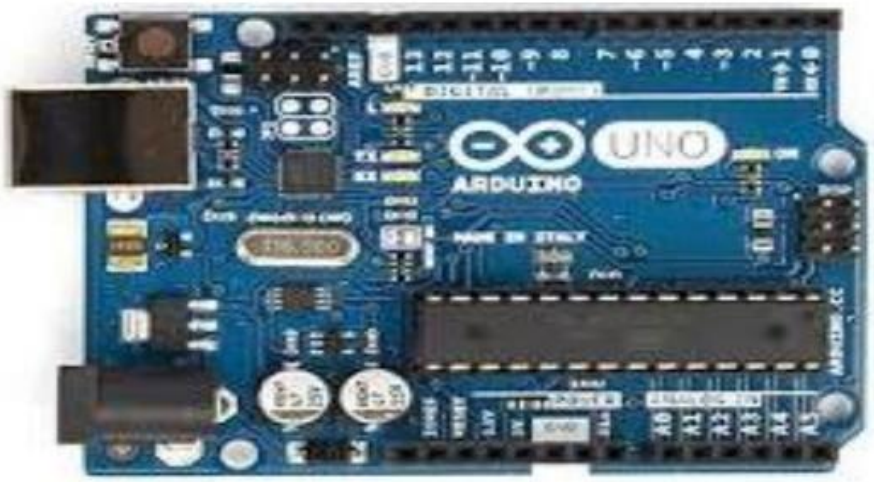


Fig. 2.Arduino Uno Board

2) Bluetooth HC-05 Module

Bluetooth HC-05 module is an easy to use Bluetooth SPP (Serial Port Protocol) module, designed for transparent wireless serial connection setup. This module is used to provide communication between Arduino Uno Board and the smart phone, which will have Android Apps to monitor the lock.

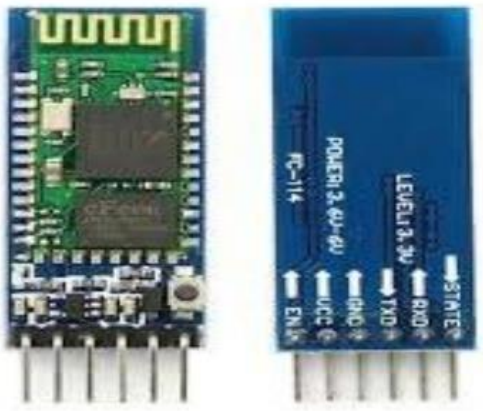
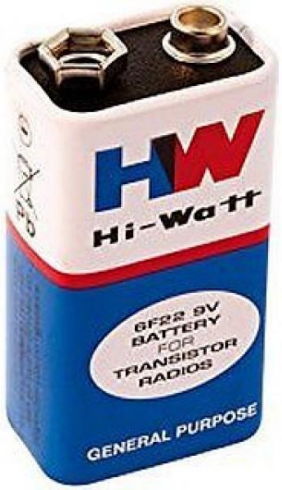


Fig. 5. Bluetooth HC-05 Module

3) 9V Battery

9V Battery Constant 9V Output till lasts.Metal Jacket Body.Good Built Quality and hence Leakproof.Easy to install and Replace.Corrosion free Connector Point for long-term use.0% Mercury and Cadmium. Environment-friendly.OEM Compatible.



4) Jumper Wires

Jumper Wires 40P color jumper wire.Length: 100mm.Weight: 25 gm.Compatible with 2.54mm spacing pin headers.High quality and in good working conditio n.Durable and reusable.Easy to install and use

5) Switch Type: SPST

Switch is used for On or Off Electric supply to Lock.

Switch Type: SPST.Contact resistance: <50mΩ.Insulation resistance: >100MΩ.Diel ectric resistance: >1500VAC / 1 min

6) MDF Board

Medium-density fibreboard (MDF) is primarily **used** for indoor applications due to its poor moisture resistance. It is available in raw form, or with a finely sanded surface, or with a decorative overlay. **MDF** is also usable for furniture such as cabinets, because of its strong surface.

7) 4”3 Aluminium Tower Bolt

Aluminium Tower Bolt is designed for keeping doors or gates locked. It is used for Manually lock and Unlock the door.

9) Solenoid Lock

A **solenoid bolt** is a type of electronic-mechanical locking mechanism. This type of lock is characterized by the **use** of a **solenoid** to throw the **bolt**. Sophisticated **solenoid bolt** locks may **use** microprocessors to perform voltage regulation, reduce power consumption, and/or provide access control.

Manufacturing process

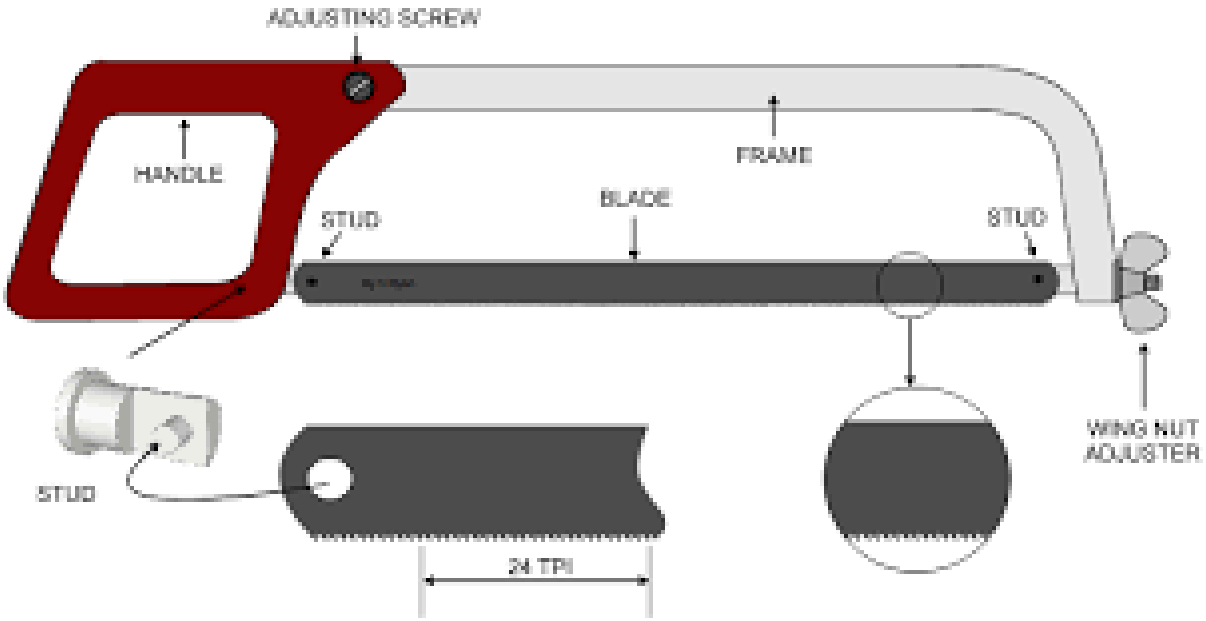
MANUFACTURING PROCESS

Following elements are required for the manufacturing.

Hacksaw

The hacksaw is a very simple tool, consisting of an elongated C-shaped frame with a handle at one end, and a narrow, flexible blade that mounts on pegs and is stretched taut across the open side of the frame. There are also mini-hacksaw frames that allow one end of the blade to extend past the handle. These are well-suited for use in confined spaces, where a full-sized saw frame won't fit.

It is used to cut MDF Board.



drilling machine

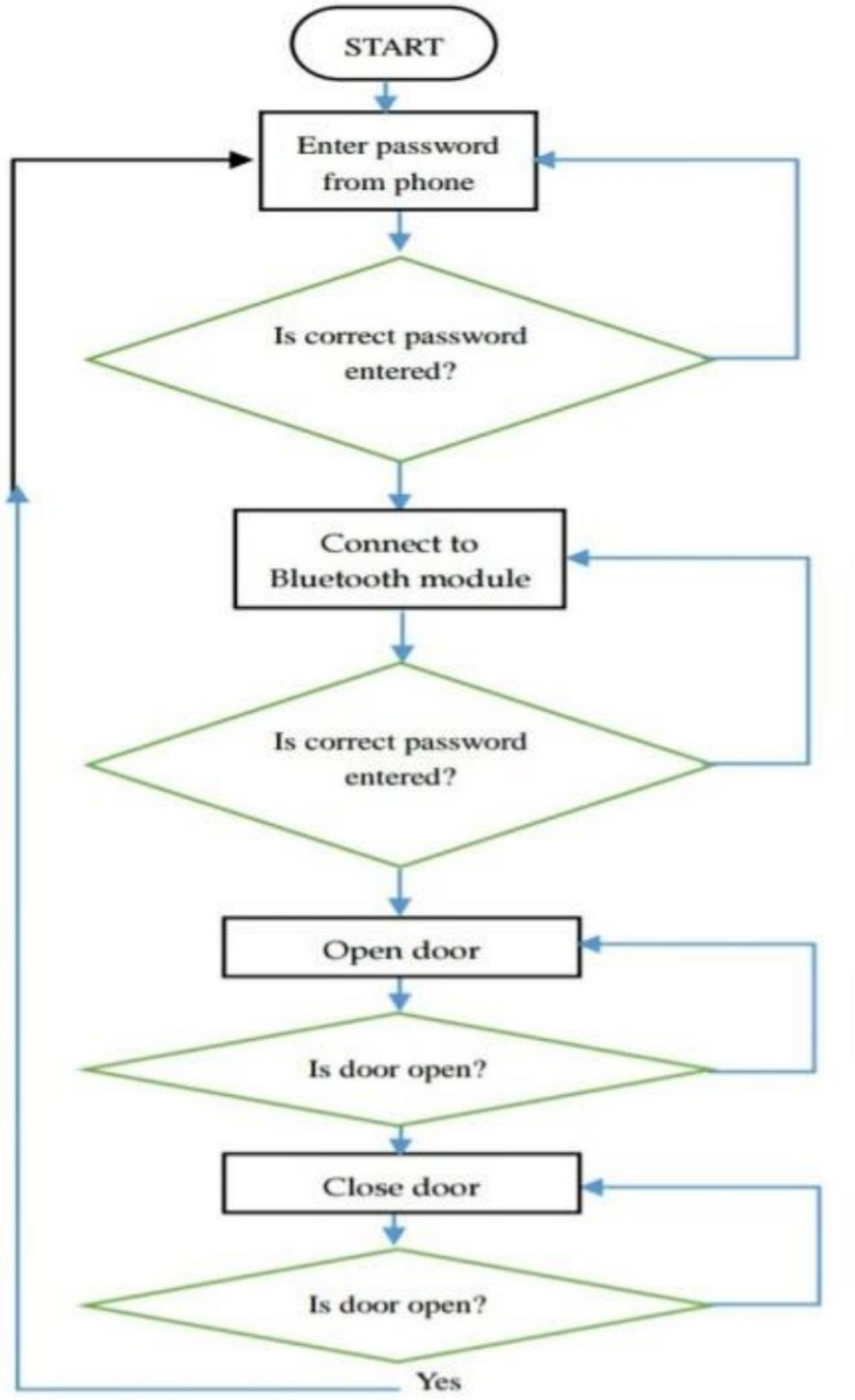
A drill or drilling machine is a tool primarily used for making round holes or driving fasteners. It is fitted with a bit, either a drill or driver, depending on application, secured by a chuck. Some powered drills also include a hammer function.Drills vary widely in speed, power, and size. They are characteristically corded electrically driven devices, with hand-operated types dramatically decreasing in popularity and cordless battery-powered ones proliferating.Drills are commonly used in woodworking, metalworking, construction, machine tool fabrication, construction and utility projects. Specially designed versions are made for medicine, space, and miniature applications.

Following Process is carried out for the manufacturing.

1. Material selection
2. Cutting as per design
3. Drilling
4. Assembly
5. Testing

Working

Working



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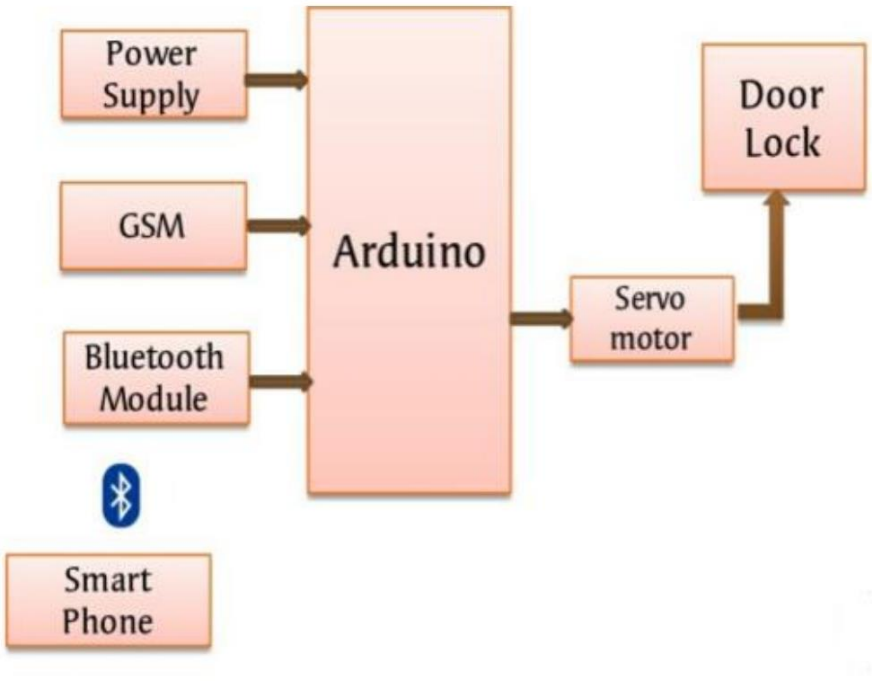

The main feature of the proposed system is its multi mode functionalities. The proposed system works on two different modes which are as follows: -

A. Normal Mode

In this mode a single user can login and use the system. It has following features:-

- User can login using the registered password.
- User can lock or unlock the door with the password.
- Recovery of password is available if he/she forgets using the registered email address.
- User can reset the password if he feels it is not secure

B. Multiuser Mode

This mode is useful when more than one users are authorized to operate lock. It has following features.

- Individual user can login using the registered password.
- Each individual user can login using his\her own registered ID and password.
- Recovery of password is available if he/she forgets the password by using the e-mail provided earlier.
- Each Individual can reset the password if they feel it is not secure.

C. Assumption

It is assumed that the users will operate the system using Android Smart Phones having Bluetooth features with the Bluetooth HC-05 which is been installed in the system. The mobile App which is developed for Android Phones will not work on other platform. However it can be customized for other platform also. It is also assume that user will operate it within the Bluetooth device accessibility range of 10m to 100m.

Advantages

Advantages

- No More Fumbling for Keys. Digging around for your keys in your purse, pocket or briefcase is a hassle. ...
- No Risk of Being Locked Out. ...
- No More Keys Under the Mat. ...
- No More Robbery

Disadvantages

Disadvantages

- You'll Pay More for a Keyless Lock.

Cost estimation

MATERIAL COST

SR NO.	PART NAME	QUANTITY [NOS]	COST [IN Rs.]
01	Arduino Uno		800
02	Bluetooth HC 05		400
03	9V Battery		80
04	Jumper Wires		80
05	Switch Type: SPST		50
06	MDF Board		200
07	4”3 Aluminium Tower Bolt		100
08	Solenoid Lock		550
09	Other		300
	Total		**2560**

Application

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- Office Buildings
- Shopping Centres
- Banks
- Server Rooms
- Hotels & Apartments

Conclusion

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The goal of this project was to provide an easy and convenient method for unlocking a front door by removing the need for the old-fashioned key. We start by evaluating the need for such a system by sending a survey and analyzing the results. We follow the Software Development Life Cycle to set the project objectives and implement the design.

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Reference

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