

# REPORT ON REMOTE KEY CONTROL

## Description:

A remote keyless entry system consists of a remote that can lock, unlock, and perform numerous other activities within a car when activated within a defined range. At the touch of a few buttons, you can lock or unlock your car, open the trunk, start the engine, and perform some really fancy stuff (in high-end models). A short-range radio transmitter transmits radio waves to a receiver unit within the vehicle, which activates the aforementioned functions. So this project assists with automobile locking, unlocking, alarm activation/deactivation, and alert system. A led signalling system aids in the identification of the features. For instance, clicking once will turn on all of the LEDs, signalling that the car has been locked; similarly, pressing a button twice, three times, or four times would turn on all of the LEDs, indicating that the car has been locked.

## Abstract:

Remote key control is an electronic key access control system that can be operated from a distance to perform specific function to the car. This RKE works by transmitting radio waves at a specific frequency, these frequency are used to remotely lock or unlock doors, and also helps the user to perform an action that causes a physical or software key fob to send a radio signal to a receiver that controls an electronic lock of the car. This is performed by pressing a button on a physical fob.

## HIGH LEVEL REQUIREMENTS

ID	DESCRIPTION
HLR1	UNLOCK THE DOOR
HLR2	LOCK THE DOOR
HLR3	ACTIVATE THE ALARM
HLR4	ALERT THE APPROACH OF LIGHT

## LOW LEVEL REQUIREMENTS

ID	DESCRIPTION
LLR1	All led on at the same time
LLR2	All led off at the same time
LLR3	All led on in clockwise manner
LLR4	All led on in anti-clockwise manner

## SWOT ANALYSIS

### STRENGTHS :

AUTOMATIC LOCKING AND  
UNLOCKING OF CAR

MANAGES ALL THE FUNCTION  
WITH ONE PRESS BUTTON

EASY TO USE AND ACCESS

### WEEKNESS :

THE RANGE IS RESTRICTED

POSSIBLE RISK OF FAILURE  
AND MALFUNCTION

### OPPORTUNITIES:

AUTOMOBILE SECTOR HAS A  
WIDE RANGE OF  
APPLICATION.

VERY EFFICIENT AND SAFETY  
IS ASSURED

### THREATS:

IMPROPER FUNCTIONING OF  
REMOTE CAN BE HUGE  
THREATS

LOSS OF DATA IF THERE IS  
SAFETY ISSUE

## 4W's & 1H

### Who

- People who own a car.

### What

- An automobile remote that can lock, unlock, and do a variety of additional functions.

### When

- It is used when we want to unlock, lock or perform variety of function to car.

### Where

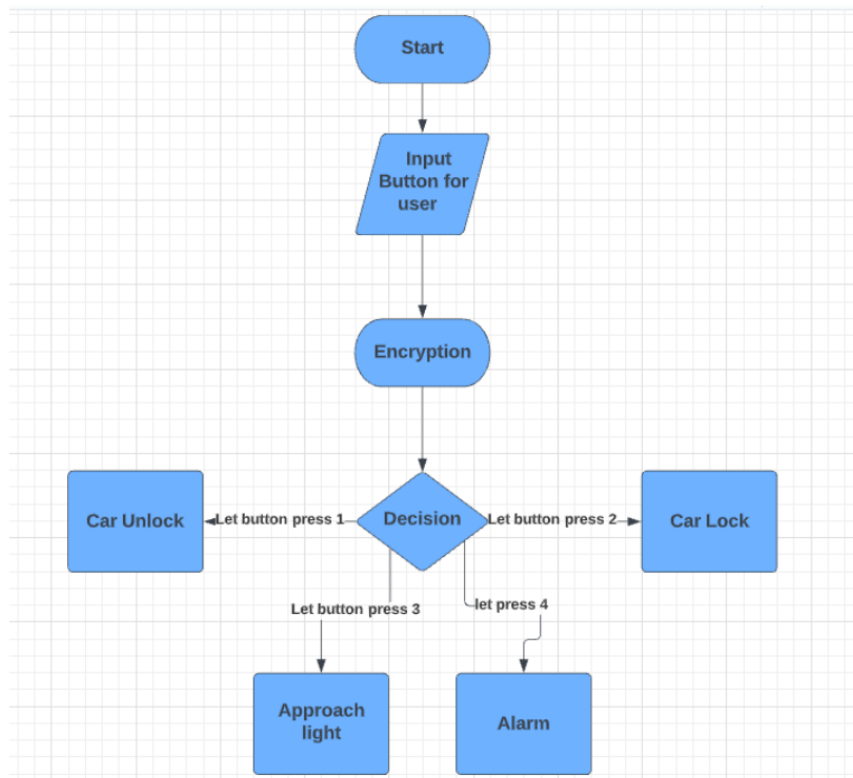
- Remote keyless entry can be used in a variety of vehicles, including cars, jeeps, and buses.

### How

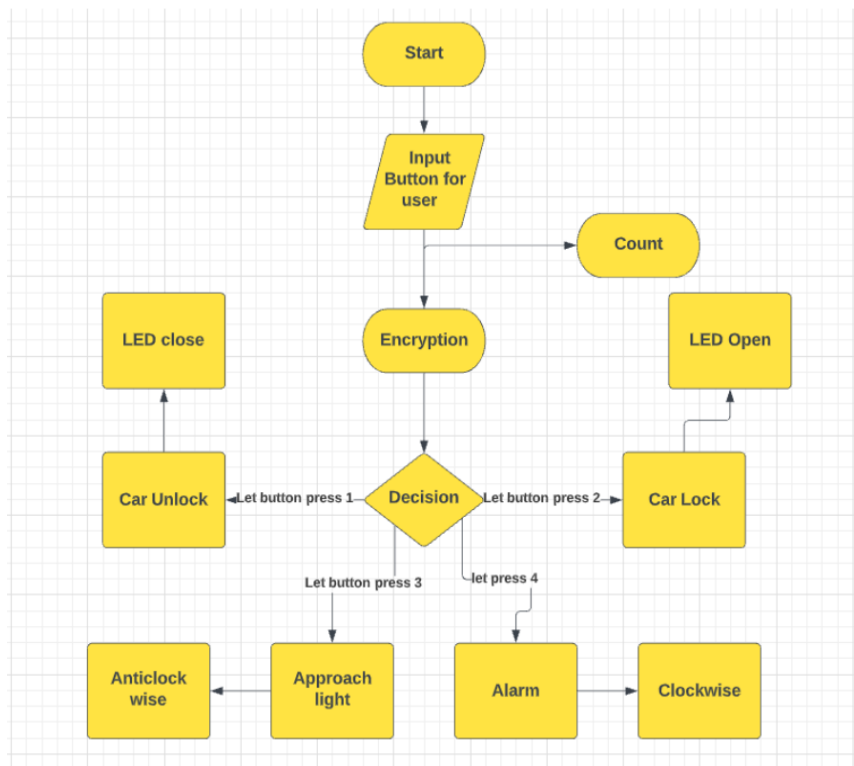
- Developed using STM32CubeIDE and push buttons are used to run all the functionality.

# Architecture:

## ◦ High Level Flow chart Behavioural Diagram

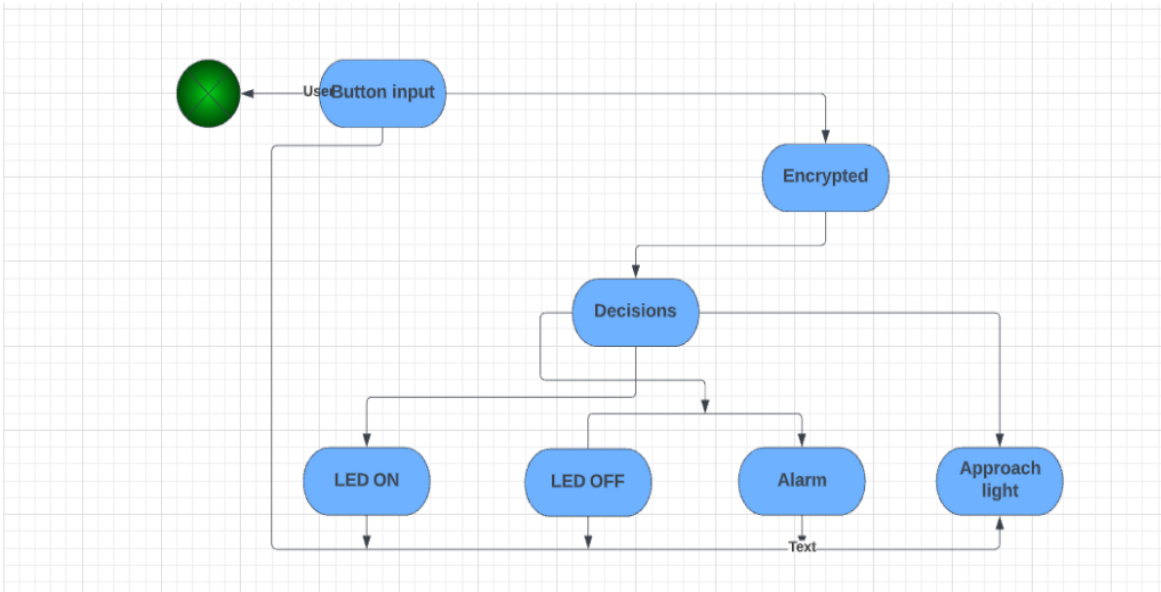


## ◦ Low Level Flow chart Behavioural Diagram

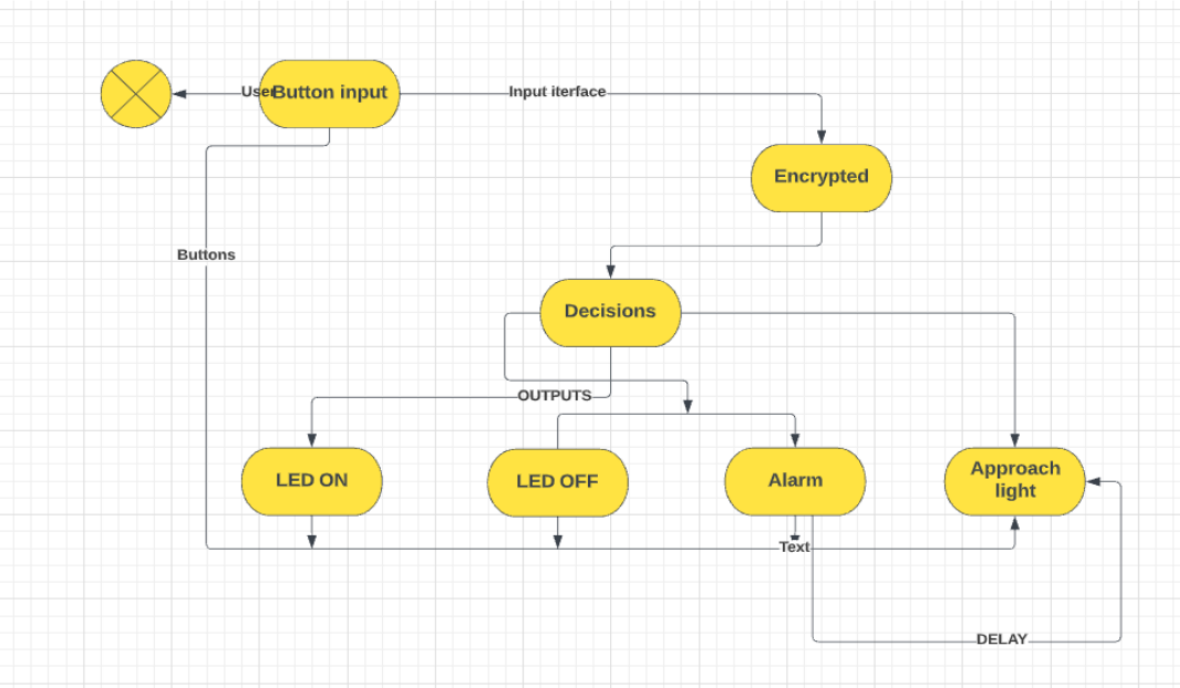


1B. Structural Diagram

- High Level UML Use Case Structural Diagram



Low Level UML Use Case Structural Diagram



- **Test Plan and Output**

- **High level test plan**

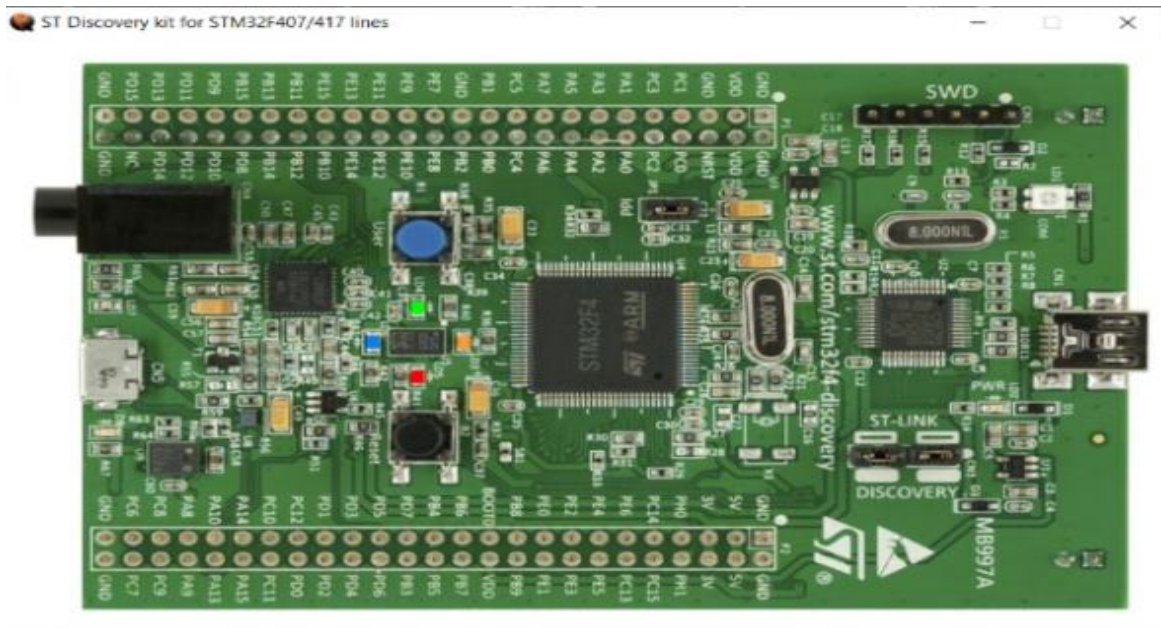
Test ID	Description	Exp I/P	Exp O/P	Actual Output	Type Of Test
<b>H_01</b>	UNLOCK THE DOOR	None	Successful Integration	Successful Integration	Requirement based
<b>H_02</b>	LOCK THE DOOR	None	Successful Integration	Successful Integration	Requirement based
<b>H_03</b>	ACTIVATE THE ALARM	None	Partially Integrated	Partially Integrated	Requirement based
<b>H_04</b>	ALERT THE APPROACH OF LIGHT	None	Partially Integrated	Partially Integrated	Requirement based

- **Low level test plan**

Test ID	Description	Exp I/P	Exp O/P	Actual Output	Type Of Test
<b>L_01</b>	LOCK	USER button press once	ALL 4 LED TURNS ON	ALL 4 LED TURNS ON	Requirement based
<b>L_02</b>	UNLOCK	USER BUTTON PRESS TWICE	ALL 4 LED TURNS ON	ALL 4 LED TURNS ON	Requirement based
<b>L_03</b>	Check for ALARM ACTIVATE/DEACTIVATE	USER BUTTON PRESS THREE TIMES	LED Turns on Clockwise	-	Requirement based
<b>L_04</b>	Check for APPROACH LIGHT	USER BUTTON PRESS FOUR TIMES	LED Turns on anti-Clockwise	-	Requirement based

## Results :

- When car is locked (display lock)



When car is unlocked (display unlock)

