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Display a third level of an UAQ in the DVA dialog

All the user defined new UAQs will be listed under the Quantities Browser in IPGControl and DVA. If they are all listed under the same level, it is difficult to search quantities. Today I want to share an example about how to create the user defined UAQs in the format with 3 sublevels under the Quantities Browser just like "Traffic.<ObjectName>.<QuantityName>" ("Traffic" is the first sublevel and "<ObjectName>" is the second sublevel).

Technical Background

If more than three quantities have a same prefix such as DM.Brake, DM.Clutch and DM.Gas, they will be listed under the 2nd. sublevel of the group "DM" automatically. But how to create UAQs which will be shown in 3 sublevels? To realize it, we need to edit the Configuration file ".CarMaker.tcl".

Step 1:

Declare the following C variables at the beginning of the User.c file.

```
1: typedef struct tMyVar tMyVar;  
2: struct tMyVar {  
3:     struct {  
4:         double Brake;  
5:         double Gas;  
6:         double Clutch;  
7:     } A, B, C;  
8: };  
9: tMyVar MyVar;
```

Step 2:

Create UAQs for those C variable under the function User_DeclQuants (void):

```
10: DDefDouble4 (NULL, "MyVar.A.Brake", "s", &MyVar.A.Brake, DVA_None);  
11: DDefDouble4 (NULL, "MyVar.A.Gas", "s", &MyVar.A.Gas, DVA_None);  
12: DDefDouble4 (NULL, "MyVar.A.Clutch", "s", &MyVar.A.Clutch, DVA_None);  
13: DDefDouble4 (NULL, "MyVar.B.Brake", "s", &MyVar.B.Brake, DVA_None);  
14: DDefDouble4 (NULL, "MyVar.B.Gas", "s", &MyVar.B.Gas, DVA_None);  
15: DDefDouble4 (NULL, "MyVar.B.Clutch", "s", &MyVar.B.Clutch, DVA_None);  
16: DDefDouble4 (NULL, "MyVar.C.Brake", "s", &MyVar.C.Brake, DVA_None);  
17: DDefDouble4 (NULL, "MyVar.C.Gas", "s", &MyVar.C.Gas, DVA_None);  
18: DDefDouble4 (NULL, "MyVar.C.Clutch", "s", &MyVar.C.Clutch, DVA_None);
```

Compile a new CarMaker executable. About how to generate a new CarMaker executable, please refer to the chapter "Rebuilding the CarMaker Simulation Program" in the document "Programmer's Guide".

Step 3:

Add a .CarMaker.tcl file including the following Tcl-code at the top level of the project folder or extend an already existing .CarMaker.tcl file with these code:

```
19: lappend DVA::SubMenuSpec MyVar key3 MyVar
```

It is used to extend the CarMaker GUI with additional sublevel names and just for the visualization inside the GUI as shown in the figure below after start the restart of CarMaker.

