**REMOTE KEYLESS ENTRY**

**(RKE)**

**DONE BY GROUP NUMBER 43**

**ABDUL RIYAZ**

**VISHNUVARDHAN REDDY PUTTA**

**MOULIGA P**

**DEBOJIT PARIAL**

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**1) INTRODUCTION**

Remote keyless entry is a system which allows users to lock and unlock the doors of the vehicle from a distance remotely. Almost 70% to 80% of the vehicles in the world comes with remote keyless entry. It requires a user to press a button on a physical fob which will send/transmit a radio signal to the receiver and locks the door. It has LEDs which will tell us that what functionality currently performing. It provides high secuirity for vehicles. Additionally it has a functionality to activate alarm or deactivate alarm and approach light.

**2) FEATURES**

1. Use to lock or unlock vehicles from a distance.
2. Have LEDs to indicate which functionality is currently performing.
3. Small in size and handy too.
4. Can activate/deactivate alarm of the vehicle
5. Have approach light functionality.
6. Keeps the vehicle secure.

**3) REQUIREMENTS**

**3.1) HIGH LEVEL REQUIREMENT**

|  |  |
| --- | --- |
| **Test ID** | **Description** |
| HL01 | The system shall have alarm activation/deactivation functionality |
| HL02 | The system shall have approach light funtionality |
| HL03 | The system shall be secure |
| HL04 | The system shall lock vehicle doors wirelessly |
| HL05 | The system shall unlock vehicle doors wirelessly |

**3.2) LOW LEVEL REQUIREMENT**

|  |  |  |
| --- | --- | --- |
| **For High level requirement** | **Test ID** | **Description** |
| HL04 | LL01 | All the LEDs shall turn on at the same time after single press. |
| HL05 | LL02 | All the LEDs shall turn off at the same time after two presses |
| HL01 | LL03 | All LEDs shall turn on in clockwise manner after three presses |
| HL02 | LL04 | All LEDs shall turn on in anti-clockwise manner after four presses |

**4) SWOT ANALYSIS**

**STRENGTHS**

* It works wirelessly and reduce human effort and shows different vehicle status

**WEAKNESSES**

* It has limited range(distance).

**OPPORTUNITIES**

* It can be implemented on mobile phones and its range(distance) can be increased.
* More features can be added.

**THREATS**

* The components of the system are hard to replace.

**5) 5W's & 1H**

**WHO**

* People who have vehicle.

**WHAT**

* It is a system which wirelessly lock/unlock door of a vehicle and perform different functionalities from a distance.

**WHEN**

* Whenever the user wants to lock or unlock the door of the vehicle and wants to use its other features.

**WHERE**

* It can be use anywhere

**WHY**

* For an easy use of vehicle and to ensure secuirity.

**HOW**

* The system can be operated by just clicking a button .

**6) ARCHITECTURE**

**6.1) BEHAVIOURAL DIAGRAM**

Diagram

Description automatically generated

**6.2) STRUCTURAL DIAGRAM**

Diagram

Description automatically generated

**6.3) BLOCK DIAGRAM**

A picture containing text, businesscard, screenshot

Description automatically generated

**7) TEST PLANS**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Test ID** | **Description** | **Input** | **Expected Output** | **Actual Output** | **Pass/Fail** |
| 01 | Vehicle door lock | 1 press button | Vehicle locked | Vehicle locked | Pass |
| 02 | Vehicle door unlock | 2 press button | Vehicle unlocked | Vehicle unlocked | Pass |
| 03 | Alarm activation/deactivation | 3 press button | Activated/deactivated | Activated/deactivated | Pass |
| 04 | Approach light | 4 press button | On | On | Pass |

**7.1) HIGH LEVEL TEST PLAN**

**7.2) LOW LEVEL TEST PLAN**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Test ID** | **Description** | **Input** | **Expected Output** | **Actual Output** | **Pass/Fail** |
| 01 | All LEDs shall on at same time | 1 press button | All LEDs on | All LEDs on | Pass |
| 02 | All LEDs shall off at same time | 2 press button | All LEDs off | All LEDs off | Pass |
| 03 | All LEDs shall on in clockwise | 3 press button | All LEDs on in clockwise manner | All LEDs on in clockwise manner | Pass |
| 04 | All LEDs shall on in anti-clockwise | 4 press button | All LEDs on in anti-clockwise manner | All LEDs on in anti-clockwise manner | Pass |