Speed Limiter and Cruise Control

Team Members

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Project Description

1. Speed Limiter:

The speed limiter is used to limit the speed of the car at a certain specified speed. It is turned on/off and configured by three buttons. Whenever the driver tries to surpass the speed limit, they should find the gas pedal harder to press, nevertheless a harder press on the pedal will suffice to accelerate over the speed limit and then a flashing warning sign should appear in the dashboard.

2. Cruise Control:

The cruise control is used to automatically maintain the speed of the car at a certain specified speed without the driver pressing the gas pedal. It can be turned on/off and configured by three buttons (two of which are shared with the speed limiter). At any time, the driver can press the breaks or the gas pedals to accelerate or decelerate the car and then a flashing warning sign should appear in the dashboard.

Speed Limit & Cruise Control

RTOS Design

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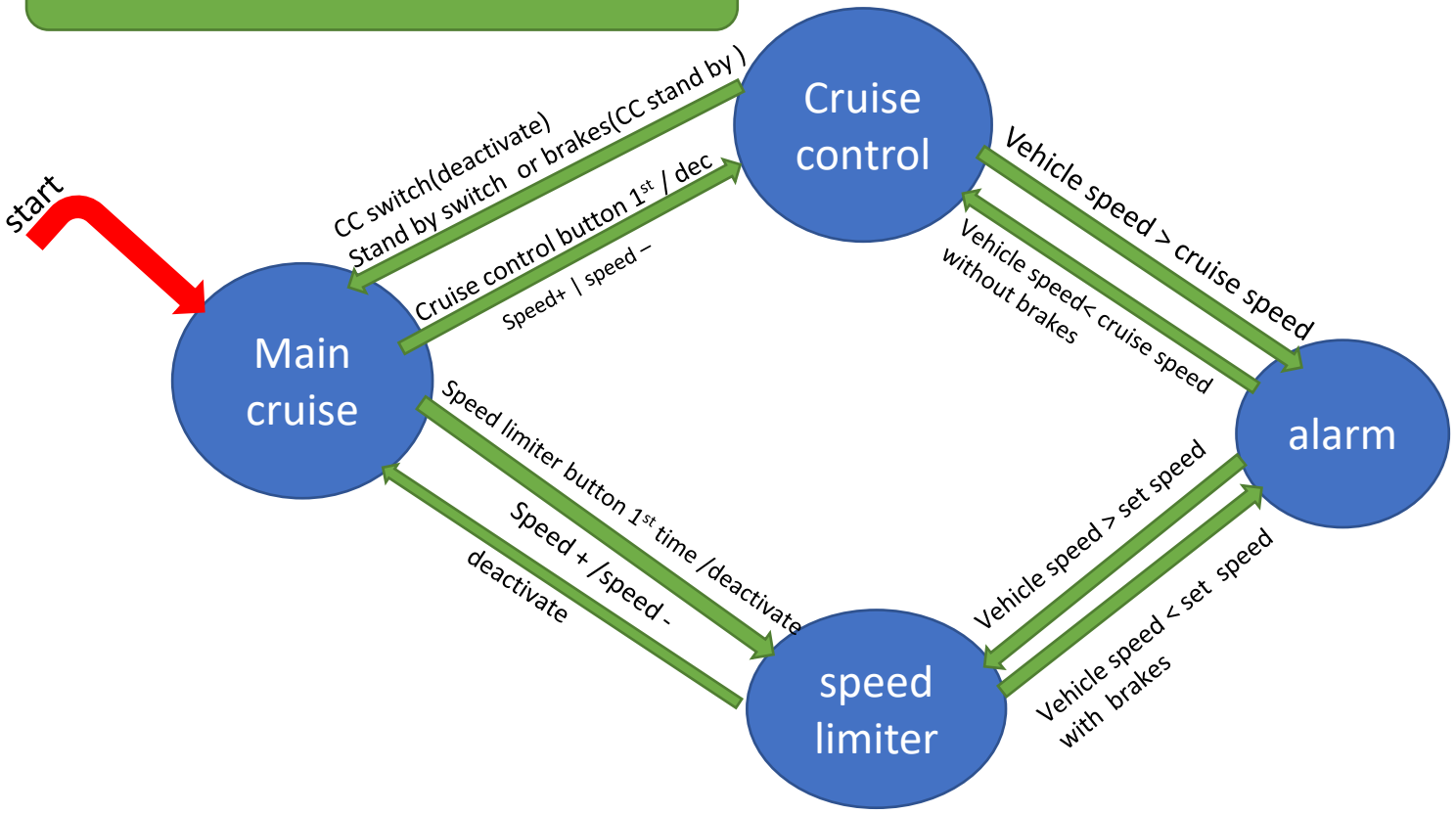
State Design



Normal Driving Switches
brakes
Gas

Speed Control switches
Stand by button
Set Speed +
Set Speed -
Select Speed limit
Select Cruise control

System parameters

1- System State
2- Speed Limit
3- Cruise Control
4- Speed
5- Limit
6- Gas
7- Break

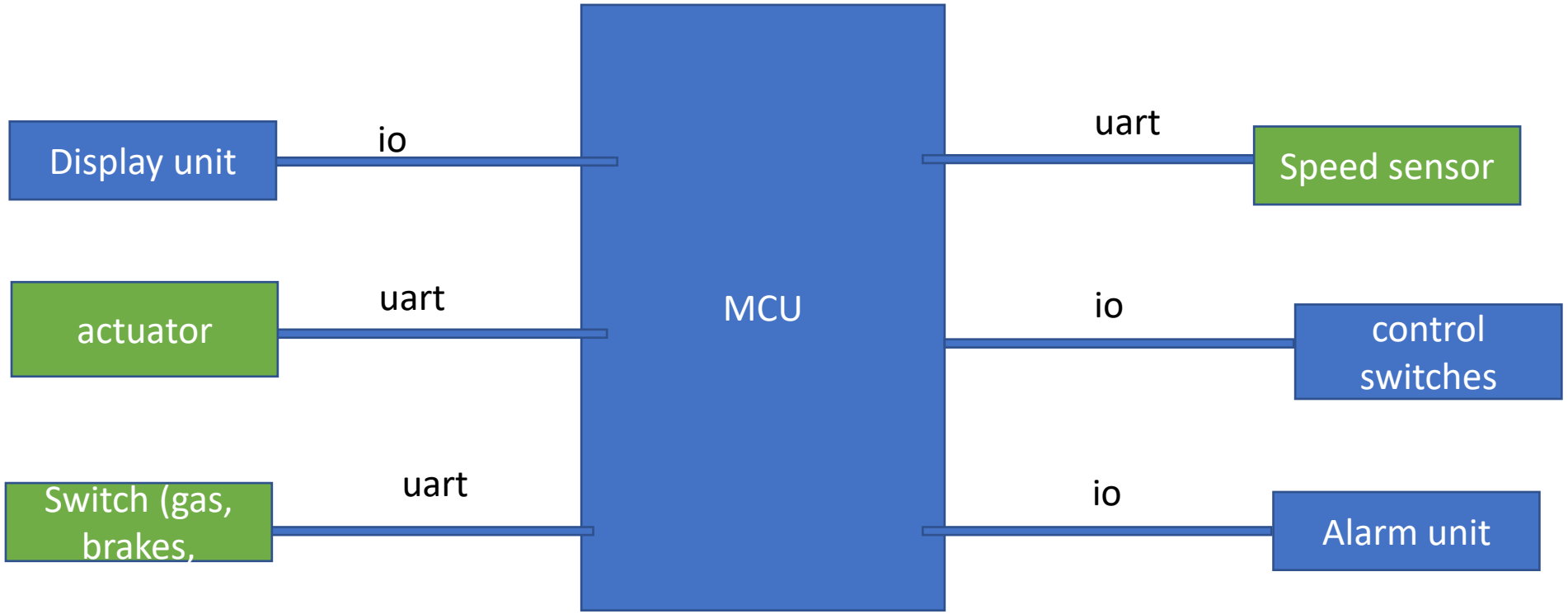
Stand by screen
Speed =
SL = stand BY
CC= Stand By

Speed limiter screen
Vehicle speed, limit speed
Options : Speed + / speed –

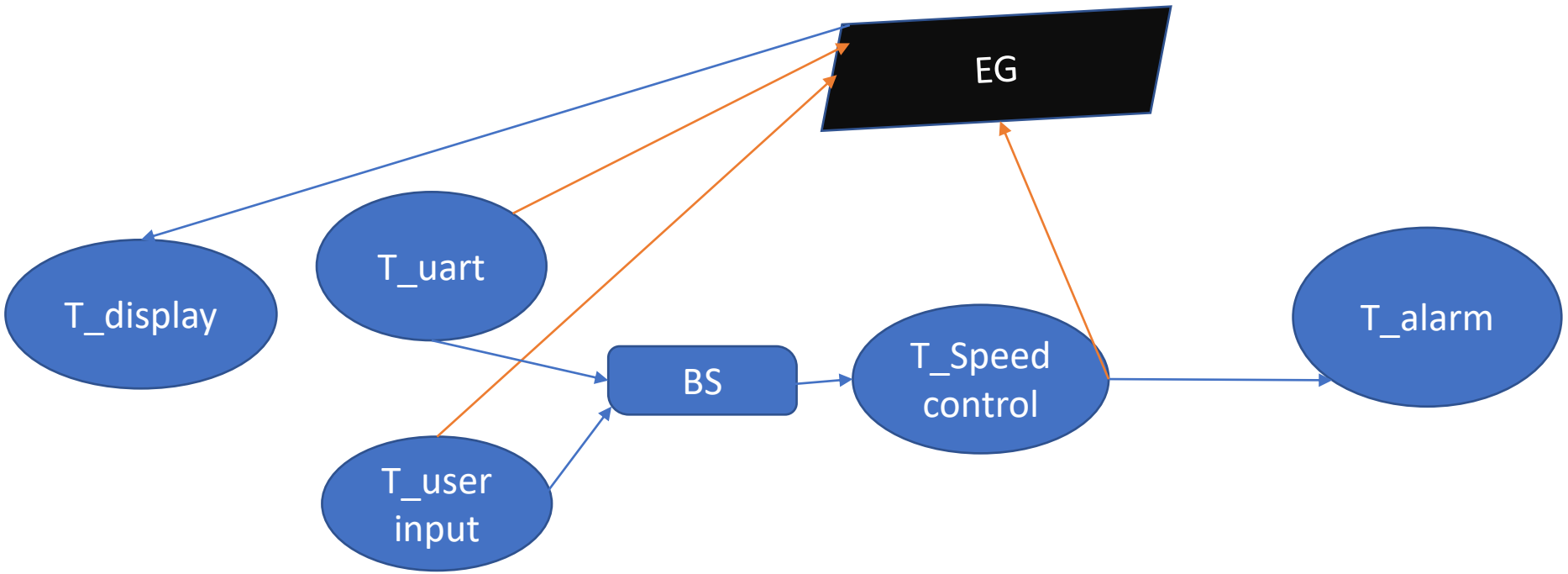
Cruise control screen
Vehicle speed ,
Options : speed+/ speed-

Alarm screen
Blink led
Display limit or cruise speed

Hardware Design



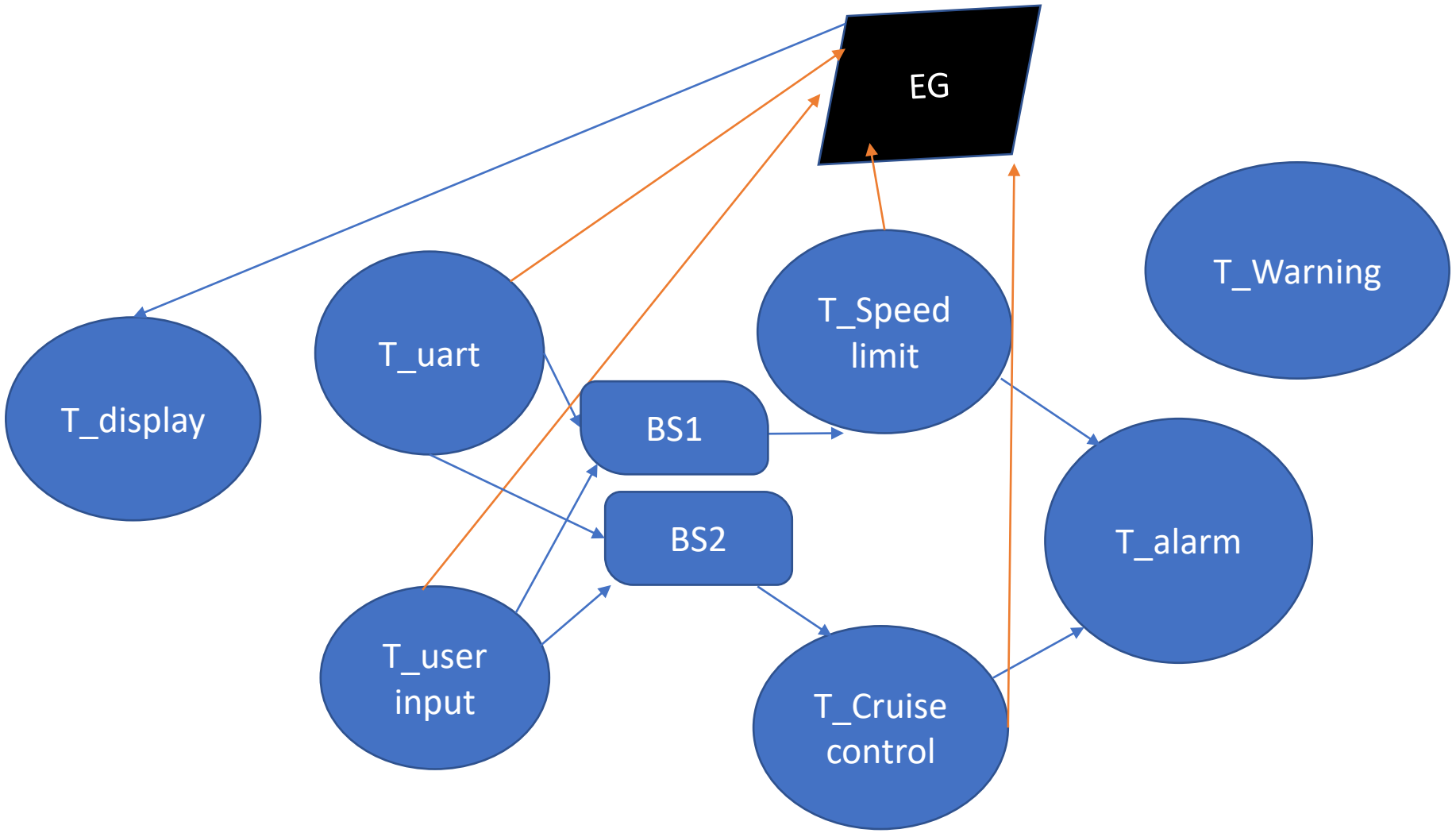
Task Design 1



Tasks

5-T_alarm
4-T_speedControl
3-T_userInput
2-T_uart
1-T_display

Task Design 2



Tasks

5-T_alarm
4-T_speedControl
3-T_userInput
2-T_uart
1-T_display

EG: display events

1-E_MainSCR
2-E_SLSCR
3-E_CCSCR
4-E_vehicle speed
5-E-set limit speed
6-E_alarmSCR

EG: Control events

1- E_AlarmON
2- E_Break
3- E_ Gas