1. (4pts) Regrading the number of bits which need to be transmmited, do you think that the new design is better? Please explain.

Origin :

transmitted bits in 100msec

= (6 + 47)\*2 + (10 + 47)\*2 + (10 + 47)\*2 + (16 + 47)\*1

= 106 + 114 + 114 + 63

= 397 bits / (100msec)

New design :

transmitted bits in 100msec

= (16 + 47)\*2 + (10+ 47)\*2 + (16 + 47)\*1

= 126 + 114 + 63

= 303 bits / (100msec)

When we talk about the number of bits which need to be transmitted, new design is better.

1. (4pts) Can you further merge into ?

(Assume we could not assign task to another ECU)

No. Since the sender of , are different. If we can’t assign the task on to or assign the task on to , we can’t merge and

1. (4pts) In most cases, it does not hurt to have more frequent messages, but it is not allowed to have less frequent messages. Following this policy, can you further improve the number of bits which need to be transmitted? Please explain.

Since the sender of and are the same, we can merge them into a new message, called

Origin :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Message | Sender | Receiver(s) | Number of Bits | Period(msec) |
|  |  |  | 16 | 50 |
|  |  | , | 10 | 50 |
|  |  |  | 16 | 100 |

transmitted bits in 100msec, we calculated it in 2-1

= 303 bits / (100msec)

Merged :

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Message | Sender | Receiver(s) | Number of Bits | Period(msec) |
|  |  | , | 32 | 50 |
|  |  | , | 10 | 50 |

transmitted bits in 100msec

= (32 + 47) \* 2 + (10 + 47) \* 2

= 158 + 114

= 272 bits / (100msec)

Yes, merge and into would improve the number of bits which need to be transmitted.