V2V:

Purpose:

CAR 1 sends data to CAR 2 and act accordingly to avoid accidents.

Assumptions:

1. CAR 1(master) always leads CAR2(slave)
2. Both are in a straight line.

Requirements:

1. Data to be sent:
   * Speed
   * Distance
   * Indicator
     + Traffic
     + Brake
     + Obstacle
   * Direction
   * Location

Modes of operation:

1. Normal mode: CAR 2 is still out of range so no communication yet and each act based on its own data.
2. Communication mode (if CAR 2 is within the communication range): CAR 1 sends data to CAR 2
3. Dominant mode: CAR1 sends data and controls CAR2 actions.

Scenarios:

1. No problems
2. Obstacles
3. Normal brake
4. Sudden brake in communication mode switches to Dominant mode

**State Machine:**

Any pressed Button on BM

On Reset||  
Button Not Pressed

Car2 Range <= X && No Obstacle

Car1 Speed = 0 && Car1 Obstacle distance = y

Normal   
Mode

Stationery

Car2\_Range<=X

Stop BM

Car2\_Range>X

Comm   
Mode

Button Pressed

Stop BM

Emergency

Dominant Mode

Note :   
We assume that we only have 2 cars ,

X and Y is arbitrary distances.

BM : Bluetooth Module

Stationery :

System Starts,

(pooling BM “F,B,L,W” && Button Not-Pressed )

|| (Button Pressed )

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Emergency (robbery) :

Red Led as Indication occur when Button is pressed .

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Normal Mode :

-Normal Vehicle Action

“Depends on Ultrasonic Reading , we decide if we continue Normal Motion or Stop”

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Comm Mode :

-Check range of Car2

* Within range

Send Data with NRF

* Out of range

Return Normal Mode

Dominant Mode (Crash)

Car1 Full Control Car2 (Without permission)(Platooning mode ).

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