

Bicom System

Module : Getting Started with ARM Based Microcontroller

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Bicom System

Introduction:

Two-way communication is used in the Bicom system. The receiver performs two-way encryption and verification when the driver carries the smart card key and comes within the designated range. The door will automatically open after verification is completed, and the driver will only need to touch the ignition button to start the vehicle. The entire procedure does not necessitate any key operations. It will also provide the motorist with a new level of safety and comfort. The LF downlink in two-way RF systems is solely used to wake up the key fob and establish the RF up/downlink. During the authentication procedure, the bi-directional RF link handles all communication.

Research:

The Bicom system is referred to as 'Passive' because it does not need the user to take any action. A magnetically coupled radio frequency signal is used to communicate between the key and the automobile. When the key is 'in the car's communication range,' the system believes that it is in close proximity. The system is made up of two parts: a key fob and a vehicle module, both of which contain wireless transceivers that use a magnetically coupled radio frequency signal to detect each other. When the key fob is within range, the vehicle's module sends out encoded messages all the time.

Requirements

High Level Requirements

ID	DESCRIPTION	STATUS
HLR1	The application shall display Window status	
HLR2	The application shall display alarm status	
HLR3	The application shall display car battery info status	

ID	DESCRIPTION	STATUS
HLR4	The application shall display Door status	

Low Level Requirements

ID	DESCRIPTION	STATUS
LLR1	For displaying window status, user need to press the button one time	
LLR2	For displaying alarm status , user need to press the button two time	
LLR3	For displaying car battery info status, user need to press the button three time	
LLR4	For displaying Door status, user need to press the button four time	

SWOT Analysis

Strengths

low power consumption

Better Security

Better accesss control

Ease and convenience

Weakness

The cost of this technology is high

Thieves can hack the program

4W'S & 1H

WHO

The Bicom system is an electronic access control system that can be operated from user.

WHAT

The Bicom system which are commonly used to displaying window status, alarm status, car battery info status, Door status.

WHEN

end user needs 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.

Where

Bicom systems for cars can operate in any where with the requirements.

How

The action is usually performed by pressing a button on a physical fob.

Applications

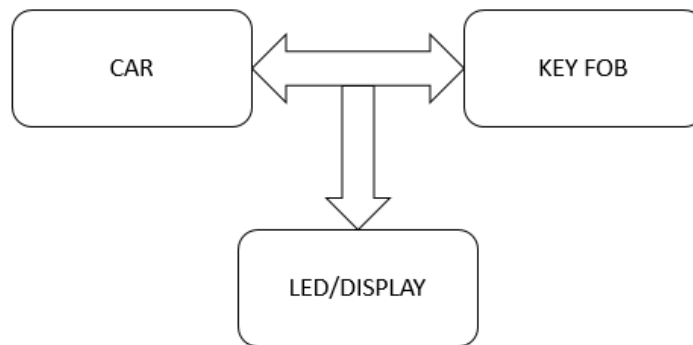
Applications of the Bicom are:

1. Bicom are generally used to remotely lock or unlock doors.
2. Bicom are often employed to secure vehicles from theft, passive keyless entry does not involve any activity on the end user's part.
3. Bicom are used in Auto mobile industries, cars and other vechicles.
4. Bicom systems for automobiles can also operate the vehicle's ignition system, security alarm, horn, lights, and trunk, in addition to locking and unlocking the doors.
5. Bicom can also be used to regulate access to certain portions of a structure, such as garages.
6. Bicom is used in some home automation and security systems.

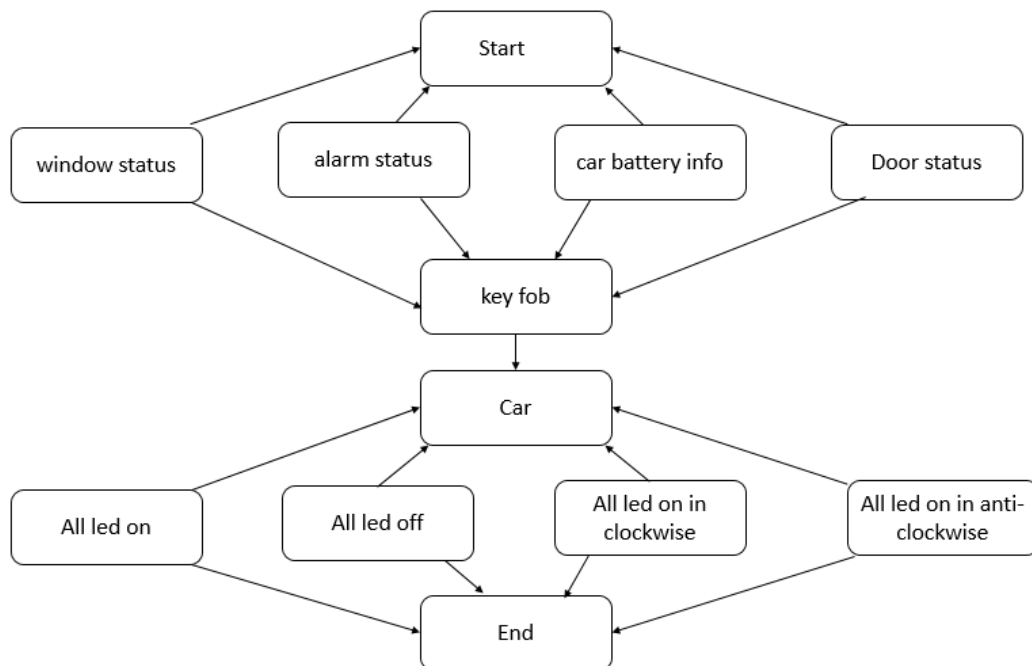
Block Diagrams

Structural

High Level

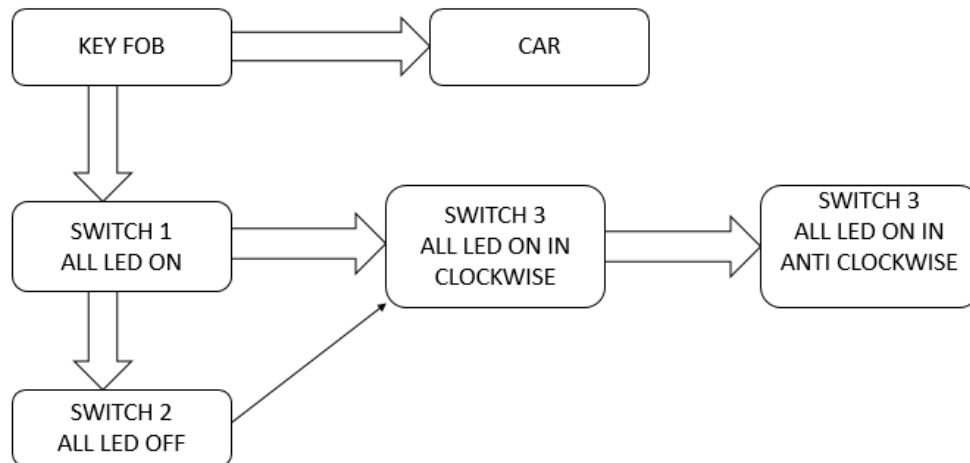


Low Level

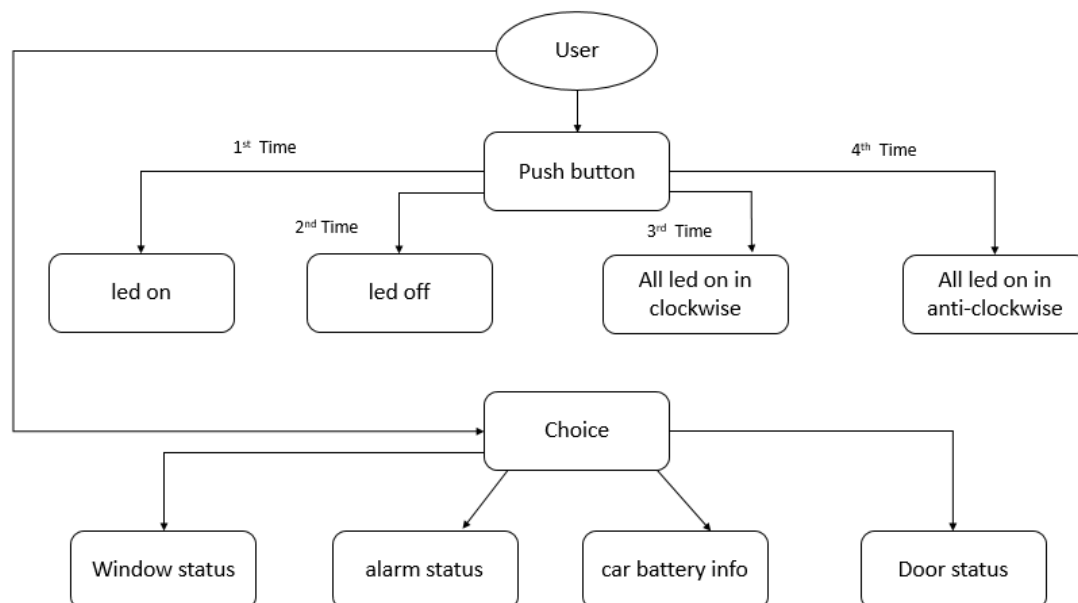


Behavior Diagram

High Level



Low Level



TestPlanAndOutput

NO	Test case	Test case Objective	Input data	Expected Result	Actual Result	status
1	TC-1	For displaying the window status of car	user needs to press the button one time	All LED On at the same time, its shows the window status	All LED ON at the same time, its shows the window status	Pass ☑
2	TC-2	For displaying the alarm status of car	user needs to press the button Two time	All led off at the same time, its shows the alarm status	All led off at the same time, its shows the alarm status	Pass ☑
3	TC-3	For displaying the car battery info	user needs to press the button three time	All led on in clockwise, it shows the car battery info	All led on in clockwise, it shows the car battery info	Pass ☑
4	TC-4	For displaying the Door status of car	user needs to press the button four time	All led on in anti-clockwise , its shows the Door status of car	All led on in anti-clockwise , its shows the Door status of car	Pass ☑
5	TC-5	Key fob	acts like a unidirectional RKE system for a car	Implemented Successful	Implemented Successful	Pass ☑
6	TC-6	Car status information	displayed on the key fob	Implemented	Implemented Successful	Pass ☑

N O	Test case	Test case Objective	Input data	Expected Result	Actual Result	status
			by LED/display			
7	TC-7	Car Window Status	Button_Press "1 Time"	Window Status	Window Status	Pass <input checked="" type="checkbox"/>
8	TC-8	Car Alarm Status	Button_Press "2 Times"	Alarm Status	Alarm Status	Pass <input checked="" type="checkbox"/>
9	TC-9	Car Battery Information Status	Button_Press "3 Times"	Battery Status	Battery Status	Pass <input checked="" type="checkbox"/>
10	TC-10	Car Door Status	Button_Press "4 Times"	Door Status	Door Status	Pass <input checked="" type="checkbox"/>

REFERENCE

https://www.researchgate.net/publication/322886970_A_Remote_Controlled_Car_Using_Wireless_Technology