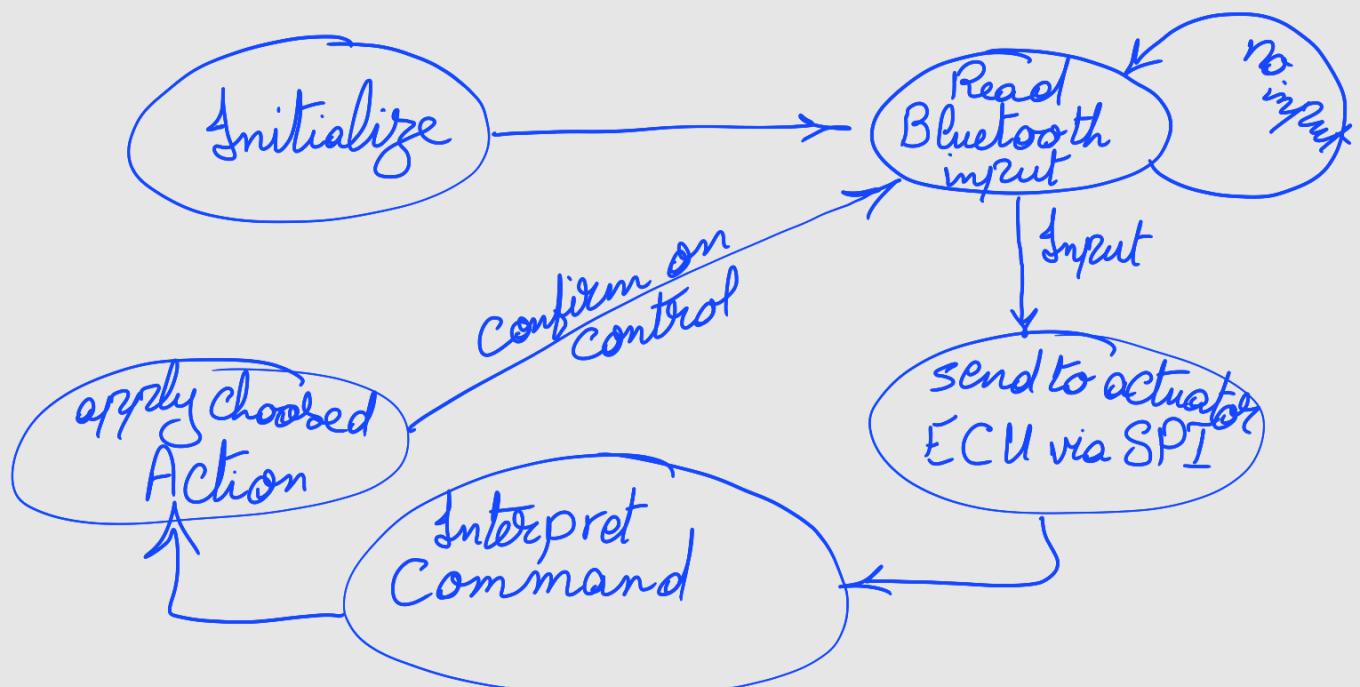
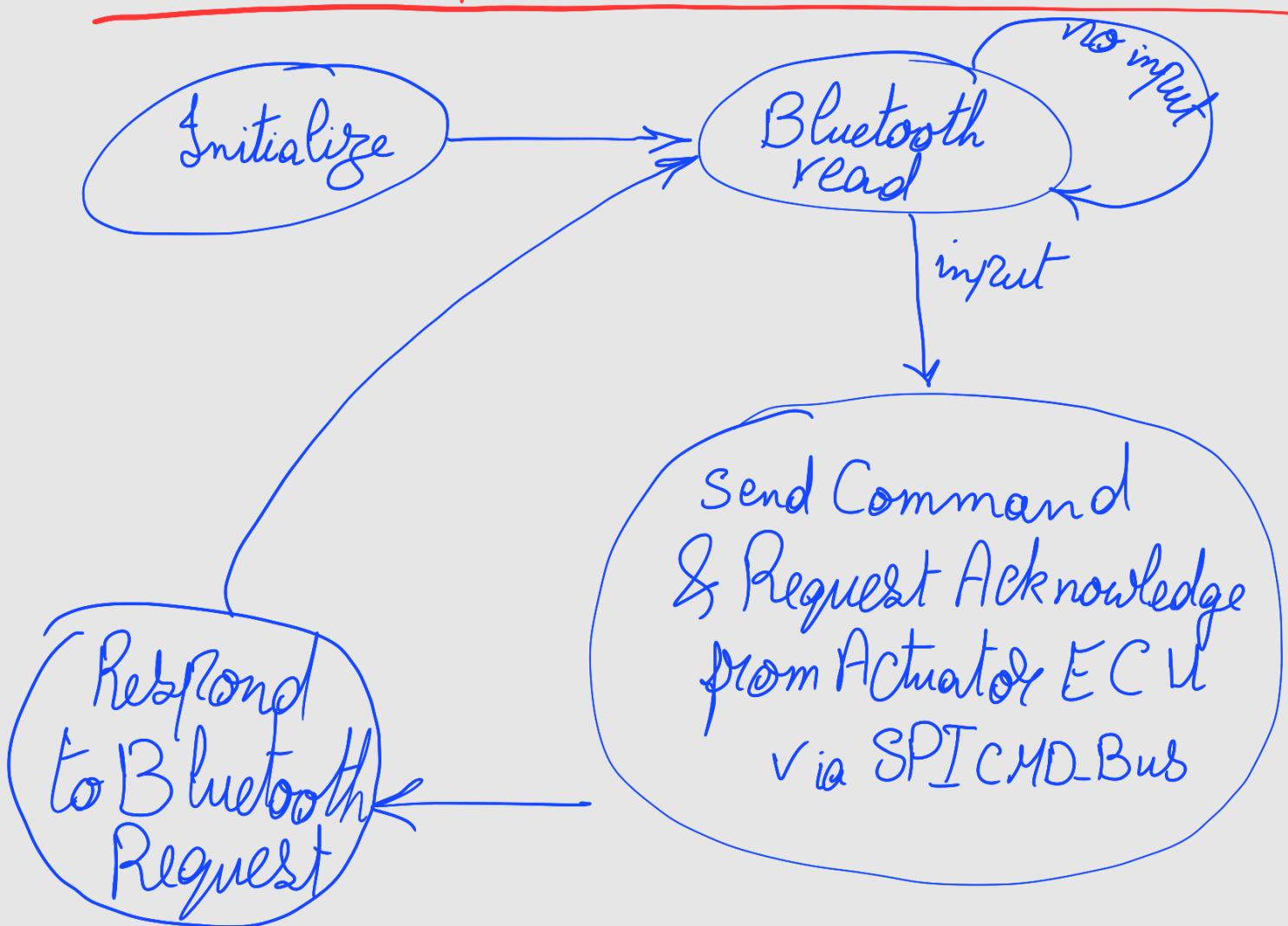


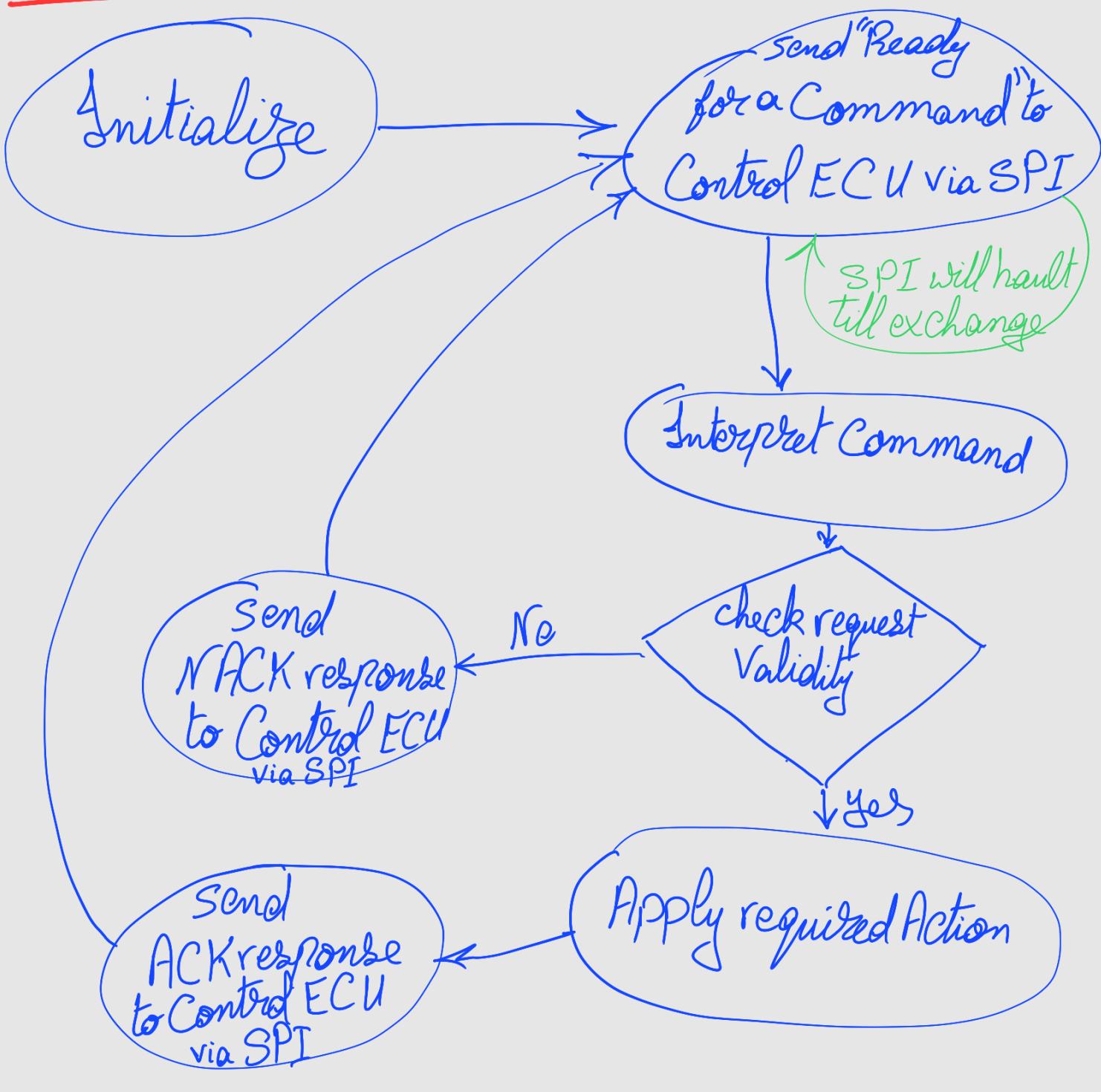
Whole System FSM: (as Provided)



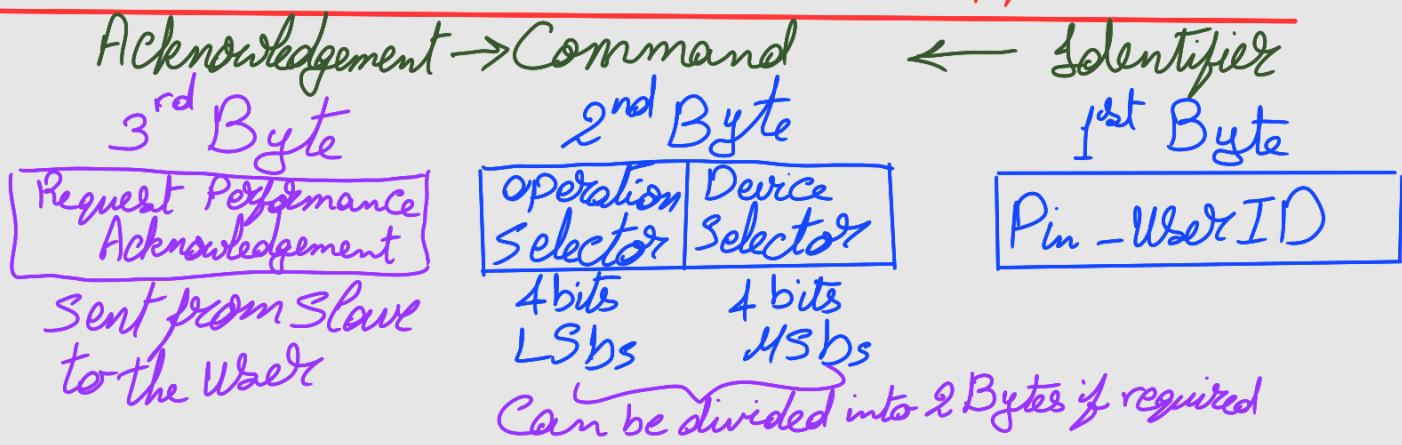
Control / Master ECU FSM:



Actuator/Slave ECU FSM:

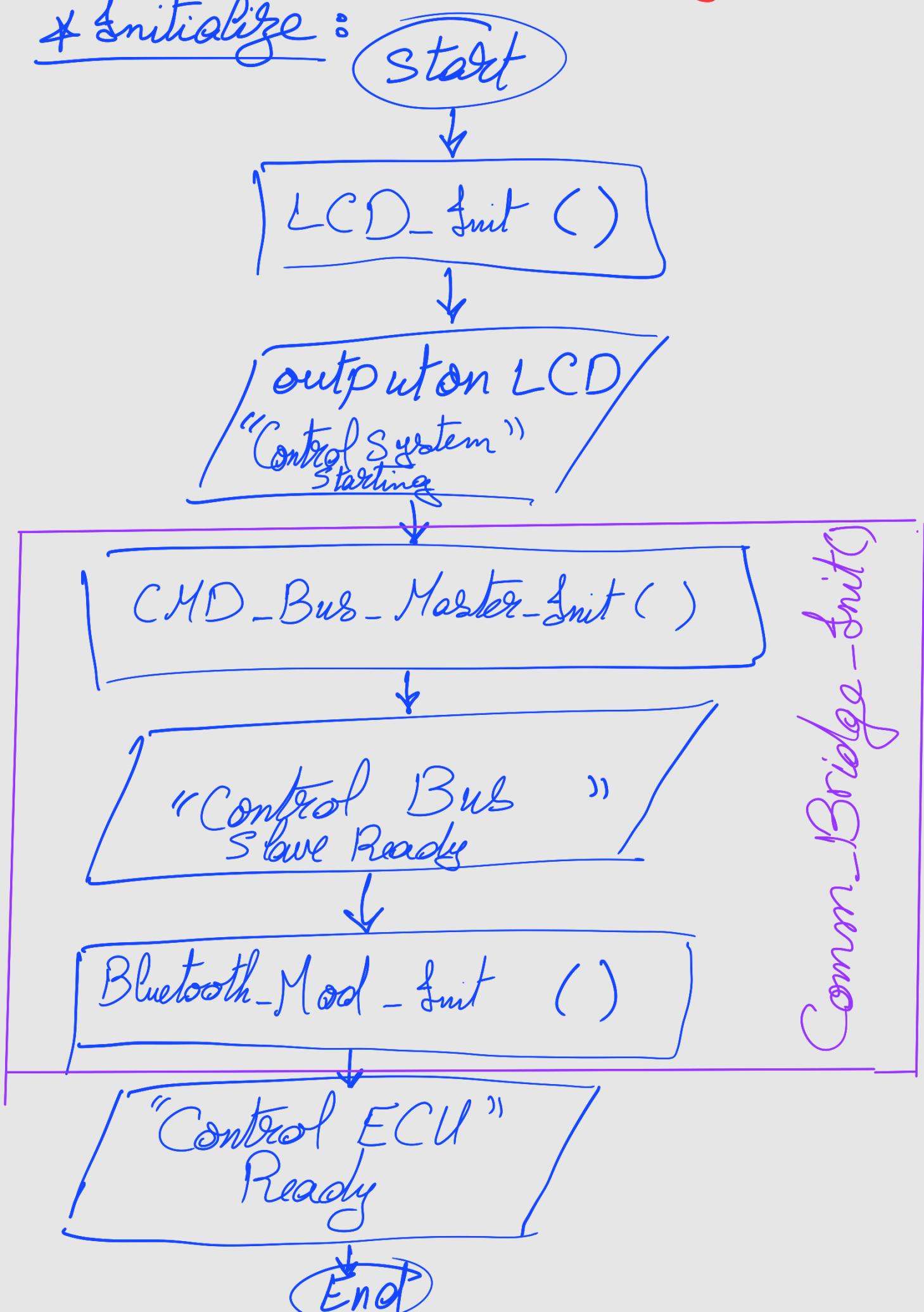


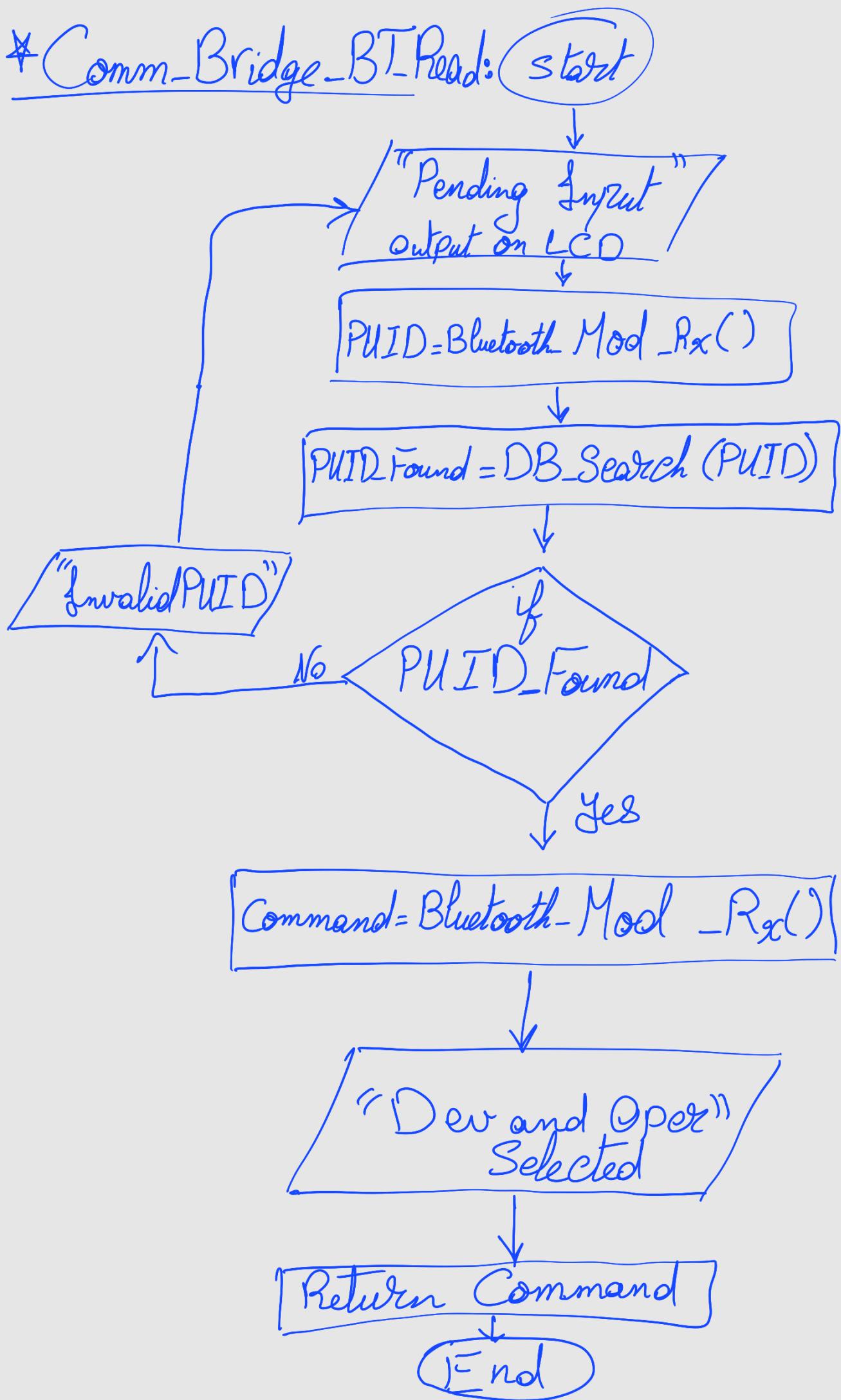
Bluetooth API to be supported:



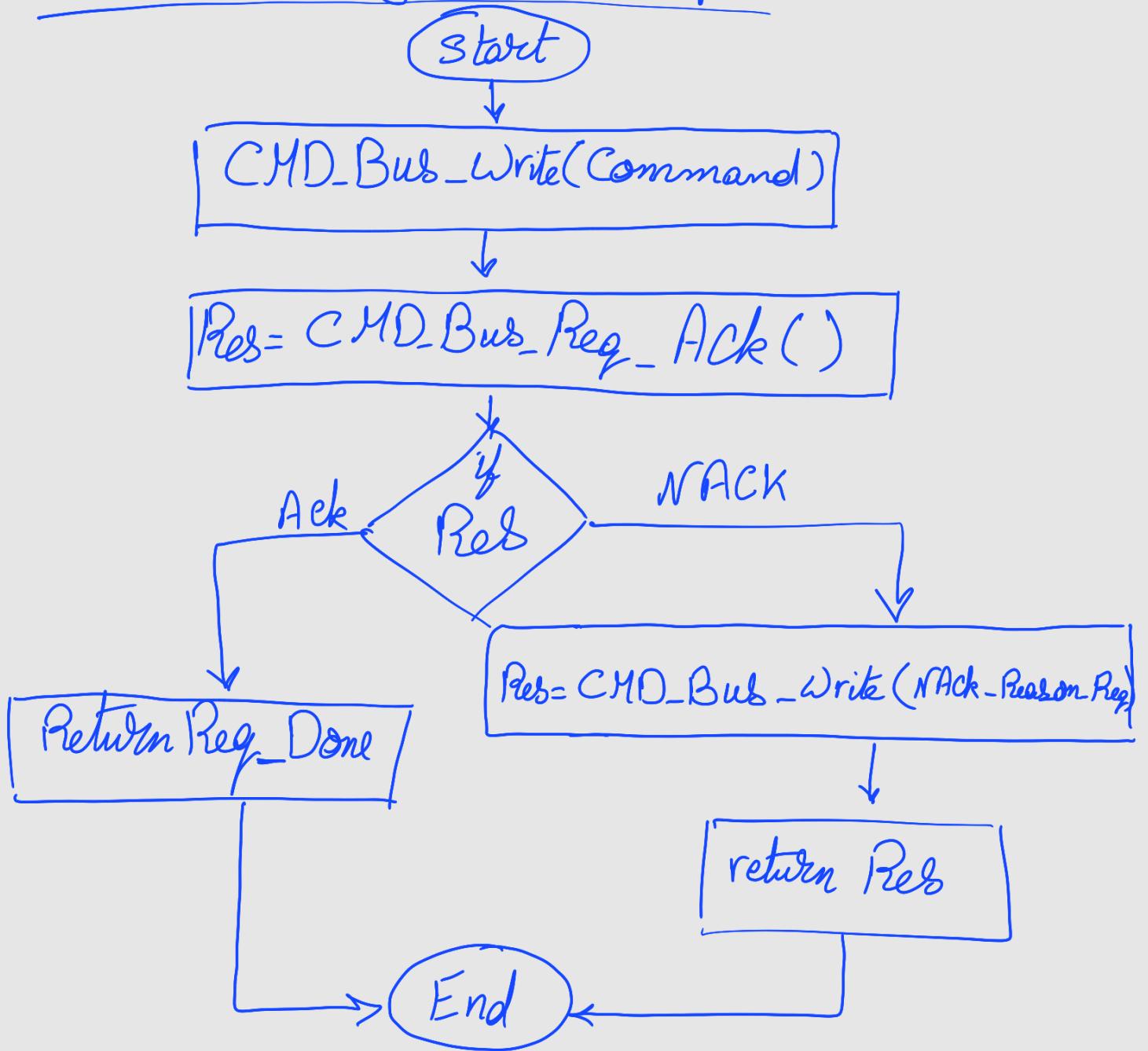
Control Master ECU System:

* Initialize :

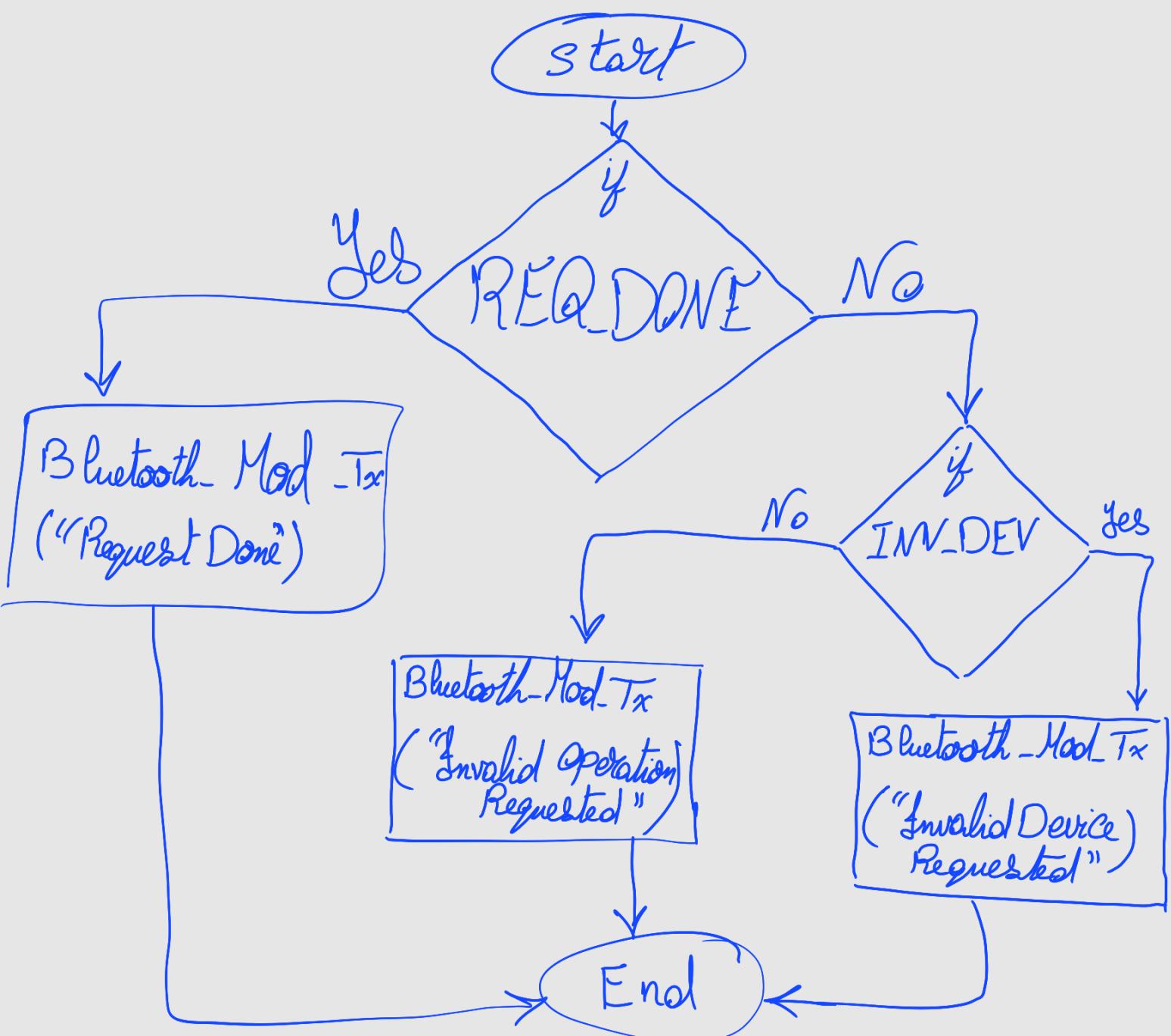




* Comm_Bridge_CMD_Req :

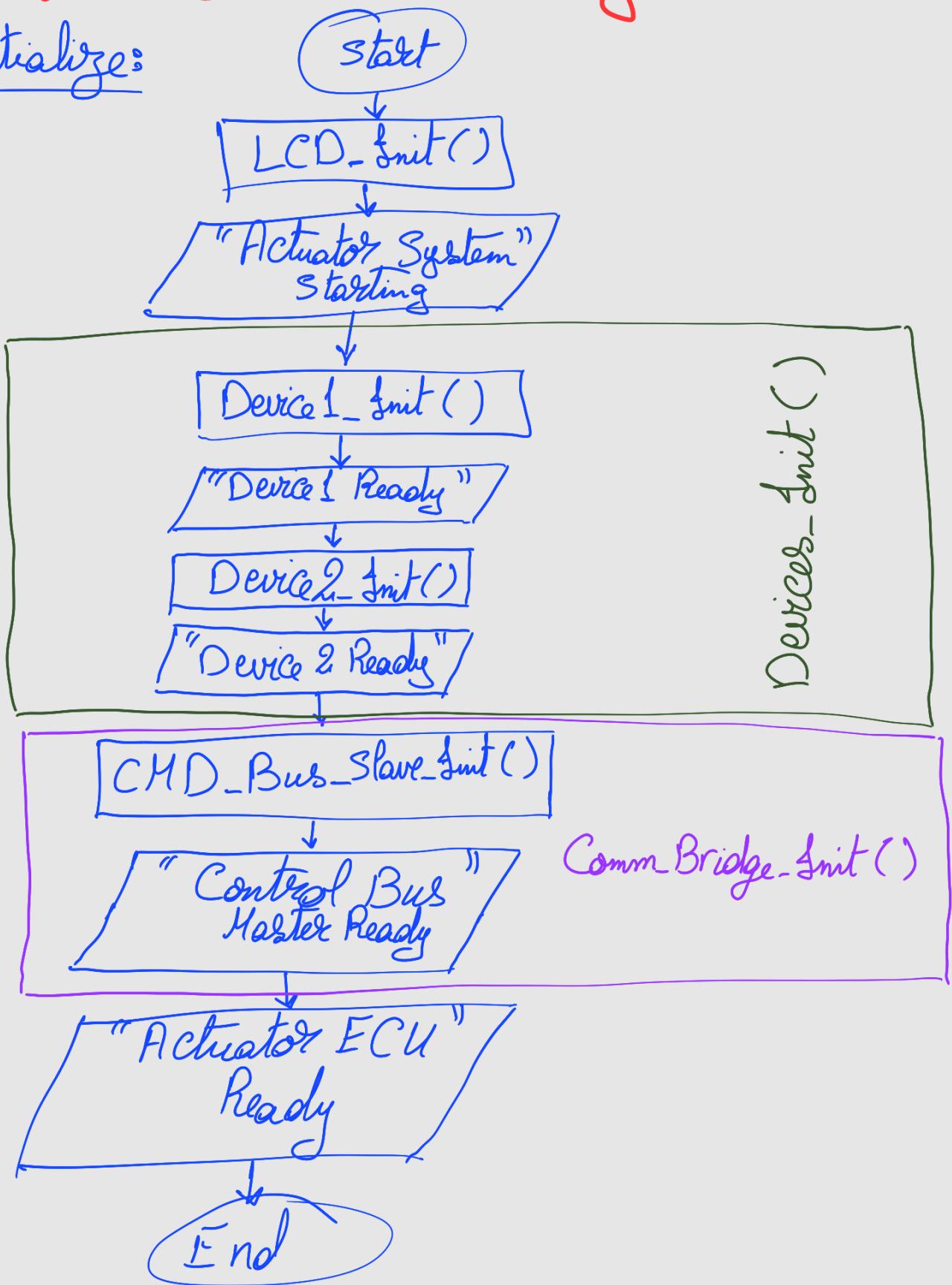


* Comm_Bridge_BT_Respond :

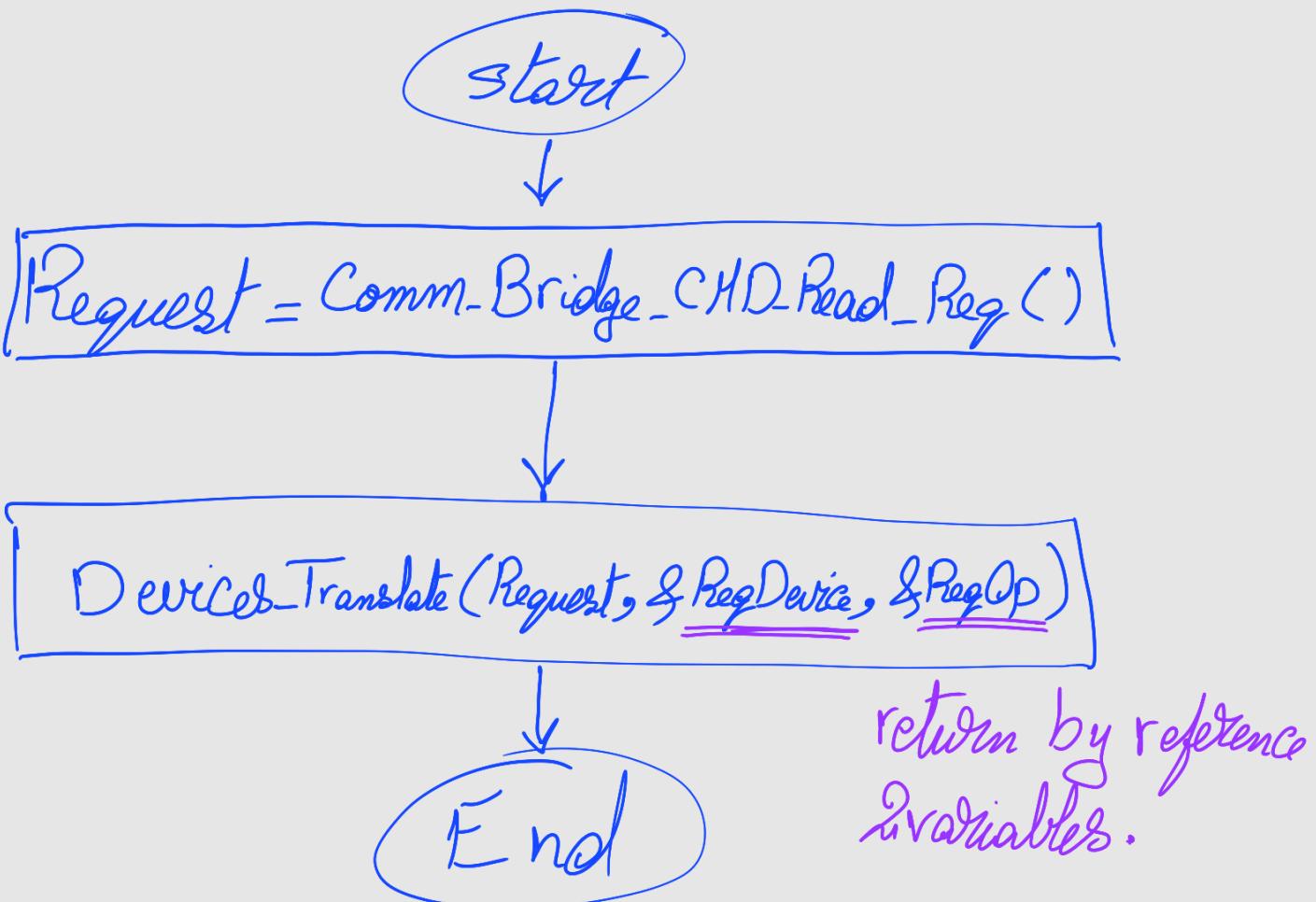


Actuator / Slave ECU System:

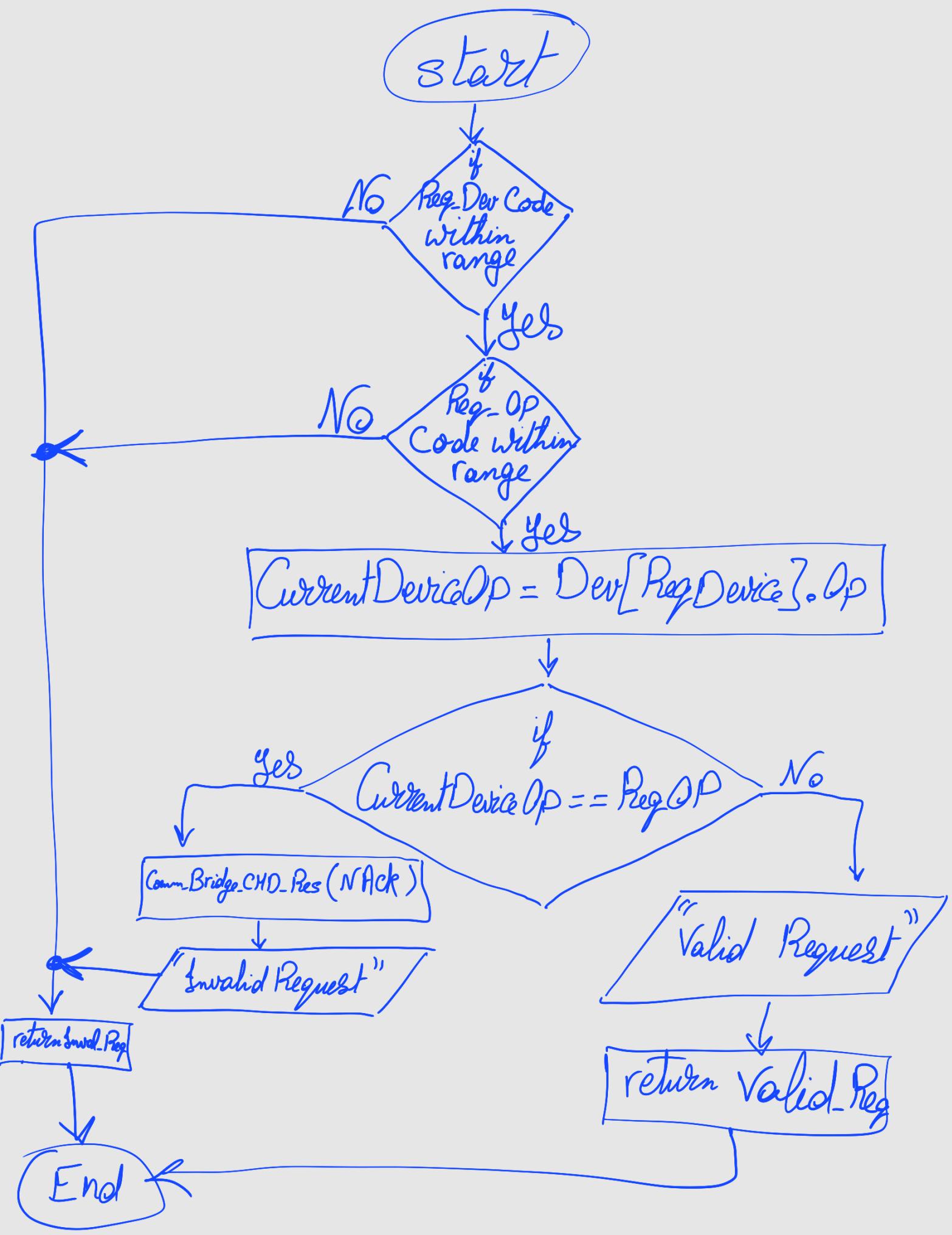
* Initialize:



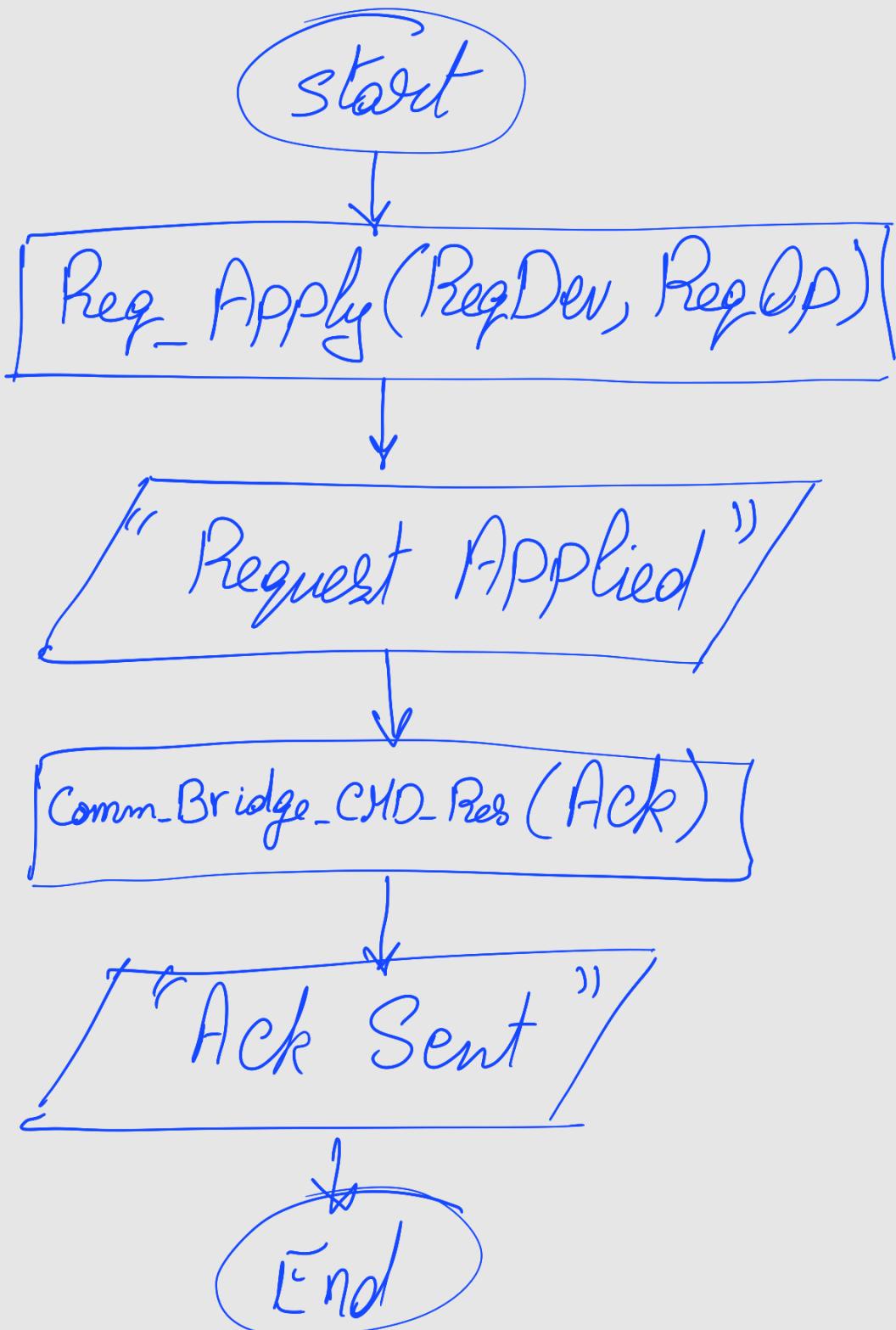
* Command Read & Decode :



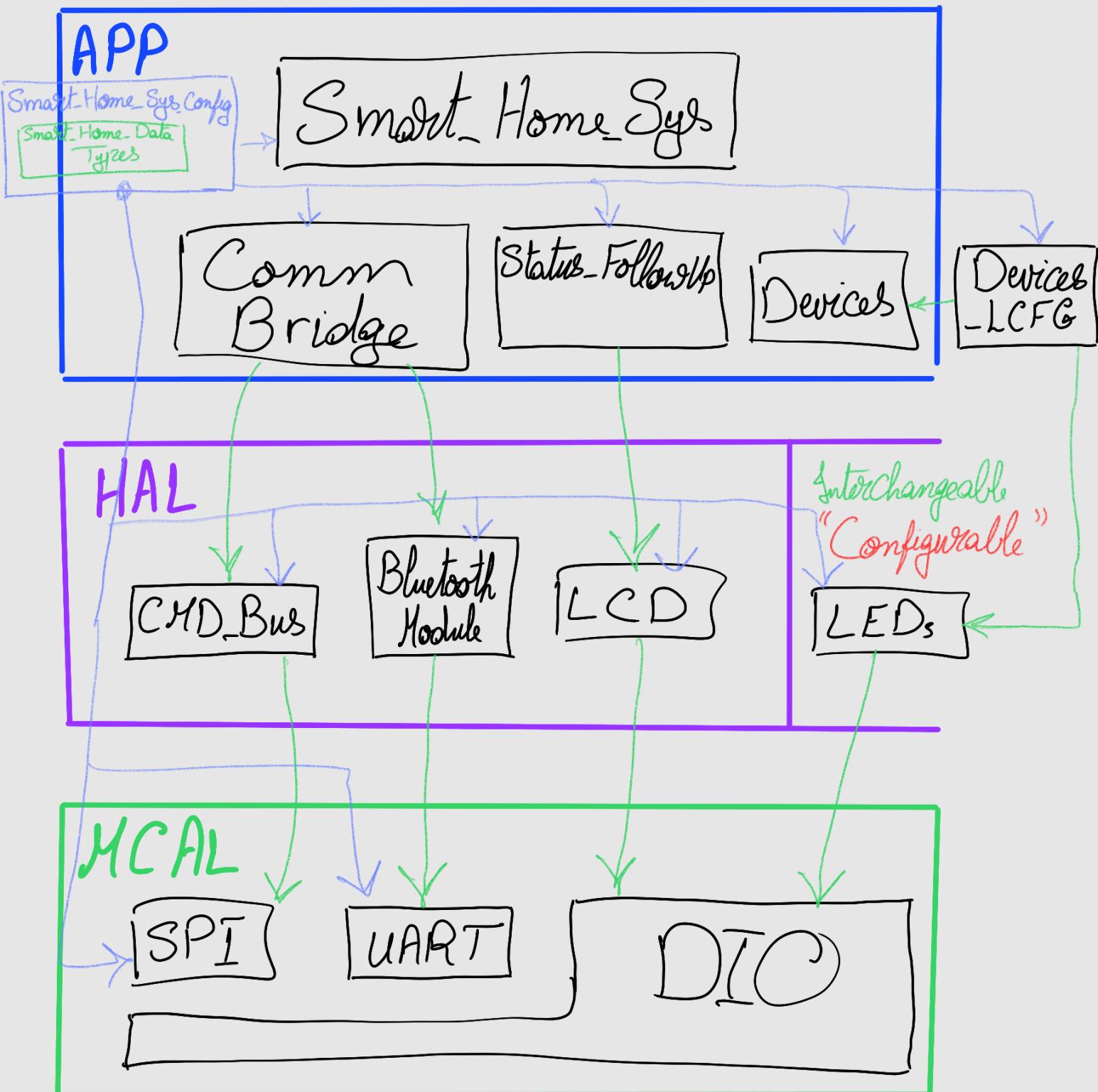
* Check Request Validity:



* Apply Request & Ack :



System Architecture :



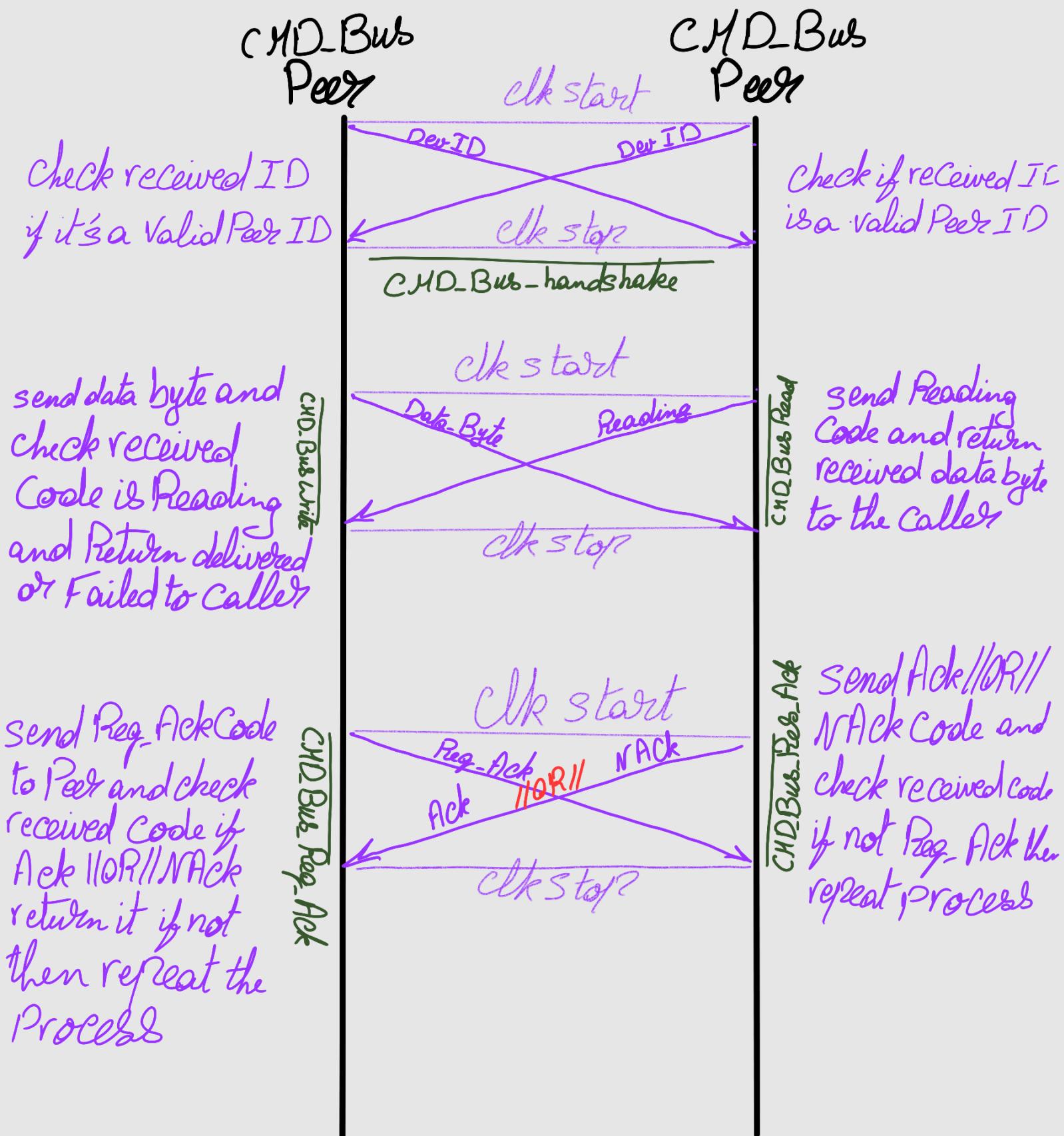
#CMD-Bus Functions :

```
void CMD_Bus_Master_Init(void);  
void CMD_Bus_Slave_Init(void);  
uint8 CMD_Bus_Write(uint8 Command);  
uint8 CMD_Bus_Read(uint8* Command);  
uint8 CMD_Bus_Req_Ack(uint8* Ack_Preq_Response);  
uint8 CMD_Bus_Req_Ack(uint8 Ack_Response);  
uint8 CMD_Bus_HandShake(void);
```

∴ Possible Outputs of this module are :

- Valid Peer Flag
- Invalid Peer Flag
- Peer - Unavailable Flag
- * Received data byte
- Received Flag
- Invalid Ack Response Flag
- Ack response data byte
- Delivered Flag
- Invalid Ack Request Flag.

CMD-Bus Communication Flow



Bluetooth Module

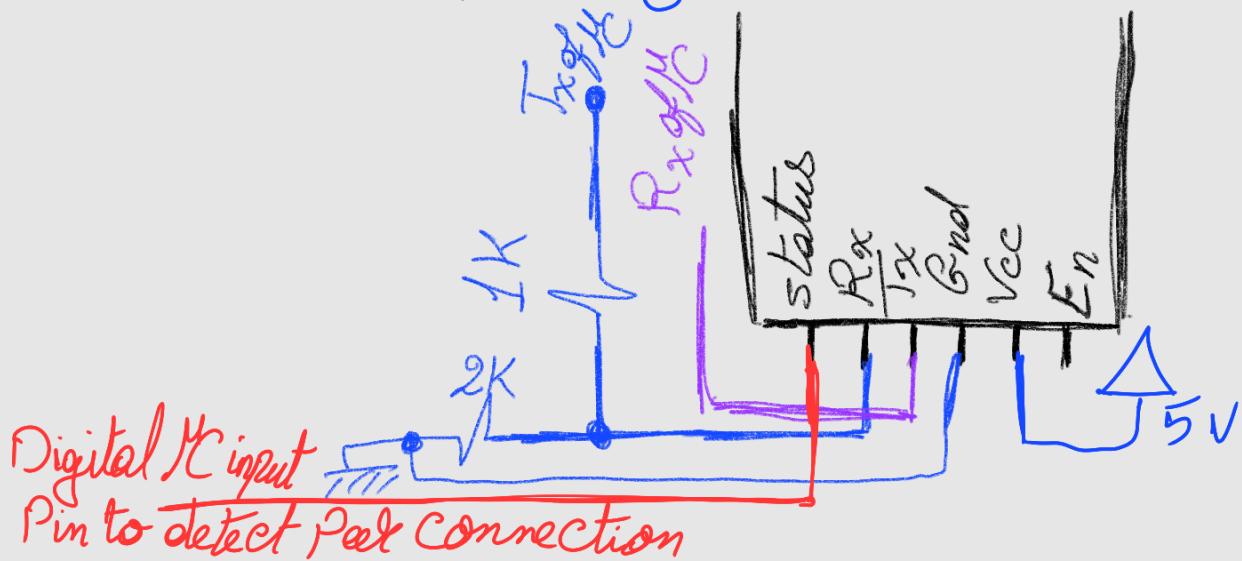
// This module is to operate with the BT module on first contact level (physical connection & AT commands)

// Also it shall handle the basic pairing functions

* Information about the BT module :

- Programmable Baud rate (default = 38400 , though , it supports Baudrate of 9600, 19200, 57600, 115200, 230400, & 460800)
- To disconnect from peer generate a rising pulse on Pin En .
- Status indicator pin ;
Low - Peer disconnected
High - Peer Connected
- if peer is beyond range and gets disconnected , it shall automatically try to reconnect to it in 30 mins .
- Auto-Pairing feature with default pin = "1234"

* Physical Connection



Bluetooth Module Functions :

- void Bluetooth_Mod_Init(void)
- uint8 Bluetooth_Mod_Ch_Pair(void)
- void Bluetooth_Mod_Tx(uint8)
- uint8 Bluetooth_Mod_Rx(void)
- void Bluetooth_Mod_Seq_Tx(uint8*)
- void Bluetooth_Mod_Seq_Rx(uint8*)

Comm_Bridge Functions:

void Comm_Bridge_Init(void)

void Comm_Bridge_BT_Read(uint8*)

Void Comm_Bridge_BT_Send (uint8)

Void Comm_Bridge_BT_Seq_Send(uint8*)

uint8 Comm_Bridge_CMD_Req (uint8*)

uint8 Comm_Bridge_CMD_Read_Req (uint8*)

uint8 Comm_Bridge_CMD_Resp (uint8)

uint8 Comm_Bridge_Handshake_Resync (void)

Communication Sequence

