A Report on

REMOTE KEY ENTRY

By- Group 55

Introduction

An electronic lock that controls entrance to a facility or vehicle without the use of a traditional mechanical key is known as remote key entry. The term "remote key entry system" refers to a system that uses a remote to control some functions of an automobile, such as lock, unlock, alarm activation, and approach light at or near the vehicle, all of which require entering a default (or self-programmed) numeric code. A transmitter and a receiver are required for RKE transmission. Receiver - Body Control ECU, other ECU with integrated RKE Transmitter - RKE key fob, other ID device with RKE incorporated RKE works by sending radio waves in a single direction on a certain frequency. To prevent automobile thieves from intercepting and spoofing telegrams, RKE systems use encryption and rolling code techniques.

SWOT Analysis

4W's & 1H

1. What ?

- Wireless key for the smart cars.

2. Who ?

- The people who want to control their car wirelessely.

3. When ?

- User want to locking and unlocking, alarm function activation.

4. Where ?

- Outside/Inside and near the car or at a frequent range.

5. How ?

- By pressing the blue button in the remote key.

Requirements

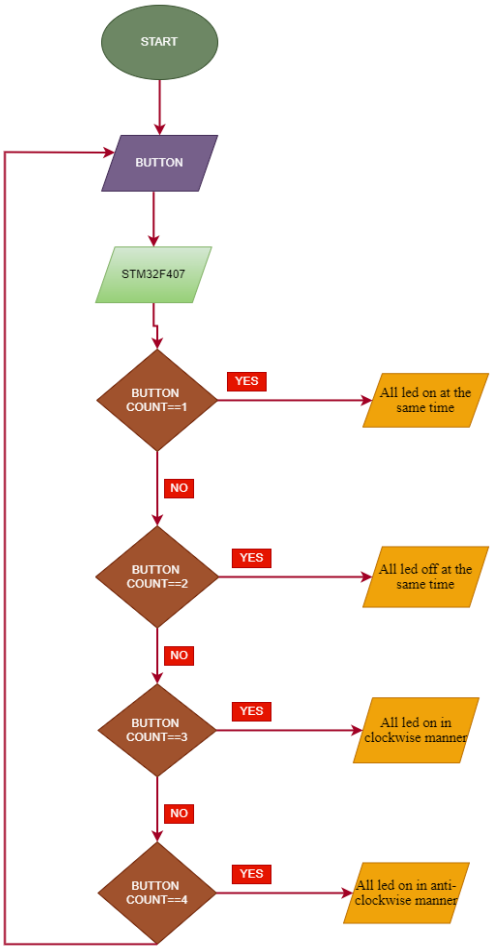
High Level Requirements

ID	Description
HLR1	When you press the blue switch once, it should lock.
HLR2	When you press the blue switch two times, it should unlock.
HLR3	When you press the blue switch three times, it should alaram activation/decactivation.
HLR4	When the blue switch is pressed four times, it should turn on the approach light.

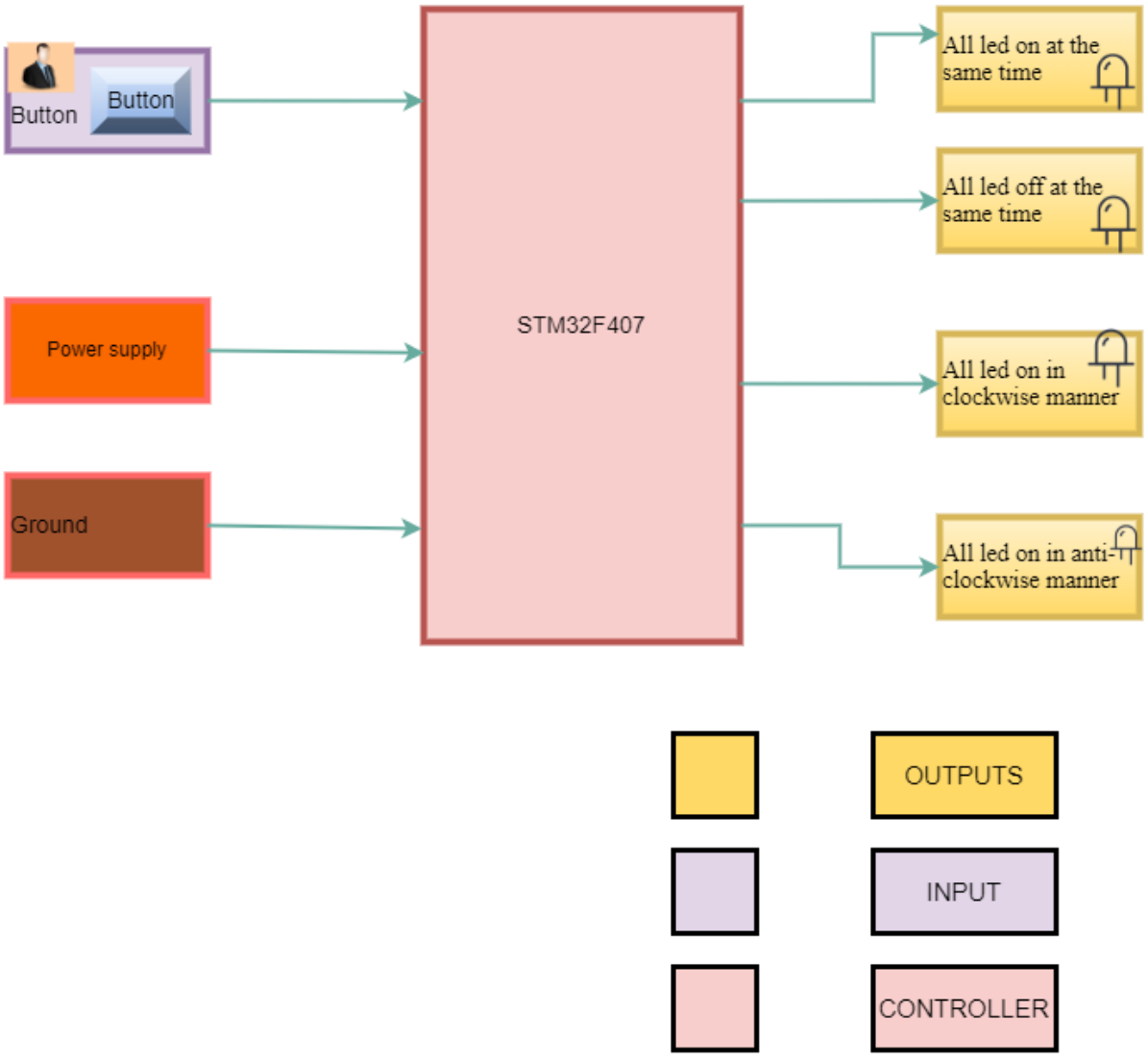
Low Level Requirements

ID	Description
HLR1_LLR1	All LED's are ON at the same time
HLR2_LLR2	All LED's are OFF at the same time
HLR3_LLR3	All LED's are ON in Clockwise-direction
HLR4_LLR4	All LED's are ON in Anti-Clockwise-direction

FLOW CHART



STRUCTURAL DIAGRAM



Test cases for High level Requirements

HLR_Test ID	Description	Input	Expected output	Actual Output	Passed Or Not
01	All the LEDs should turn ON at a time	press the button once	All LEDs turned On at the same time	All LEDs turned On at the same time	□
02	All the LEDs should turn OFF at a time	press the button twice	All LEDs turned off at the same time	All LEDs turned off at the same time	□
03	All the LEDs should turn ON clockwise	press the button thirce	Turn ON all the LEDs clockwise	Turn ON all the LEDs clockwise	□
04	All the LEDs should turn ON anti-clockwise	press the button thirce	Turn ON all the LEDs anti-clockwise	Turn ON all the LEDs clockwise	□

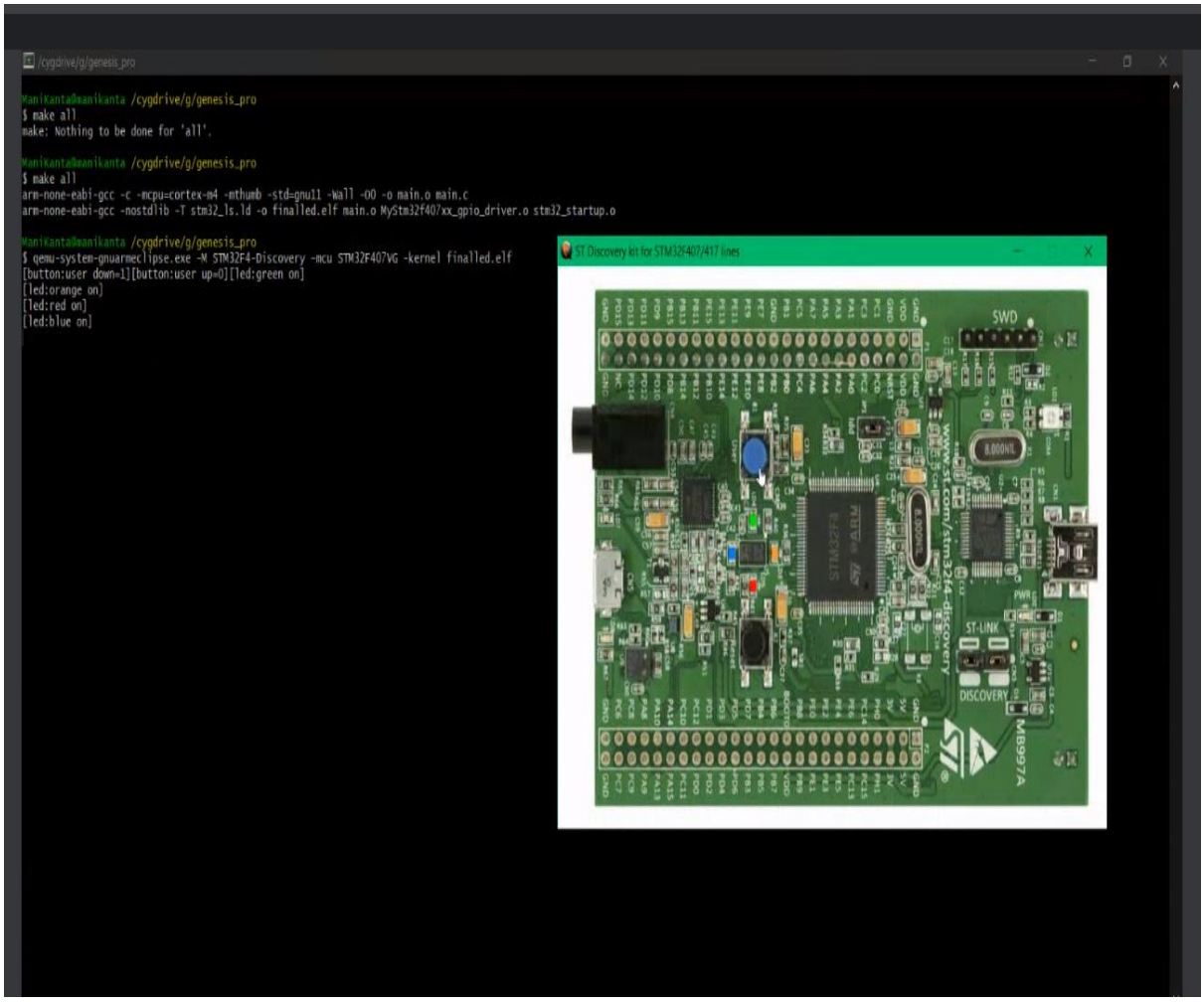
Test cases for low level requirements

Test ID	Description	Input	Expected output	Actual Output	Passed Or Not
1.1	Check the pin state of the button	-	Get the button state	Get the button state	□
1.2	Increment the count based on number of times the button is pressed	press the button	increment the button count	increment the button count	□
1.3	Check for the condition to be equal to 1/2/3/4	press the button once	All Leds turned ON	All LEDs turned ON	□
2.1	Check the pin state of the button	-	Get the button state	Get the button state	□
2.2	Increment the count based on number of times the button is pressed	press the button	increment the button count	increment the button count	□
2.3	Check for the condition to be equal to 1/2/3/4	press the button twice	All Leds turned OFF	All LEDs turned OFF	□
3.1	Check the pin state of the button	-	Get the button state	Get the button state	□
3.2	Increment the count based on number of times the button is pressed	press the button	increment the button count	increment the button count	□

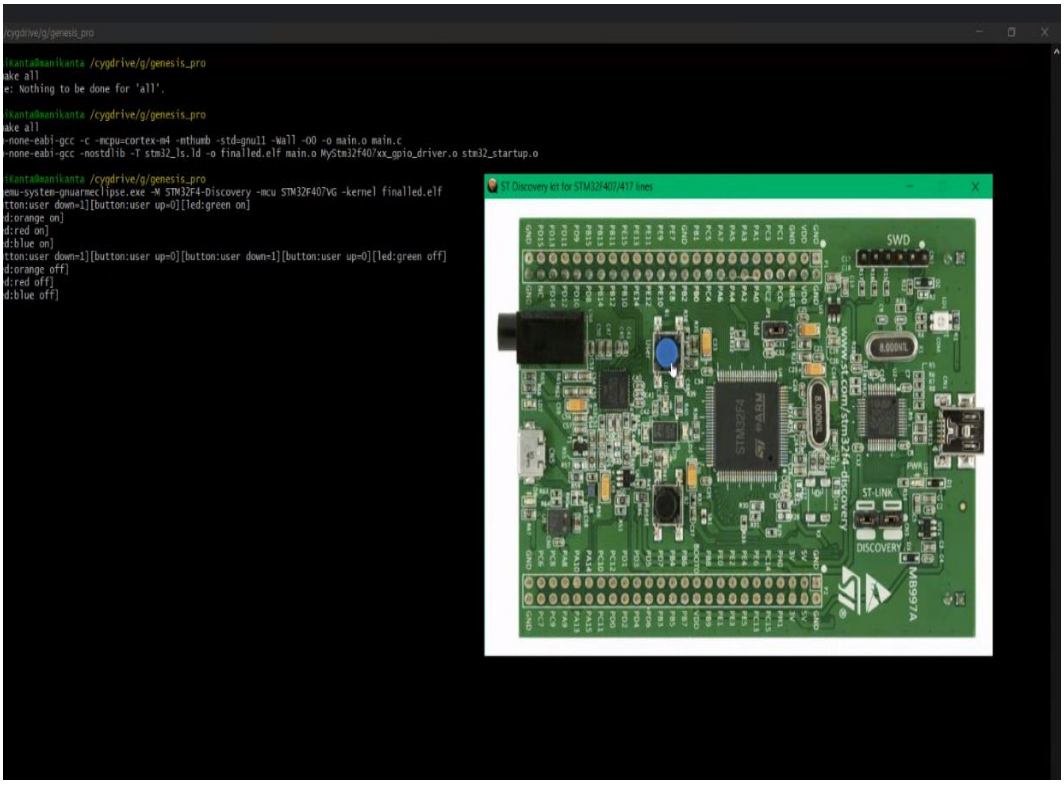
3.3	Check for the condition to be equal to 1/2/3/4	press the button thrice	All Leds turned on clockwise	All LEDs turned on clockwise	☐
4.1	Check the pin state of the button	-	Get the button state	Get the button state	☐
4.2	Increment the count based on number of times the button is pressed	press the button	increment the button count	increment the button count	☐
4.3	Check for the condition to be equal to 1/2/3/4	press the button four times	All Leds turned on anti-clockwise	All LEDs turned on anti-clockwise	☐

Results

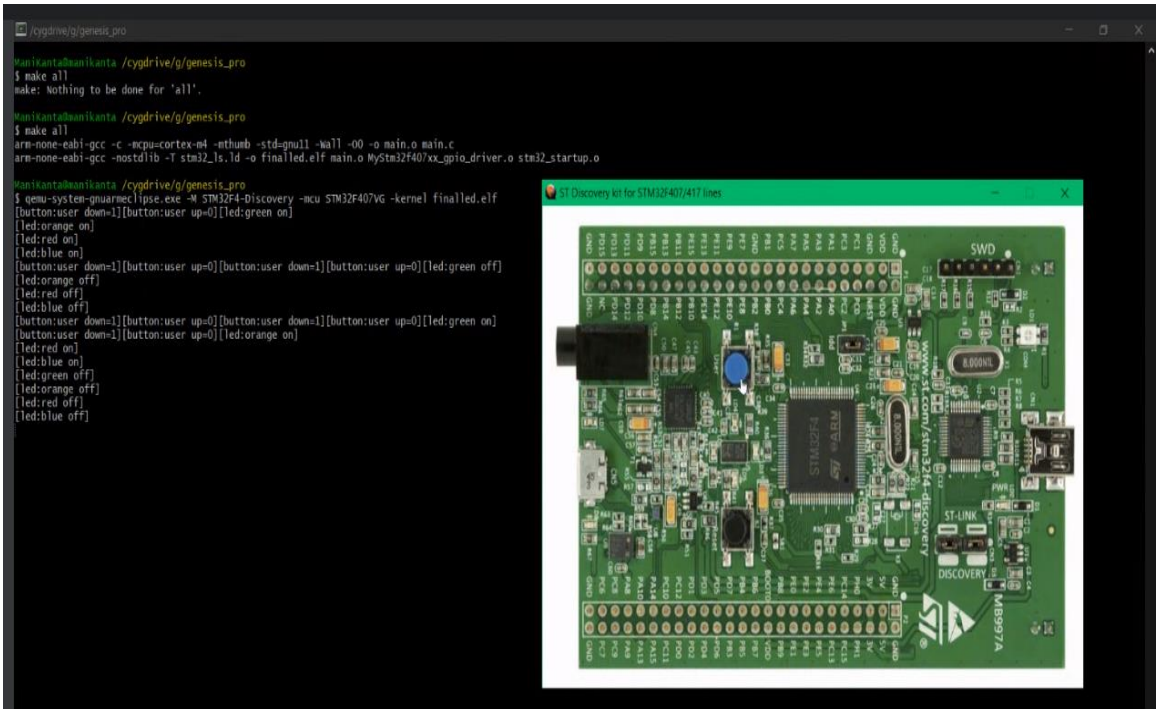
Functionality1



Functionality2



Functionality3



Functuionality4