

CAN Protocols

Wednesday
Day (001/364)

01

CAN stands for Control Area Network.

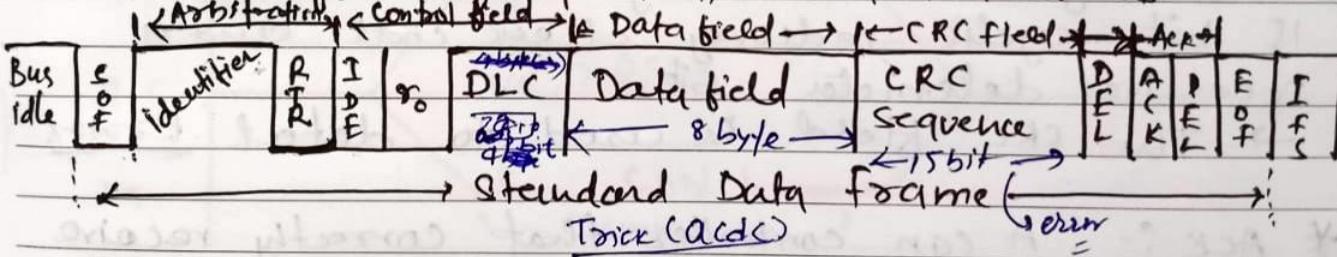
- Bosch developed the CAN in 1985 for in vehicle networks, but in 1993 it became ISO - 11898.

Benefits of CAN

- I. Low cost, lightweight networks.
- II. Broadcast communication.
- III. Priority of Message.
- IV. Guarantee of latency time.
- V. Error detection.
- VI. Flexible configuration.

CAN Frame:

CAN device sends data across the CAN network in the form of packets called frames.



- SOF:** Start of frame bit → it indicate the beginning of message with dominant i.e (0) bit.

- Arbitration field:-** Identify the msg and indicates the msg's priority.

Wk	January 2014						Wk	February 2014					
01	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa
01	1	2	3	4	5			05		1	2		
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Work to do

FEB

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APR

MAY

JUN

January

02 Thursday
Day (002/363)

Standard - 11 bit
Extended - 29 bit.

- * Identifier :- it is 11 bit, for standard and 29 for Extended.
- * RTR → Remote transmission request bit :-
it is used to differentiate a remote frame from a data frame.
 → A dominant i.e '0' indicates a Data frame
 → RTR bit 1 i.e Remote frame.
- * DLC (data Length code) :- No. of byte the data field contains.
- * Data field :- if contains 8 byte of data.
- * CRC (cyclic redundancy check) :- It contains 15 bit cyclic redundancy check code and a recessive delimiter bit.
 → The CRC field is used to detect Errors.
- * ACK :- A can controller that correctly receive the msg sends, an ack bit at the end of msg.
- * CAN Signal :- An individual piece of data contained within the CAN Frame data field.
 - It contains 0 to 64 signals (0/1).



Advice after injury is like
medicine after death.

Work to do

2014

January

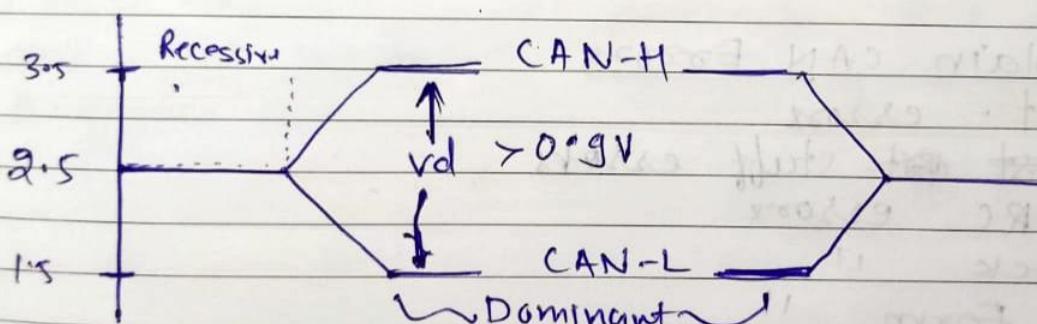
1) What is CAN and its properties.

CAN stands for ~~Central Area Network~~ Friday Day (003/362) 03
 It is message based protocol not an address based. It has two wires CAN-H, CAN-L.

- Properties:-
- i.) prioritization of message.
 - ii.) guarantee of latency time.
 - iii.) Configuration flexibility.
 - iv.) Error detection.
 - v.) Multimaster.

2. What is CAN Voltage level?

If $V_d < 0.9$, it is recessive, \rightarrow CAN-H
 If $V_d > 0.9$, it is Dominant. \rightarrow CAN-L



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January

04

Saturday
Day (004/361)③ What is Bus Arbitration?

When two or more ECUs attempt to send message at the same time, collision occurs at that time arbitration requires. Or simply winning of bus, which has less value.

④ Explain 4 types of data frame.

- (i) Data frame - To transfer data.
- (ii) Remote " - To request data frame a particular node.
- (iii) Error " - It gives a signal to error node.
- (iv) Overload " - It gives extra delay for the next data frame or remote frame.

(5.) Explain CAN Errors

- i) Bit errors
- ii) ~~Bit~~ stuff errors
- iii) CRC errors
- iv) Ack "

05 Sunday \rightarrow Form "

① Bit errors: If a node is transmitting dominant (0) to the bus and at the receiver side, receives recessive (1). i.e called bit errors.

Work to do



Laughter is a tranquilizer
with up side effects.

2014

January

(ii) stuff error: When 5 consecutive bits of same polarity is transmitting, the 6th bit will be opposite polarity. if not then it is stuff error.

Monday
Day (006/359)

06

(iii.) CRC Error: The result of CRC calculation at the transmitting side and receiving side is not same then it is CRC Error.

(iv) ACK: When the transmitter sends the msg to the receiver end, but if there is no ACK gets from receiver side re ACK error.

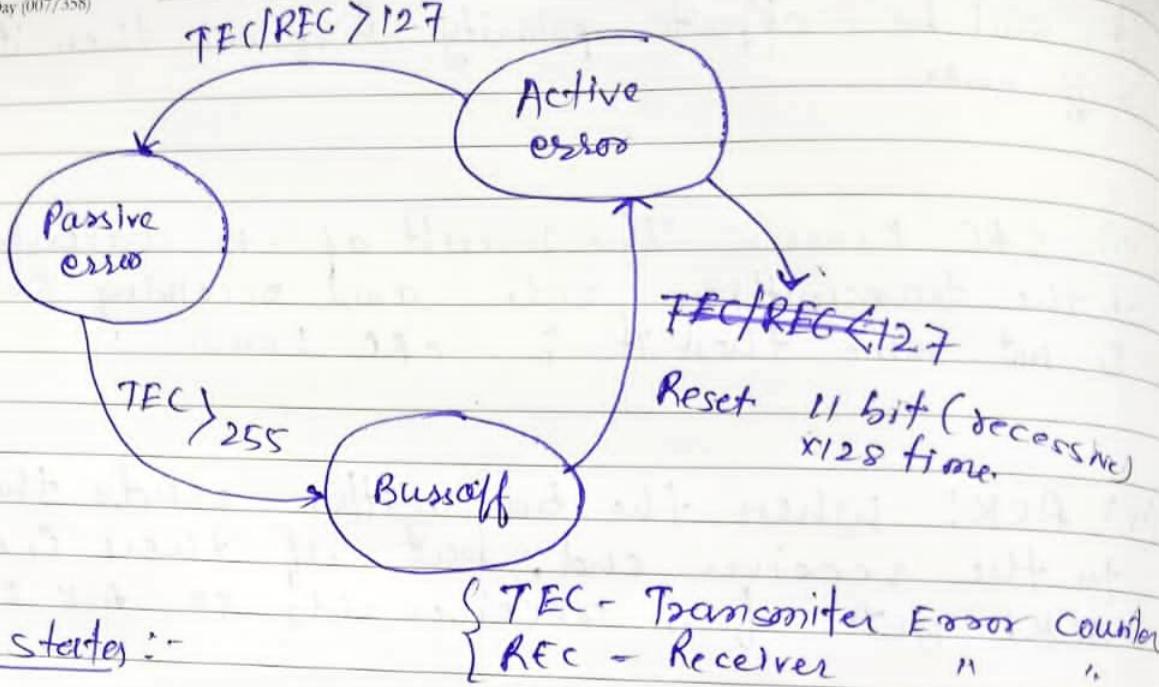
(v) Form Errors: - CRC delimiter, ACK delimiter and EOF should be receive, if not then it is form error.

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Work to do

07

Tuesday
Day (007/358)CAN ERROR HANDLING

There are 3 error states.

- (I) Active error
- (II) Passive "
- (III) Busoff

* Active Error : - When $\text{TEC}/\text{REC} < 127$ ie Active error.

* Passive Error : When $\text{TEC}/\text{REC} > 127$ and < 255 .

* Busoff : When $\text{TEC} > 255$ ie. Busoff.



A man comes to measure his greatness by the regrets, envies and hatreds of his competitors.

Work to do

2014

January

v.v.i How to recover from bus off condition?

→ There are two types of recovery

(i) short time recovery (L_1)

(ii) Long " " (L_2)

Wednesday
Day (008/357)

08

(i) short time recovery: on the car bus there is an error counter which monitors the error. When the error counter reaches to 255, it triggers the wake-up watchdog reset and it resets the ECU.

(ii) Long time recovery:- By sending 11 consecutive bit 128 times.

• What is busoff processing?

It is the process of recovering from bus off condition.

• What is wake up processing?

When the bus is in sleep mode, to make it active a signal is triggered.

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Work to do

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09

Thursday
Day (009/356)

* What is bit timing?
 → The ~~total~~^{sum} of time ~~counts~~^{quanta} required to carry a single bit.

• ~~Define~~

- 1.) Synchronisation Segment
- 2.) Propagation "
- III) Phase Segment 1
- IV) Phase " 2
- V) Sampling point

④ CAN Bus-off failure condition

CAN-H interrupted

CAN-L "

CAN-H Shorted to battery.

CAN-L Shorted to Vcc.

CAN-H " " ground.

- Error counter Register: will store Tec & Err.

↑ What is bit timing?

The time of quanta to carry a single bit.

- I) Synchronisation Segment
- II) Propagation "
- III) Phase Segment 1
- IV) Phase segment 2
- V) Sampling point

Work to do



True dignity is never gained by place, and never lost when honours are withdrawn.

2014

January

* Sampling point: It is a point where value is interpreted as read.

Friday
Day (010/355)

10

I/P files

EIB	DEM	Derencies
<ul style="list-style-type: none"> • adm • axom • dbc 	<ul style="list-style-type: none"> • fault • matrix • sheet 	<ul style="list-style-type: none"> • dpg • arxml • dbc

com' config
- Can specifications
- Sheet
- Vehicle matrix sheet
- Datasheet
- DBC file

Vector cast: - .bat, .env, .fault

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20	21					

Work to do

FEB

MAR

APR

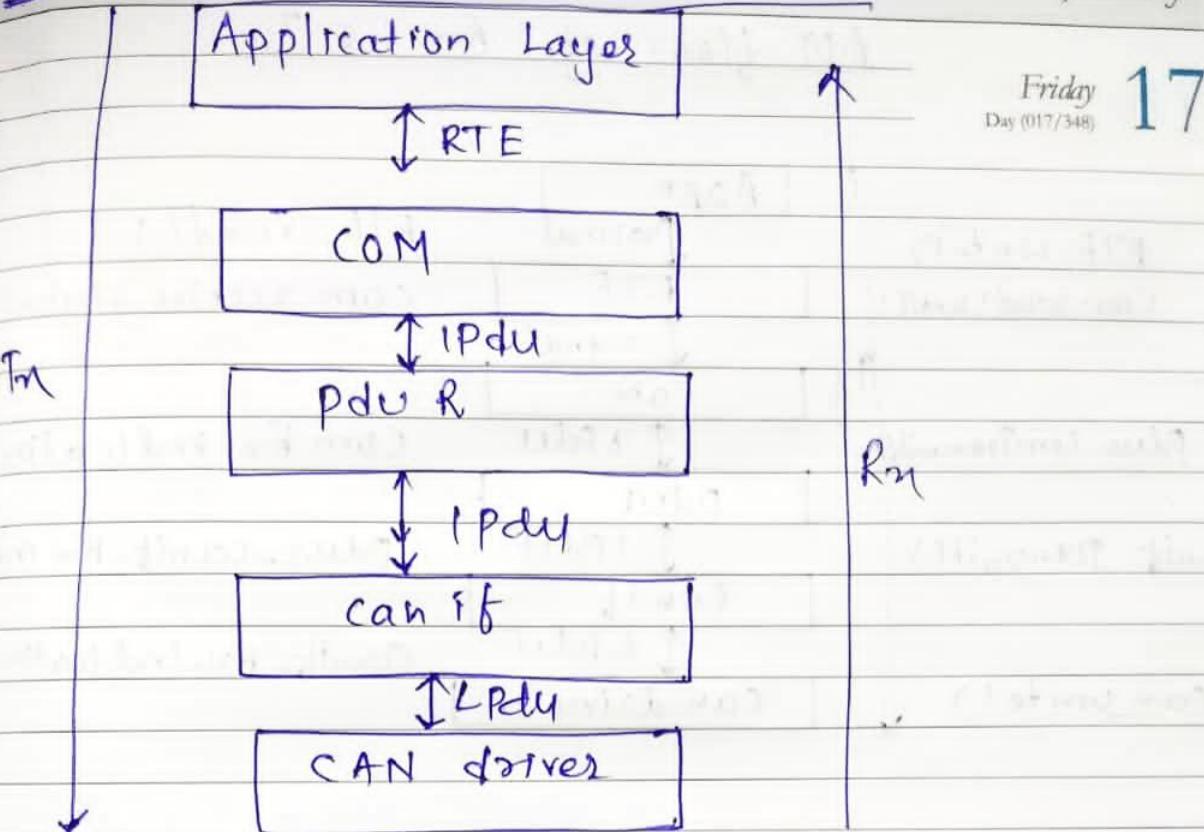
MAY

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2014 Data flow (Reception & Transmission)

January

Friday
Day (017/348) 17



* Data will move from can driver to canif in the form of LPdu. Again data will move from canif to pduR in the form of IPdu. and data will move from pduR to com in the form of IPdu. Now in com, com is responsible for packing and unpacking so, here signal will be unpacked and signal information will move from com to Application through RTE.

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Work to do

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January

18

Saturday
Day (018/347)API flow of Rx & Tx.For Rx Flow:-

1) data will move from can driver to canif in the form of LPDU by calling API - canif-Rx-indication().

19 Sunday

2) Data will move from canif to PdUR in the form of IPDU by calling API (PdUR-canif-Rx-indication.)



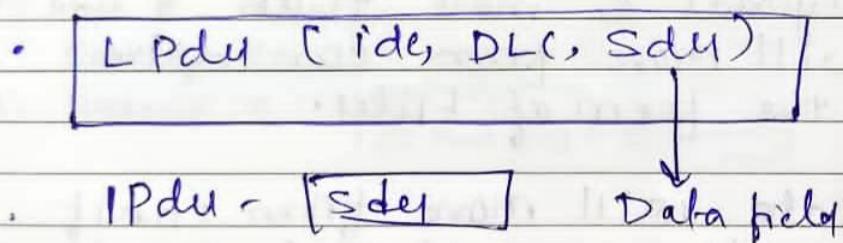
We judge overselves by what we feel capable of doing, while others judge us by what we have already done.

Work to do

- Monday
Day (020/345) 20

 - 3) Data will move from pdu to com in the form of IPdu by calling com_fn_indication().
 - 4) Signal info.
Data will move from com to RTE in the form of signal by calling API com receive signal().
 - 5) Signal information will move from RTE to App by calling RTE-read().

[# similarly Transmission will be move from App² to RTE ----> cardriver.]



January

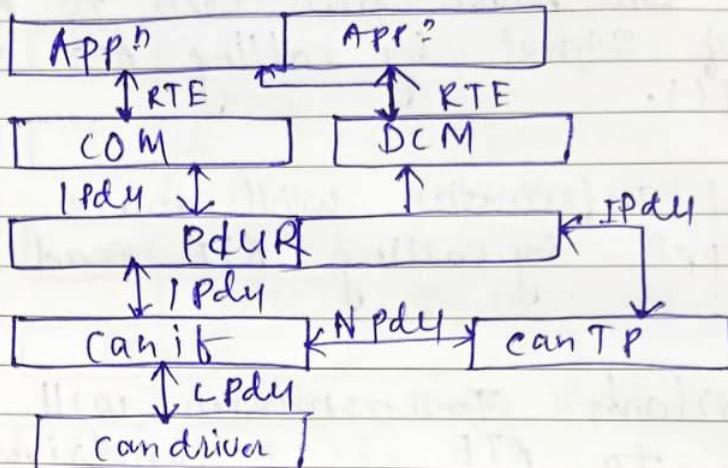
2014

21

Tuesday
Day (021/344)

for CAN TP

when payload is more than 8 bytes



1) When the payload is more than 8 byte the data will move from can driver to canif in the form of LPdu.

2) Again the data will move from canif to CAN-TP in the form of Npdu. and it will go through Pdu to COM, COM to APP2

* If it is diagnostic msg then it will move from PdUR to DCM to APP2 through PdUR to canif, canif to can driver, can driver to canif, canif to PdUR through RTE.

Work to do



Real leaders are ordinary people with extraordinary determinations.

V.V.Iconfiguration of comWednesday
Day (022/343)

22

CAN DRIVER

can general

can config set

can controller

Hardware obj.

Parameter

- I> Can cont² Base add.
- II> RAM size
- III> Rx processing
- IV> Tx "
- V> Bus off "
- VI> Wakeup "

Reference

- I> Wakeup source
 - II> Baudrate
 - III> CPU CLK ref.
 - IV> controller Ref.
- In baudrate we have to configure
 - ① Sync. segment
 - ② Propagation
 - ③ Phase seg. 1
 - ④ Phase seg. 2
 - ⑤ Sampling point.

Can controller is one time configuration, I didn't configured but I am aware of the configuration. So,

After creation H/w obj data will move from can driver to can if in the form of L PDU. In can if we are creating H/W obj. Handlers to handle the hardware obj. which is created in the can driver. i.e. H/W.

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								23	24	25	26	27	28

23

Thursday
Day (023/342)

this can be read as -

in can driver there is two container
let one is **can general** and **can config set**
in can config set there is two sub container
(i) can controller (ii) hardware obj.

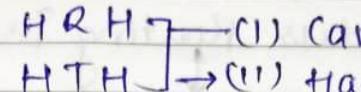
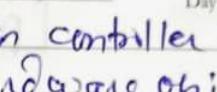
- so, in Hardware Obj we have to configure
id type whether it is Extended or standard.
• after that we have to configure Handle type
ie Basic & Full, in case of Basic we have
to use **filter mask range value**.
• After that object type re fn or tn
as I am considering here fn. and after
that we have to take reference from
• controller ref

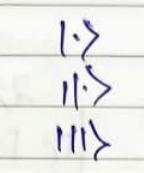
2014

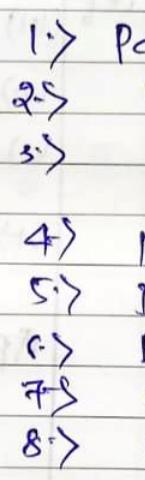
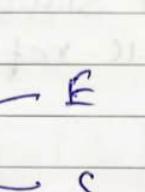
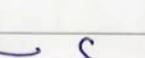
January

CANIFFriday
Day (024/341)

24

- ① HOM config   

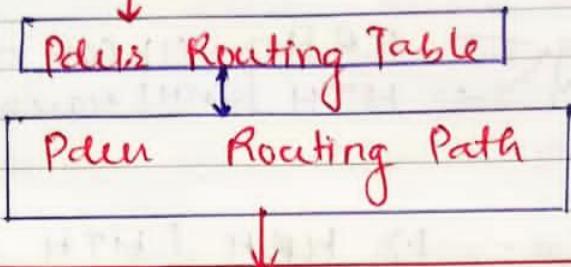
- ② Buffer config -  I> HRH / HTH Ref
II> Buffer size
III> No. of pdu

- ③ Rx/Tx Pdu -  1> Pdu Name
2> msg id  E
3> id type 
4> Buff. ref
5> DLC length
6> Ecoc ref.
7> upper layer
8> upper layer API.

After Configuration canif, Data will move from canif to pdu in the form of 1pdu.

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Saturday
Day (025/340)Pdu-R (Pdu - Routing)

1) Source path

- i) Pdu Name R_n
- ii) Direction T_n
- iii) BSW source module ref.
- iv) Ecuc ref

2) Destination Path

- i) Pdu Name R_n
- ii) Direction T_n
- iii) BSW destination module ref.
- iv) Ecuc Ref.
- v) Data processing
 - immediate
 - differ

vi) Routing type

- API forwarding
- Gateway forwarding

26 Sunday

Now, the data will move from Pdu's to com in the form of 1Pdu.

Work to do



He alone is an acute observer, who can observe minutely without being observed.

2014

January

COMMonday 27
Day (027/338)

- I. > Signal.
- II. > signal group.
- III. > IPdu.
- IV. > IPdu group.
- V. > gateway Mapping.

Signal Parameter

1. > Signal Name
2. " length
3. " Type
4. " position → big
5. > Endianness → little
6. > Transfer properties

Transfer properties

- I. > Trigger
- II. > Trigger without repetition
- III. > Trigger own change
- IV. > Trigger " " without repetition
- V. > pending

IPdu Parameter

- I. > IPdu Name → Rn
2. > Direction → Ty
3. > IPdu Signal ref → immediate
4. > Sig. processing → diff. deff.
5. > IPdu Type → Normal
can't p
6. > Transmission mode.

Transfer mode

- I. > Direct
- II. > mixed
- III. > periodic
- IV. > none

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28

Tuesday
Day (028/337)RTE (Run time environment)

To configure the RTE, we have to open autodesk builder in that we have to create authorised file. On that we have to create software component (swc). For that create part ie P part and R part (P - provider part) (R - required part). And we have to give part interface ie sender-receiver → normal & client-server → Diagnostic. In that we have to create Data element.

- After that we will create runnable entity is that we have to configure Event mapping.
- After that create Access point, creating Access point connection will be established.
- Now Now, create file and go to ECU abstraction file.xml.
 - The file (xml) import into Eb process / device,
 - for and RTE. Write Edit
 - Data mapping and file will be created by s2g/elf or .c and .oh.



Not all one string are all life's jewel strings.

Work to do

2014

January

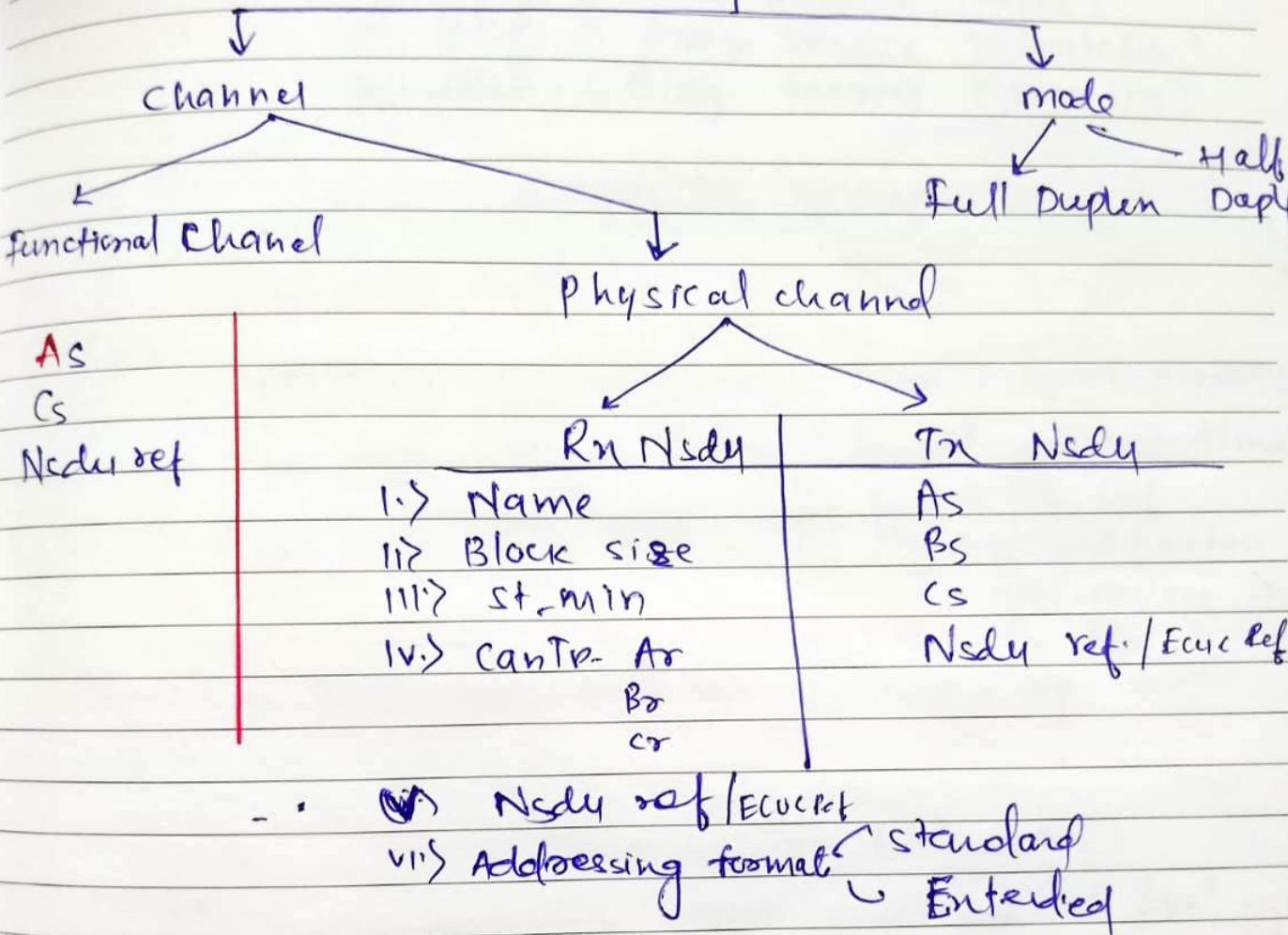
CAN-TP

can general

config set

Wednesday
Day (029/336)

29



Can TP API

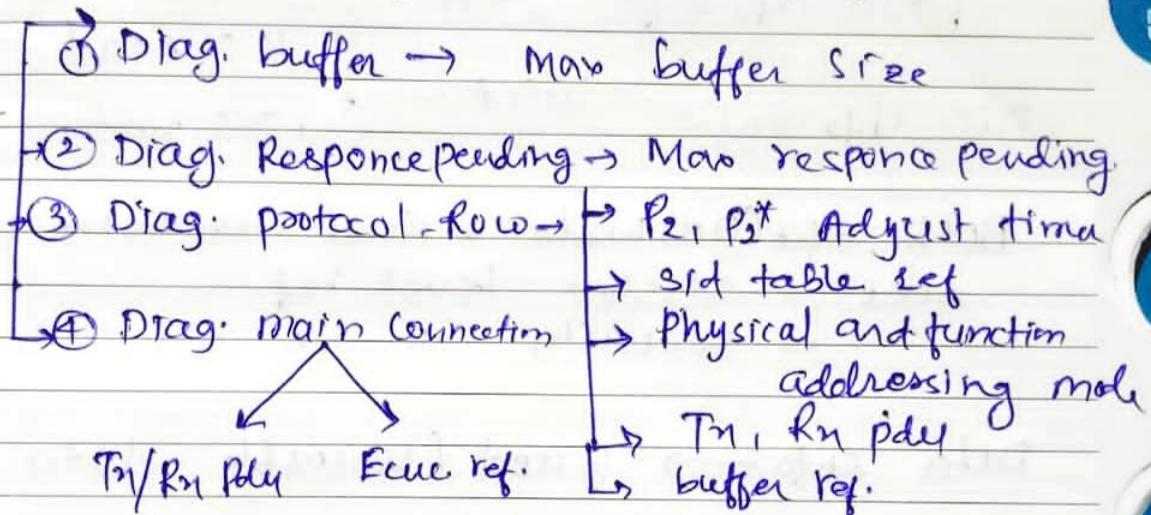
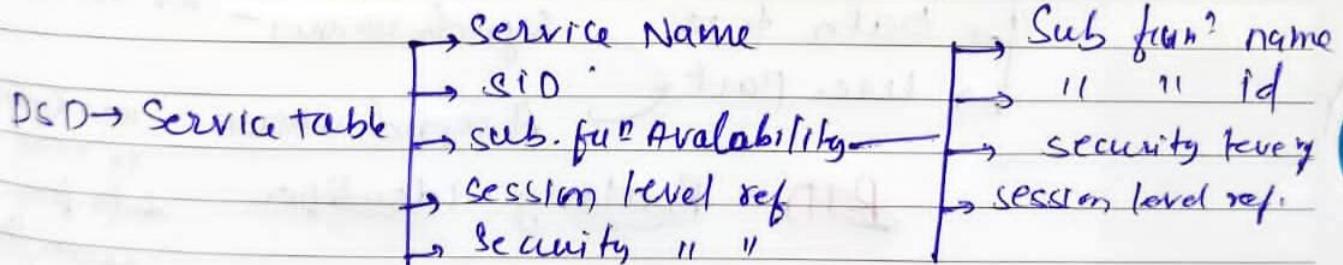
- ① startup reception.
- ② Copy Rn data.
- ③ Copy Tn 11.
- ④ Rx indication.
- ⑤ Tx confirmation.

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DCM ConfigurationDiagnostic Comm² ManagerFriday
Day (031/334)

31

- ① DSL (Diag. session layer)
- ② DCD (Diag. Service Dispatcher)
- ③ DSP (Diag. Service processing)

DSL (Diagnostic session layer)DSD (Diag. service dispatcher)

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February 2014

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Work to do

2014

DSPDIDRIDDID - Data Identifier

DID →

- DID Name
- DID Value
- + DID info ref

DID info ref → DID Access

DID Read

DID Write

BOTH (DID Write & Read) contains parameters
 like → session level def
 → security " "

Data info → fixed (variable data length)

Data →

- Data Name
- Data size
- Data type
- User part

To read data from NVM
 Synchronously -

Asynchronously -

RID - Routing Identifier

To read data from server / API

February '14

Monthly Planner

RID (Routing Identifier)

Sa 01

Su 02

Mo 03

Tu 04

We 05

Th 06

Fr 07

Sa 08

Su 09

Mo 10

Tu 11

We 12

Th 13

Fr 14

Sa 15

Su 16

Mo 17

Tu 18

We 19

Th 20

Fr 21

Sa 22

Su 23

Mo 24

We 25

Tu 26

Fr 27

Sa 28

Routing

→ RID Name

→ RID value

→ Routing info set

Routing info

→ Start routing

→ Stop "

→ Req. Result routing

- 1) Signal Name
- 2) Signal pos
- 3) Signal type
- 4) Signal endians

2014

February

Explanation :

DCM - It stands for Diagnostic Communication Manager
 It has 3 layers (I) DSL (II) DSD (III) DSP

DSL: It handles the

- (I) Buffer
 - (II) Timers (P_2 , P_2^* , Session)
 - (III) Few NRC (γ_8 - Response pending)
 (IV) Busy request
 - (V) Request and response
 - (VI) Express request set bit (True, false)
 - (VII) It handles PDU
 - (VIII) Session, Security level
 - (IX) Physical & Functional
 - (X) Tester present.
- enough

DSD: It stands for Diag. Service Dispatcher.

- It verify and validate the data if it is valid then data will go to DSP otherwise it will go to DSL Layer.

DSP: It stands for Diag. Service processing, 02 Sunday and it process the request, collect the data from corresponding modules, prepare response & it will send to DSD to DSL.

Saturday
Day (032/333) 01

February 2014							March 2014						
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Work to do

2014

February

Tuesday
Day (035/330)

04

DEM (Diagnostic Event Manager)DEM configsetDEM general

- 1.) DTC class list → DTC Name

→ DTC ID
 → Protocol ↗ UDS
 ↗ OBD

- 2.) Events Parameters → Event ID BSW
 → Event kinds ↗ ASW
 → Max^{no.} no. of freez Frame
 → DTC reference

- 3.) Event list:

→ Aging allowed or not [✓]
 → Aging Threshold → 40 cycle
 → Event Destination
 Event ↗ primary memory
 ↘ secondary memory
 ↘ monitor "

→ Operation cycle ref.
 → Event priority.

February 2014						
Mo	Tu	We	Th	Fr	Sa	Su
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	20

Wk	March 2014					
	Mo	Tu	We	Th	Fr	Sa
09					1	2
10	3	4	5	6	7	8
11	10	11	12	13	14	15
12	17	18	19	20	21	22
13	24	25	26	27	28	29

Work to do

MAR

APR

MAY

JUN

05 Wednesday
Day (036/329)

4.3 Debounce Counter Algorithms (DCA)

↳ Debounce counter based

- Debounce counter increment step size.
- D.C. Decrement step size.
- D.C. pass threshold.
- D.C. failed !!

Question in DEM

④ What is freeze frame & extended frame?

Freeze frame :- It is like screenshot, whatever information is provided that can be seen in the DTC (ID, Name, fault name) this freeze frame.

* Extended frame contains extra information like speed, time, temp etc.



The future is not in the hands of fate but is ours.

Work to do

DEM: when fault occurs, it is stored in fault memory in the form of DTC.

Thursday
Day 037 / 328

06

DTC: Diag. Trouble code \rightarrow 3 bytes
fault \rightarrow DTC ID.

Counters :-

* Occurance counter: (127) threshold value.

* Occurrence Counter, (2+) When fault occurs in some operation cycle then O.C will be increasing. When counter reaches threshold value DTC status changes from test failed to pending. ($F \rightarrow P$)

* Debounce counter: (127) threshold value.

when fault occurs in different operation cycle then debounce counter will increase.

when counter reaches threshold value

DTC status change from pending to confirmed.
 $(P \rightarrow C)$

Threshold value)

* **Aging Counter (40):** When fault does not occur in the same operation cycle or different cycle, then Aging counter gets incremented.

When counter reaches threshold value (40), DTC or fault removed from fault memory.

February							March						
2014							2014						
Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su
					1	2	9		31			1	2
3	4	5	6	7	8	9	10	3	4	5	6	7	8
10	11	12	13	14	15	16	11	10	11	12	13	14	15
17	18	19	20	21	22	23	12	17	18	19	20	21	22
24	25	26	27	28			13	24	25	26	27	28	29

February

How to debug12 Wednesday
Date (04/03/2014)

Once configuration done, code is generated. We will implement the stub code, if SWC is not available, then compile, build and flash on to target board.

Before flashing target board check the debuggers and hardware setup.

Keep break point in stub code to particular ADJ and send the data from CANOE through EG block, then it will come and hit the break point and the O/P we can see in watch window that msg is receiving or not.

- Q. How many DID you have configured - 30-40
 RID - 3-4
 PDU - 80-100
 Signal - 200-250



A liar will not be believed,
even when he speaks the truth.

Work to do

2014

February

Agile Methology

Thursday
Day (044/321)

13

- Every day will be scrum meeting in the wo
used to say yesterday's task and today's task.
And there will be Scrum master, engg, project
manager.
- After that sprint meeting is that we used to say
the plan of every two weeks. There will be
all project owner, Engg;
- we discuss the progress of the project and what
the milestone we reached.

February 2014							March 2014						
Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su
3	4	5	6	7	8	9	10	11	12	13	14	15	16

Work to do

February

Questions on com

17

Monday
Day (948/317)

What are the Transfer properties -

- ① Trigger.
- ② Trigger without repetition.
- ③ Trigger on change.
- ④ Trigger on change without repetition.
- ⑤ pending:

- Trigger - Data/^{Signal} will be transferred continuously when it is triggered.
- Trigger without repetition: Signal will transfer but it will not repeat when it is triggered.
- Trigger on change: Signal value will transmitted if the signal value is change with previous value.
- Triggered on change without repetition - It means signal value will transmit every time it will not repeat from all → once the signal value is triggered.
- pending: - means particular signal will send periodically.



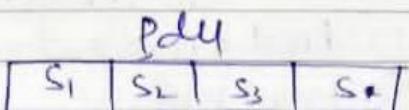
Knowledge is the eye of desire and can become the pilot of the soul.

Work to do

Transmission mode

Ⓛ Direct Ⓜ Periodic Ⓝ mixed
 Ⓞ None

Tuesday 18
Day (049/316)



* Direct:

- In pde there are some signal which posses the all properties except perking i.e. known as Direct mode.

* It periodic :- On plus there is some signal which possess the properties of periodicity. To properties.

* Mixed: In pem there is some signal which has the properties both direct & periodic.

* None :- It has no properties of any type properties.

⊕ Ecuc → PDU information
↳ msg name, DLC length

February							March							Work to do	
2014							2014								
Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su		
					1	2	9						1	2	
3	4	5	6	7	8	9	10						9	10	
10	11	12	13	14	15	16	11						16	17	
17	18	19	20	21	22	23	12						23	17	
24	25	26	27	28			13						30	24	

February

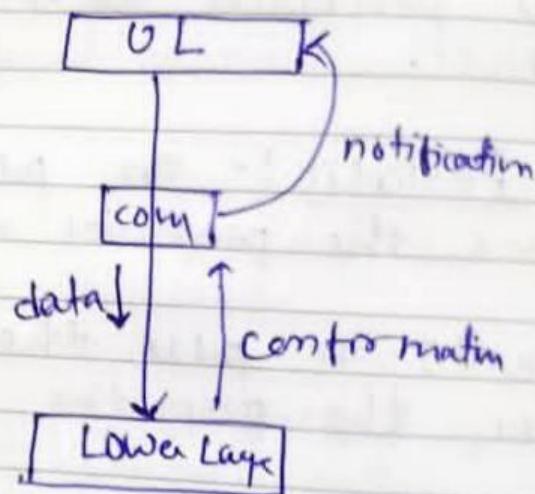
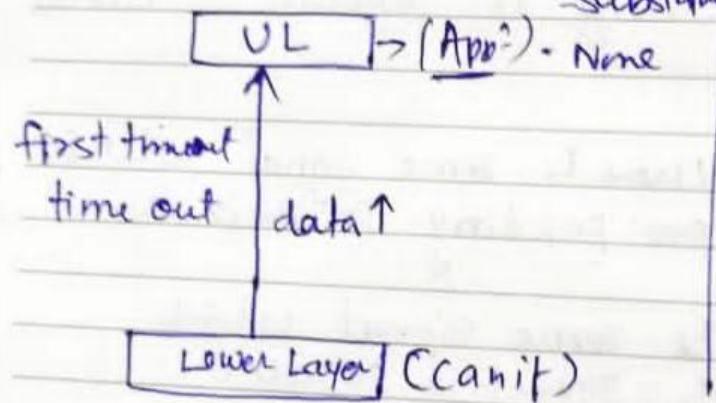
Deadline Monitoring

19 Wednesday
Day (80/315)

- Rn deadline monitoring
- ↳ first time out
 - ↳ time out

- Tn deadline monitoring
- ↳ first time out
 - ↳ time out

Rn data timeout action = Replace
= substitute



- * There are two types of deadline monitoring:
 - * Rn & Tn deadline monitoring.
 - * Rn deadline monitoring:- move from L/L^(can't) to upper layer^(App). When msg will not get the msg at the particular time first time out will happen.

- * Again msg will move from Lower layer to upper layer again not receive the msg out will happen.



Humour is by far the most significant activity of the human brain.

Work to do

and call and if will replace, substitute
and none.

Thursday
Day 1051/314

20

- In Deadline Monitoring:-
when msg will transmit from UL to L/L, Lower layer has to give confirmation if there is no confirmation within a particular time timeout will happen.
 - Again if Layer layer will not send the confirmation, timeout will happen, and COM will send the notification to App layer.

COM FILTER Algorithm:

 - Always - Always signal allowed.
 - Never - Never " "
 - Masked- New Equal - \rightarrow it will allow when the signal value is equal to x.
 - Masked- New- differ x \rightarrow it will allow when the signal value not equal to x.

- Mask New Masked Differ^{old}. Signal change with previous.
- Within range - Allow only signal value within range.
- Outside range - " " " " Outside "
- every New_N → n times signal allow.

February							March						
2014							2014						
Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su
					1	2	9	31				1	2
3	4	5	6	7	8	9	10	3	4	5	6	7	8
10	11	12	13	14	15	16	11	10	11	12	13	14	15
17	18	19	20	21	22	23	12	17	18	19	20	21	22

February

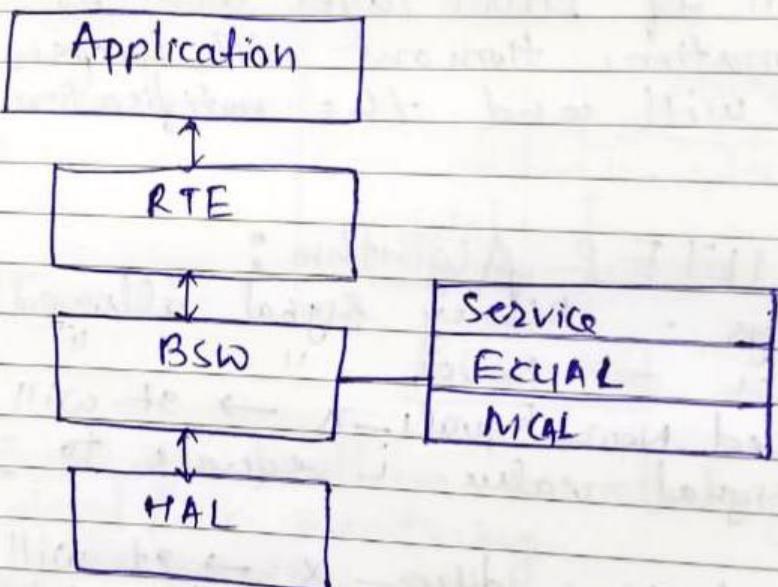
21

Friday
Day (052/313)

Sampling Point :- point at which the value is interpreted as read.

- # • Autosar Layer Architecture ; - st is stands for automatic open system architecture.
- st makes independent of h/w to s/w.
- st is used for reusability of code.

Autosar layered architecture



The greater the obstacles
the more glory in
overcoming it.

Work to do



2014

February

Run time environment

RTE - Overview

- 1) RTE - Virtual function bus
It helps to interface b/w AL to BSW through ports.
- 2) Runnable → It is piece of code, which transfer the data from UL to LW & LW to UL through port interface, when event triggered.

Saturday
Day (053/312)

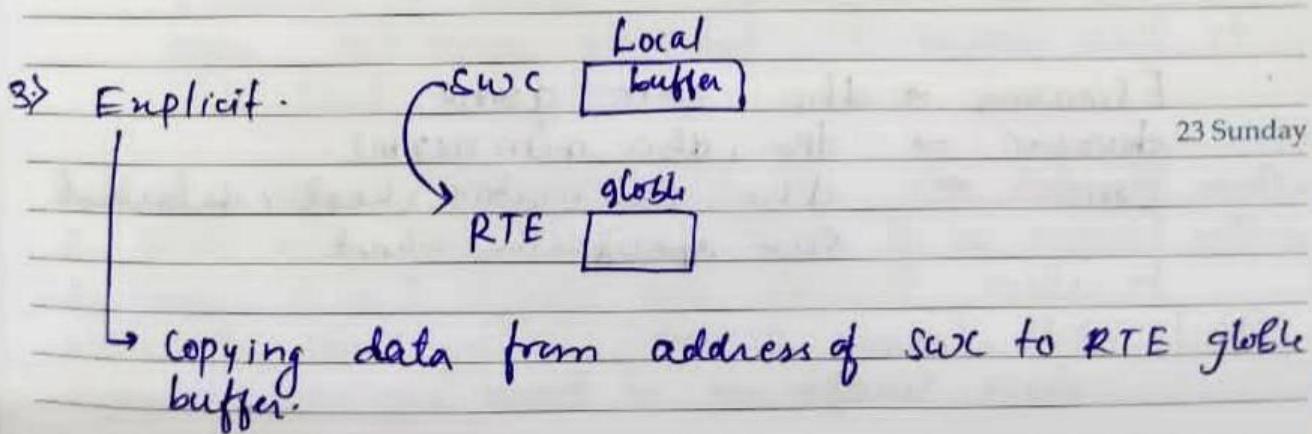
22

There are two ports

- ① P-Port - Provider Port
- ② R-Port - Required "

Data Element → Data type.
↳ uints

Event mapping: - Based on task, event triggered periodically.



23 Sunday

February 2014							March 2014							Work to do						
Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31					

February

24

Monday
Day (055/310)

Impercits: Copying data from SWC local buffer to RTE global buffer.

Synchronous:-

Event triggered, and when it completed in the same operation cycle.

Asynchronous:

Event triggered. if complete in same or different O.C.

Connectors -

- I) Assembly Connectors:- ports connected to same composition.
- II) Delegation Connector: ports connected to different composition.

→ composition:- no. of SWC.

EBRASS → dbc, xdm, axml.
 dependency → dpa, dbc, atm axml.
 com → dbc, can matrix sheet, datasheet
 can specification sheet.



Kindness is a language
 the dumb can speak and
 deaf can hear and
 understand.

Work to do

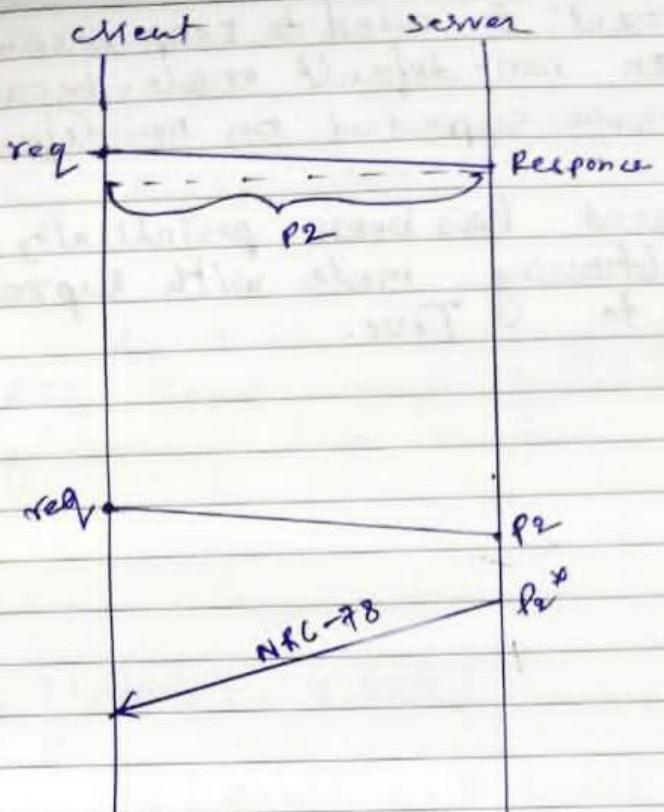


February

2014

Tuesday
Day (256 / 309)

25



P₂ - Time gap b/w request and response.

P₂* → When P₂ timeout happens, P₂* timer activated. If there is no response between P₂* time, P₂* timer timeout will happen and it will send NRC-78.

S₃ timer :- when the server is on - non-default mode, S₃ timer will activate. If there is no request within S₃ timer, it will change into default mode. If within S₃ timer when there is request, then it will remain unchanged ~~in~~ in non-default mode.

February 2014						
Mo	Tu	We	Th	Fr	Sa	Su
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28		

March 2014						
Mo	Tu	We	Th	Fr	Sa	Su
31				1	2	
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

Work to do :

February

2014

26

Wednesday
Day (057/308)

- Tester present: is used to keep session alive on non-default mode. because some service supported on non-default mode.

How:- Tester present has been periodically sent with functional addressing mode with express response bit set to True.



Life's greatest achievement is the continual remarking of yourself so that at last you know how to live.

Work to do



2014

February

Thursday
Day (058/307)

27

V.V.I DID implementation :-

once configuration done, → will implement stub code to check DID fun². Inside DID fun, by calling Right API.

Ex:-

As I am reading from App² I will call RTE-Read and from App² I will writing +ve & -ve response to that DID fun.

F189 C)

{

if (length == 8 byte)

{

if (session == Extended)

{

if (Security level is true)

{

temp = RTE-Read();

}

} NRC-33

3

NKL 7F

}

else

{

NRC-13

}

February 2014							March 2014							Work to do							
Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	
					1	2	9	31				1	2								
3	4	5	6	7	8	9	10	3	4	5	6	7	8	9							
10	11	12	13	14	15	16	11	10	11	12	13	14	15	16							
17	18	19	20	21	22	23	12	17	18	19	20	21	22	23							
24	25	26	27	28			13	24	25	26	27	28	29	30							

February

2014

28

Friday

Day (090/300)

Given :- Spare Part Name -

DID No - F189

Read from App^h

Session Extended

So, for Configuration we are taking e.g. if
Sparepart no - Name, Did no. is F189, Read from
App^h and it is supported in the exited session
and security level ref. So after configuration
code will be generated and we implement the
stub code. e.g.

As reading from App^h layer so we
have call Rgth API i.e RTE-Read, and
it will give true or false response to the
DID fun.

As I grow to understand
life less and less, I learn
to love it more and more.

Work to do



March '14

Services

Monthly Planner

Sa 01

DCM - It is used to diag. the vehicle

Su 02

health.

Mo 03

Tu 04

We 05 1) Diag. session control-(10) → It provides the session that is required by other service to be supported in that active session.

Sa 08

Su 09

Sub fun:- { 01 - Default
02 - Programming
03 - Extended }

Mo 10

Tu 11

We 12

Th 13

2) Ecu Reset (11) : It reset the Ecu.

Fr 14

There are three sub fun

Sa 15

{ ① Hard Reset → clear RAM
② KeyoffON → ignition on/off
③ Soft Reset → clear Particular module.

We 19

3) Security Access (27) : It is used to unlock Ecu.

Fr 21

Sa 22

Subfun fd { 01 - seed } key 1
02 key

Su 23

Mo 24

Tu 25

4) Communication Control: (28) - To control Tx/Rx

We 26

Th 27

Fr 28

Sa 29

Su 30

Mo 31

{ 00 - Rx, Tx Enable.
01 - Rx enable Tx disable.
10 - Rx disable Tx enable.
11 - Both disable.

2014

March

5.) Tester Present (3E):

To keep session alive, becz some service support in non-default session.

Saturday
Day (060/305)

01

6.) Control DTC setting (85): To enable and disable DTC

{ 01 - Enable DTC ^{bcz} → DTC will be logged into memory.
 { 02 - Disable " " → DTC will not " " .

7.) Read DTC information (19): It is used to read fault or DTC information from the fault memory based on status mask.

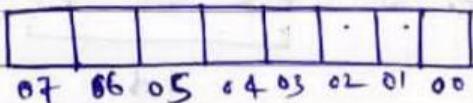
sub fun Id { 01 Report no. of DTC.

02 - " DTC.

03 - Report first test failed DTC.

04 - " first confirmed DTC.

* Status mask →



00 - Test failed

07 06 05 04 03 02 01 00

01 - Test failed in same operation cycle.

02 - Pending DTC.

02 Sunday

03 - Confirmed " .

04 - Test not completed since last clear.

05 - Test failed since last clear.

06 - Test not completed in ^{same} operation cycle.

07 - Warning Indicator failure.

March 2014						
Mo	Tu	We	Th	Fr	Sa	Su
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

April 2014						
Mo	Tu	We	Th	Fr	Sa	Su
1	2	3	4	5	6	7
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

Work to do

03 Monday
Day (062/303)

- 8) Read Data by identifier (22): To read the data from appl¹ or memory using DID. It has no funⁿ id.
- 9) Write Data by identifier (2E): To write the data in the memory or appl² using DID.
- 10) Clear DTC information (14): To clear the DTC information.

→ How to clear all DTC? By sending 3 bytes of FF FF FF.

→ To clear particular DTC:

by requesting particular DTC id
like, FF S1 E2
Id

- 11) Routing control (31): It is used for monitoring and controlling the ECU using RID.

Subfun {
01 : start Routing.
02 : stop
03 : req result.



March

2014

NRCTuesday
Day 065/365

04

- 1) general Reject (10):
 When NRC-78 is continuously sending, it reaches its threshold value. Then req. becomes general rejection (NRC-10).
- 2) Service not supported (11): if requested with the invalid service id. (NRC-11).
- 3) Sub fun. Not supported: (12) :-
 if requested with invalid sub-fun id (NRC-12)
- 4) Incorrect msg length (13):
 If there is invalid DLC length (NRC-13).
- 5) Condition not supported: (22)
 if there is some condition which is not supported.
 (NRC-22)
- 6) Request out of range (31):
 if request out of range (fig 89). (NRC-31)
- 7) Security Access denied (33):
 When ECU is in lock condition if we try to req. data it gives NRC(33) means security device (NRC-33).

March 2014							April 2014							Work to do						
Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su
31					1	2	1	2	3	4	5	6								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

05

Wednesday
Day (064/301)

8. Invalid key: (35):

When the seed value and key value is mis-matched re (NRC - 35)

9. Exceeds no. of Attempts (36):

Whenever the invalid key has been given no. times than it will give NRC (36).

10. Required time delay not Expired (37):

It means @ if ~~exceeds~~ exceeds no. of attempts times start ~~within~~ within that timer of we are trying to request that Locked ecu than will get (NRC - 37).

11. Request sequence Error (24):

If we request key instead of seed that will through NRC (24).

12. Sub - fun not supported in Active session (7F):

If any subid supported only in non-default mode but we are request in default than (NRC - 7F).

13. Service not supported in active session (7F):

If any service id supported only in non-default mode, but we are requesting in default then it give (NRC - 7F).



It is a golden rule that one should never judge men by their opinions, but rather by what their opinions make of them.

Work to do



March

2014

14) Response pending (78) :

When the ECU is preparing a response than (NRC - 78) will come.
→ Dead Lock

Thursday
Day (065/300)

06

15) NRC-21 (Busy Repeat Req: 21) :

When ECU is responding to another ECU, if we try to request that time it will give busy request ie NRC (21).

Timer (400 ms) :

P₂ timer : The time gap b/w request and response ie P₂ times.

600 (ms) :

P₂* timer : When P₂ timers timeout b/w P₂* activate again, if there is no response it will send NRC 78 ie. response pending.

Map response pending = 5;
(600 milliseconds)

P_t timer : When P₂ timers timeout will happen, P_t timer will activate. If there is no response b/w P₂* time, (P₂*.) timer timeout will happen and it will send 78 (NRE). NRC-78 is Response Pending.

March 2014							April 2014							Work to do													
Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26		

07

Friday
Day (066/299)* S3 timer:

When the server is in non-default session, S3 timer will get activated.

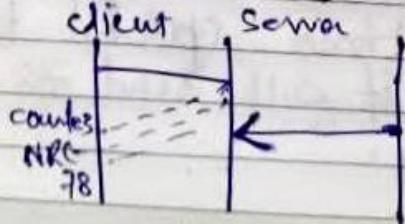
If within that S3 timer, there is no request is received then it changes to non-default to default. If there is request it will be in non-default.

- To avoid S3 timer timeout we send Test-Present alarm with functional addressing mode with suppress response bit set to true.
- When we

* Dead lock / Busy deadlock request:-

When the server sending NRC-78, if another client try to request, that time deadlock happens.

- How to avoid deadlock:
NRC-78.



To give counter for client,

Work to do



March

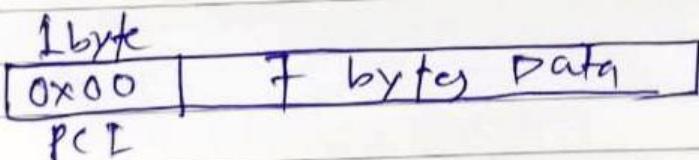
2014

CANTP.Saturday
Day (067 / 298)

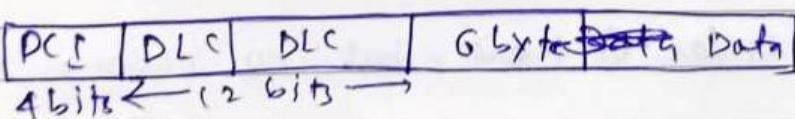
08

- whenever the payloads of data is more than 8 byte. it uses the CANTP.
- it is resp. for segmentation & resegmentation of fat data.

Frame:	1) Signal frame	- 00
	2) first "	- 10
	3) consecutive "	- 21
	4) flow control -	- 30 - Continue to send 31 - Wait 32 - Overload.

Single frame: (for diag. msg)first frame :-

09 Sunday

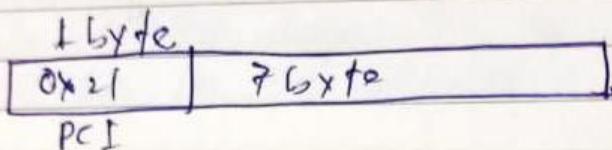
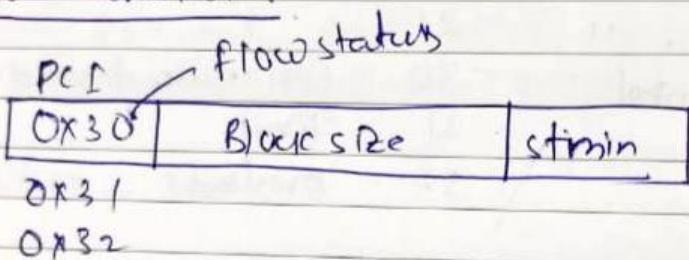


Wk	March	Wk	April	2014	Work to do
Mo	Tu	We	Mo	Tu	We
31			1	2	3
3	4		7	8	9
10	11		15	16	17
17	18		22	23	24
24	25		25	26	27

March

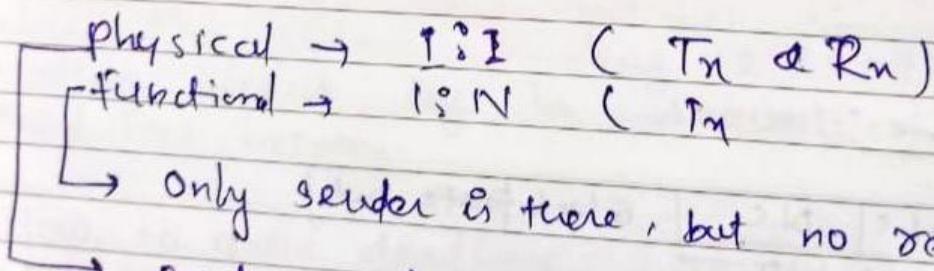
10 Monday
Day (069/296)

Consecutive frame:-

flow control:

- 0 → Continue to send
- 1 → Wait
- 2 → Overload

stmin → Time b/w two consecutive frames.

channels:-

- Only sender is there, but no receiver's Add.
- Sender's side well known with the receiver's Add.



One man can completely change the character of a country and the industry of its people, by dropping a single seed in fertile soil.

Work to do

February

10 Monday
Day (041/324)

XI. Having hands on experience in project specification tool like Jira, ptc, gitlab and management tool like IBM doors.

XII. On my project we follow agile methodology.

XIII. On warning analysis and fixing the warning based on missed c value.

XIV. I have good knowledge on ISO-standard like - 11898-
UDS-14229, 15765 - part 2. CAN



It is terrible thing to look over your shoulders when you are trying to lead-and find no one there.

Work to do



Day to Day / Project

^{project} My project was Body Control Model ECU, in that my roles and responsibility were com and diag.

Tuesday
Day (042/323)

11

- Day 1 P1*

 - My task will be assign in Jira tool.
 - Based on the task I will be analysis and understand the requirements.
 - Getting that requirements from doers and Baseline from PTC.
 - After that based on the task whether it is configuration or Testing or implementation or bug fixing, I will create a sub task.
 - As of now I will consider my self configuration.
 - I will be doing configuration in Autosar tool and ECU-trace.
 - After configuration is done, code has been generated.
 - After that I will be implementing the necessary stuff code, then compile, build and flash onto target board.
 - After that I will be preparing test cases based on requirements and Preparing a test report and traceability matrix.
 - All the necessary reports will be checking into PTC and Jira.

Wk	February		2014		Wk	March		2014		Work to do					
	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	
05						1	2	09	31				1	2	
06	3	4	5	6	7	8	9	10	3	4	5	6	7	8	9
07	10	11	12	13	14	15	16	11	10	11	12	13	14	15	16
08	17	18	19	20	21	22	23	12	17	18	19	20	21	22	23
09	24	25	26	27	28			13	24	25	26	27	28	29	30