Static Design:

Number of Tasks = 2

* Data Gathering Task
* Vehicle Communication Task

Number of timers = 2

* Check mode timer.
* Action Decision timer

Number of Queues = 3

* Tx Data (Sensors data)
* Rx Data
* Distance (back US reading)

Shared resources = 1

* Binary Semaphore (Current Mode)

Assume Tick-Time = 1 msec

3

1

Tx data Sensors data

**Data Gathering task(1ms)**

* Read all data from all sensors (Distance (US) / BM / speed)
* Insert data in Queue.

**Vehicle Comm. Task(2ms)**

* Send data to CAR2 using NRF.

**Mode (Normal / Comm./Emergency) Timer(1.3ms)**

* Check the distance and update mode
* Send with GSM in Emergency mode

2

Binary Semaphore (Mode)

1

Distance (US reading)

Rx data

**Action Decision Timer (1.6ms)**

* Read data from Queue.
* Decide the best action to be taken (Stop the car / Decrease speed/move normally…)
* Update CAR1 Status
* Insert the decision and required data in the other Queue