Title: Tcl/Tk Commands

Product: OrCAD – Capture, CIS

Summary: Collection of useful TCL/Tk Commands

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How to use this document:

All listed Tcl commands and codes are written in `Courier new` font to divide them from other text.

All attached Tcl code examples are stored with additional extension .txt to open them from PDF document as text file. To use Tcl scripts, this extension need to be removed.

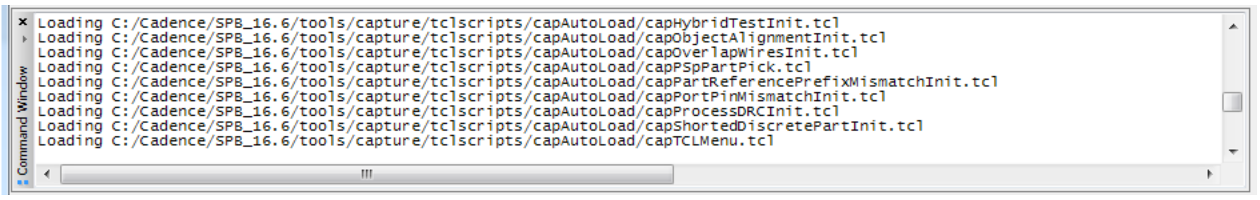
Table of Contents

1 Introduction

Tcl (**T**ool **C**ommand **L**anguage) is designed as a glue language for integrating applications and is a popular scripting language, embedded in various EDA (Electronic Design Automation) tools.

1.1 The Tcl Command Window

The Capture environment includes a Command window. You use this window to execute Tcl commands. Also, when you perform an operation (function) in Capture, the associated command is registered with the Tcl interpreter and the command is reported in the Command window.



```
Loading C:/Cadence/SPB_16.6/tools/capture/tclscripts/capAutoLoad/capHybridTestInit.tcl
Loading C:/Cadence/SPB_16.6/tools/capture/tclscripts/capAutoLoad/capObjectAlignmentInit.tcl
Loading C:/Cadence/SPB_16.6/tools/capture/tclscripts/capAutoLoad/capOverlapWiresInit.tcl
Loading C:/Cadence/SPB_16.6/tools/capture/tclscripts/capAutoLoad/capPSpPartPick.tcl
Loading C:/Cadence/SPB_16.6/tools/capture/tclscripts/capAutoLoad/capPartReferencePrefixMismatchInit.tcl
Loading C:/Cadence/SPB_16.6/tools/capture/tclscripts/capAutoLoad/capPortPinMismatchInit.tcl
Loading C:/Cadence/SPB_16.6/tools/capture/tclscripts/capAutoLoad/capProcessDRCInit.tcl
Loading C:/Cadence/SPB_16.6/tools/capture/tclscripts/capAutoLoad/capShortedDiscretePartInit.tcl
Loading C:/Cadence/SPB_16.6/tools/capture/tclscripts/capAutoLoad/capTCLMenu.tcl
```

1.2 To display the Command window

Go to **View > Toolbar** and enable **Command Window**. The Command Window menu item is a toggle menu. This implies that if you select the menu again, you will disable and hide the window.

To get more information about Tcl Scripts please read:

- OrCAD Capture User Guide -> Automation in Capture -> Working with Capture TCL (Page 372-378). You find this document under **$CDSROOT\doc\cap_ug\capug.pdf**.
- Under **$CDSROOT\tools\capture\tclscripts** you find the **OrCAD_Capture_TclTk_Extensions.pdf**. This file includes all details about Capture Tcl commands.

1.3 Clear the Command window

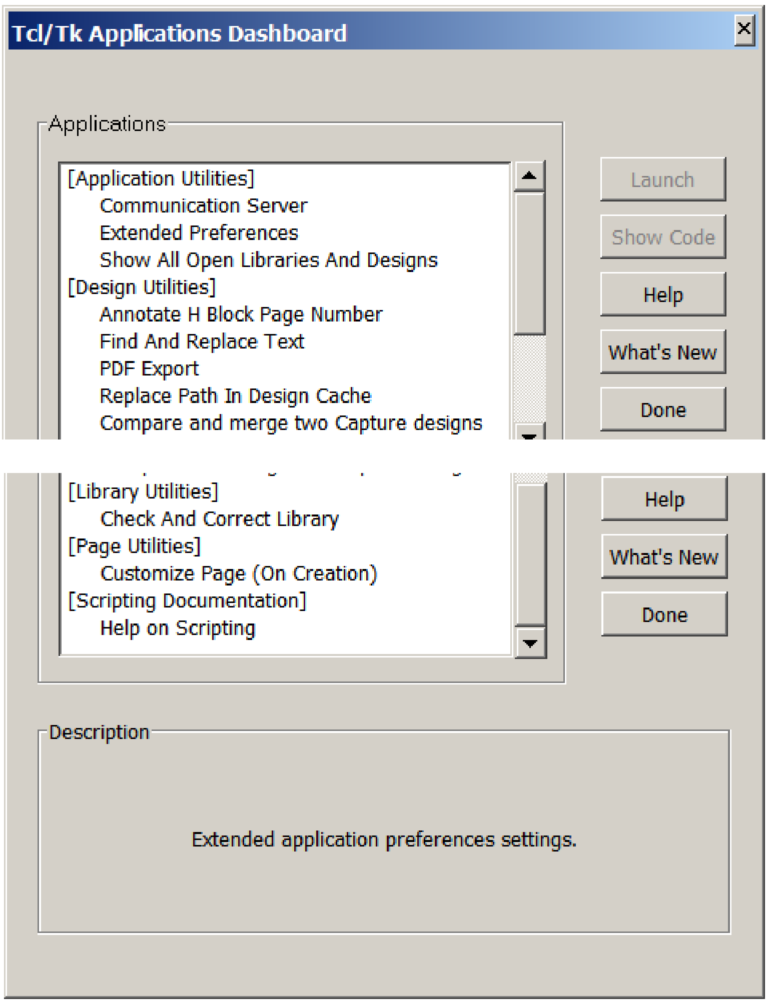
In the Command window type in `cls` and press enter.

1.4 Store TCL Commands in local environment

Cadence Tcl scripts are stored in Cadence installation structure. You can place your own TCL file in your local environment. Please see **FlowCAD_AN_Install_SiteAndHome.pdf** for more details. You can download this AN from FlowCAD Homepage or ask FlowCAD Hotline.

2 Cadence TCL Utilities

Open any project and select **Accessories > Cadence Tcl/Tk Utilities > Utilities**. You get this window.


Tcl/Tk Applications Dashboard

Applications

[Application Utilities]
    Communication Server
    Extended Preferences
    Show All Open Libraries And Designs
[Design Utilities]
    Annotate H Block Page Number
    Find And Replace Text
    PDF Export
    Replace Path In Design Cache
    Compare and merge two Capture designs
[Library Utilities]
    Check And Correct Library
[Page Utilities]
    Customize Page (On Creation)
[Scripting Documentation]
    Help on Scripting

Description

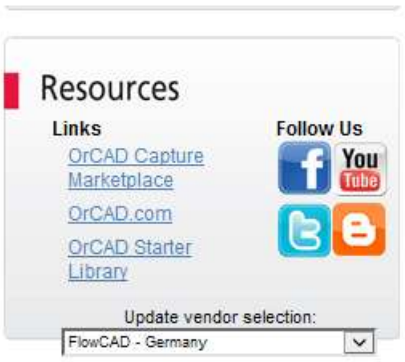
Extended application preferences settings.

This is a list of implemented Tcl utilities. All utilities are based on scripts from **$CDS_ROOT\tools\capture\tclscripts.** This folder contains a lot more Tcl examples then utilities menu shows.

For more information about Cadence Tcl utilities look at Tcl documentation **OrCAD_Capture_TclTk_Extensions.pdf**. You find this file under **$CDS_ROOT\tools\capture\tclscripts**. Some very useful Tcl utilities have a short introduction in this AN.

3 OrCAD Marketplace Apps

On **Capture Start Page** you find a Link to **OrCAD Marketplace** at the lower right corner.


Resources

Links

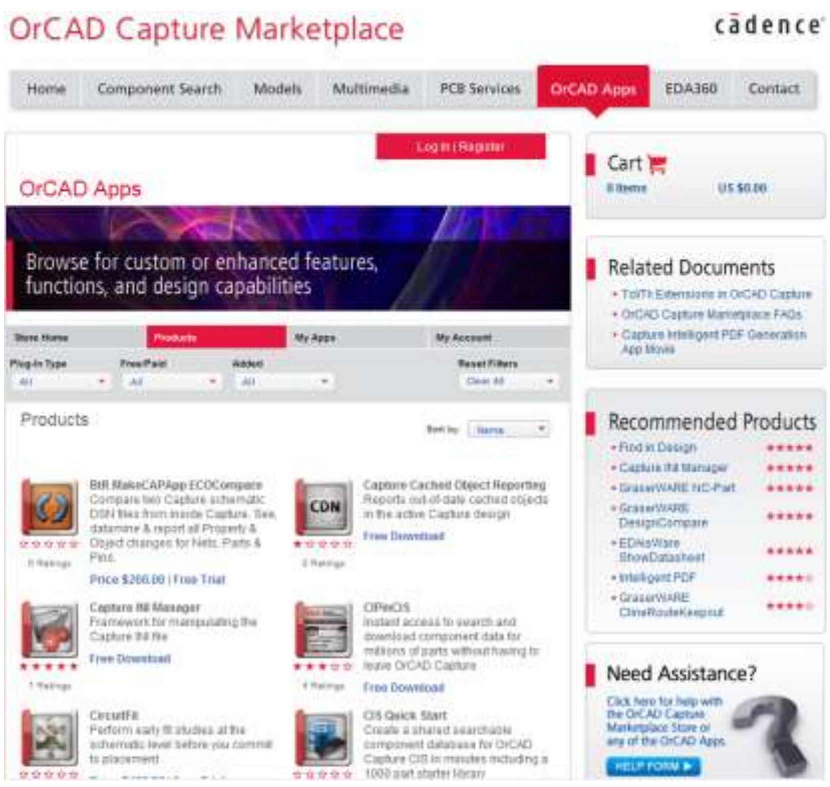
OrCAD Capture Marketplace

OrCAD.com

OrCAD Starter Library

Follow Us

Update vendor selection: FlowCAD - Germany



OrCAD Apps

Browse for custom or enhanced features, functions, and design capabilities

Plug-In Type: All; Free/Paid: All; Added: All; Reset Filters: Clear All

Products

Sort by: Name

BtR MakeCAPApp ECOCompare
Compare two Capture schematic DSN files from inside Capture. See, determine & report all Property & Object changes for Nets, Parts & Pins.
Price $266.00 | Free Trial

Capture Cached Object Reporting
Reports out-of-date cached objects in the active Capture design
Free Download

Capture Itil Manager
Framework for manipulating the Capture Itil file
Free Download

OPenCIS
Instant access to search and download component data for millions of parts without having to leave OrCAD Capture
Free Download

CircuitFit
Perform early fit studies at the schematic level before you commit to placement

CIS Quick Start
Create a shared searchable component database for OrCAD Capture CIS in minutes including a 1000 part starter library

Cart
0 items US $0.00

Related Documents
- Tcl/Tk Extensions in OrCAD Capture
- OrCAD Capture Marketplace FAQs
- Capture Intelligent PDF Generation App Movie

Recommended Products
- Find in Design ★★★★★
- Capture Itil Manager ★★★★★
- GraserWARE NC-Part ★★★★★
- GraserWARE DesignCompare ★★★★★
- EDAsWare ShowDatasheet ★★★★★
- Intelligent PDF ★★★★☆
- GraserWARE ClineRouteKeepout ★★★★☆

Need Assistance?
Click here for help with the OrCAD Capture Marketplace Store or any of the OrCAD Apps.

Some freeware Apps from OrCAD Marketplace need additional Tcl files to get them running. The files need to be stored in user environment. User environment is defined by system variable HOME. If the desired folders are not available, please create them.

Here are the files:

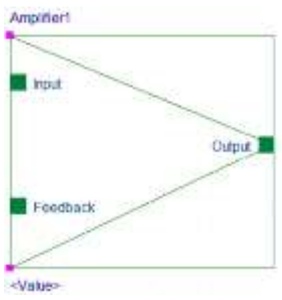
File - **DefineMarketplaceTCLAppRoot.tcl**
Desired folder - **%HOME%\cdssetup\OrCAD_Capture\tclscripts\capAutoLoad**

File - **LoadTCLApp.tcl**
Desired folder - **%Home%\Marketplace_TCLApps\TCLApploader\TCL**.

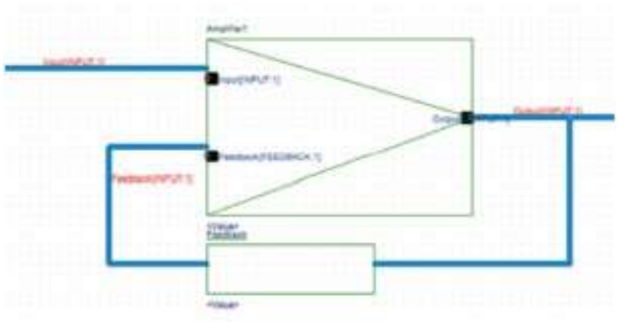
4 TCL/Tk Commands for Capture

4.1 Hide rectancle from Hierarchical Block

Create any hierarchical block with pins.
Select hierarchical block and use right mouse button > **Edit Part.**
Edit the Hierarchical block – place e.g. a triangle of lines as shown below.

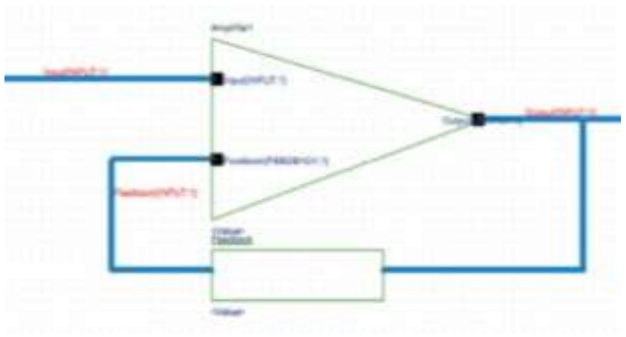


Close the Part mode and select **Yes** to update. The design should now look like this:



Open the **Tcl Command Window**, select the Hierarchical Blocks and execute the following command in the **Tcl Command window**:

```
DboBaseObject_SetBitmask [GetSelectedObjects]
$::DboBaseObject_MASK_BOXOFF
```



This hides the block border. To undo this use:

```
DboBaseObject_UnsetBitmask [GetSelectedObjects]
$::DboBaseObject_MASK_BOXOFF
```

4.2 Property Visibility

Run the attached script in Capture's command window and it will set the visibility of property values to **Do Not Display** for all parts present in the design.

You need to source the **Global.tcl** code (set value of Property Value to Do not Display) and run it.

4. `Source {Path to the Global.tcl}`. If file exist at **D:\TCL_Scripts**, then command will be like:

```
> source {D:\TCL_Scripts\Global.tcl}
```

The visibility of any property can be changed to:

- Do Not Display = 0
- Value Only = 1
- Name and Value = 2
- Name Only = 3
- Both Value Exists = 4

The same file can be modified in a text editor to change the visibility of other displayed property present in the design. An invisible property can't be changed to other display status using this script. The attached movie file shows the steps to do it.

Link to TCL code in text file - Global.tcl

4.3 Get the MAC Adress

From SPB 16.6 with hotfix 19 you can get MAC ID using following TCL command.

```
GetMACAddresses
```

4.4 ClearTempPackage

Solution to prevent Capture Crash during **Cleanup Cache**.

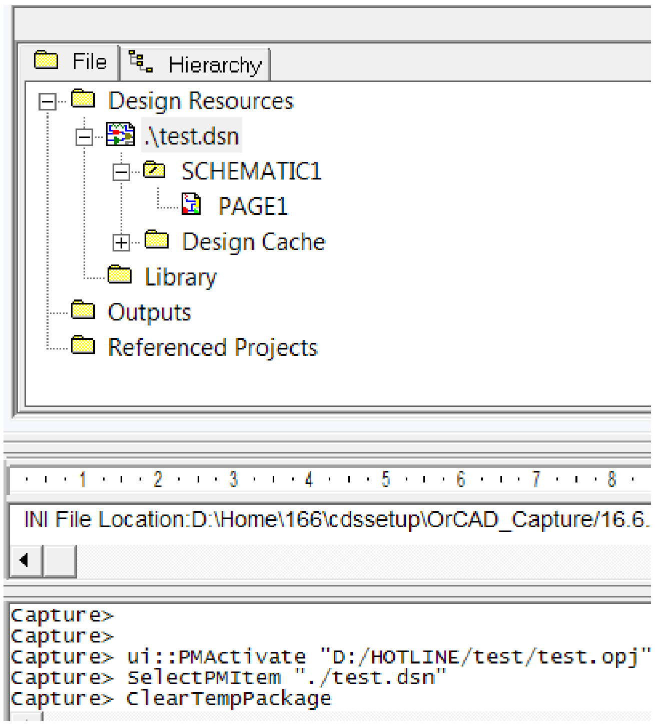
The link between the Design Cache and the part placed on the schematic is through the source library name.

Problem comes, when the cache data is correct, but the part and cache entry source library names are different. In this case, when the part needs data, cache does not return any match due to the different source library names.

The TCL command `ClearTempPackage` makes the source library name, present in cache, same as the part library name and also does cleaning of the Temporary cache object which should not be present.
However, it will work only when the source library name of a part points to the correct library path, since cache entry is updated with this value. It will not work, when this entry is not correct.

How to use it:

- Select DSN file in Project View
- Change to Command Window
- Type in `ClearTempPackage`



```
INI File Location:D:\Home\166\cdssetup\OrCAD_Capture/16.6.
```

```
Capture>
Capture>
Capture> ui::PMActivate "D:/HOTLINE/test/test.opj"
Capture> SelectPMItem "./test.dsn"
Capture> ClearTempPackage
```

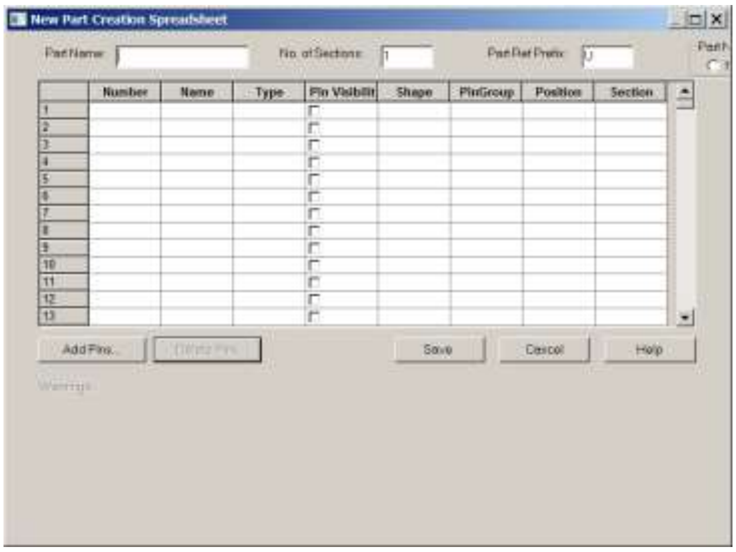
In Version 16.60 s040, and older version, you will get the error Message:

```
[ 1]RuntimeError No PM Window Containing DSN
```

You can ignore it. It will be fixed in one of the next hotfix.

4.5 Create Library Part Using TCL

You can use the following TCL command to generate part. Basically the command is the Tcl version for dialog, **New Part Creation Spreadsheet**.



Syntax:
```
capCreatePartsFromData "option1" "Path" "List"
```

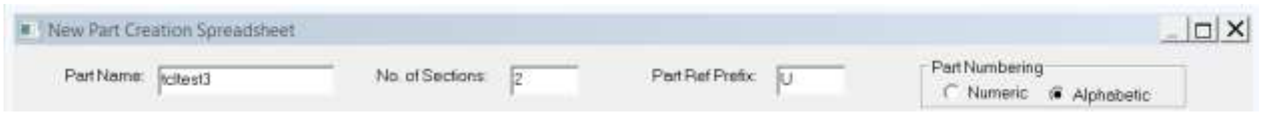
Where:

- option1
  - true, if part should be created in a new library
  - false, if part should be created in an existing library
- Path - Path of library(.olb)
- List
  - OptionList, pin1list, pin2list....
  - OptionList - "no. of section" "Prefix" "Alpha or numeric for section"
  - pinlist - "Number" "Name" "Type" "Pin Visibility" "Shape" "PinGroup" "Position" "Section"

To create your own file, use text editor to collect information and format it

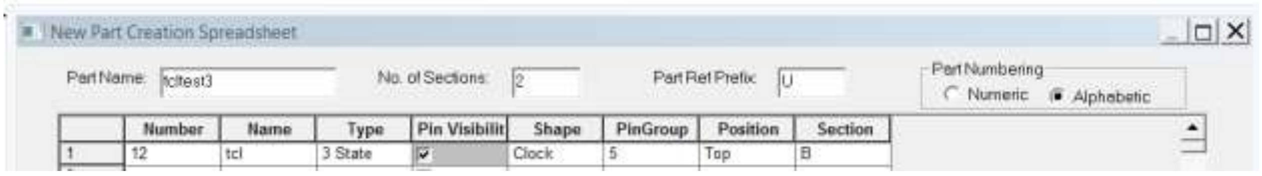
Example:
```
capCreatePartsFromData
"true"
"F:\\User\\lib\\Test.olb"
[list
  [list
    [list "tcltest4" "2" "U" "1"]
    [list "12" "tcl" "3 State" "1" "Clock" "5" "Top" "A"]
    [list "13" "tcl" "Bidirectional" "1" "Line" "5" "Left" "B"]
  ]
]
```

`capCreatePartsFromData` – TCL Command
`"true"` – Use existing OLB, `"false"` – Use new OLB
`"F:\\User\\lib\\Test.olb"` – Path to OLB
`[list [list [list "tcltest4" "2" "U" "1"]` - Start of list with part definitions



Part Name:	tcltest3
No. of Sections:	2
Part Ref Prefix:	U
Part Numbering	Numeric [✓ Alphabetic]

`[list "12" "tcl" "3 State" "1" "Clock" "5" "Top" "A"]` – First pin
`[list "13" "tcl" "Bidirectional" "1" "Line" "5" "Left" "B"]` – Second pin



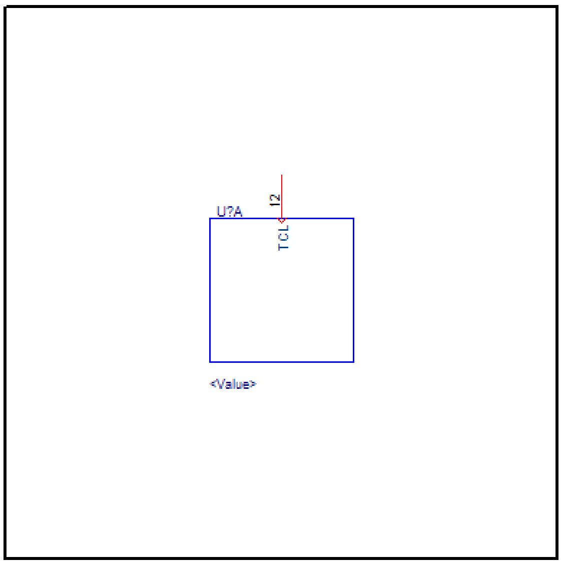
Part Name:	tcltest3
No. of Sections:	2
Part Ref Prefix:	U
Part Numbering	Numeric [✓ Alphabetic]

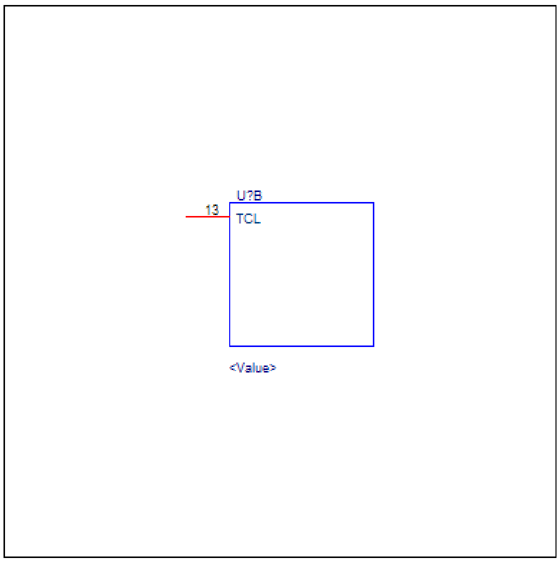
	Number	Name	Type	Pin Visibilit	Shape	PinGroup	Position	Section
1	12	tcl	3 State	✓	Clock	5	Top	B

Now create a one row command, copy it to Command window and execute.

```
capCreatePartsFromData "true" "F:\\User\\lib\\Test.olb" [list [list
[list "tcltest3" "2" "U" "1"] [list "12" "tcl" "3 State" "1" "Clock"
"5" "Top" "A"] [list "13" "tcl" "Bidirectional" "1" "Line" "5" "Left"
"B"]]]
```

That's the result:





Link to TCL code in text file - CreatePart_editor.tcl.txt (editor format) and CreatePart_command.tcl.txt (command format)

NOTE:
If you have created a part, let's say "tcltest3" in a newly created OLB, now when you run the script second time with option1 set to "False" for the same .OLB, use a different name for part, e.g. "tcltest4". You can't overwrite existing parts.

4.6 How to Update Variant Information in the Titleblock in variant view?

This script is an example based on a sample design from Cadence. You need to customize the titleblock symbol and the Tcl script. The script also includes the design specific property values of the Titleblock properties. So every design needs its own script.

You can refer this example Tcl script to get a feeling how it works. This script works on these properties.

- RevCode
- Title
- Doc

Follow these steps to learn how the script works.

1. Go to **$CDSROOT\tools\capture\samples** and open **bench_allegro.dsn**. Open the design and save it. This is to make sure we have corresponding .OPJ file.

2. Go to **View > Command Window** (If Command Window is not opened).

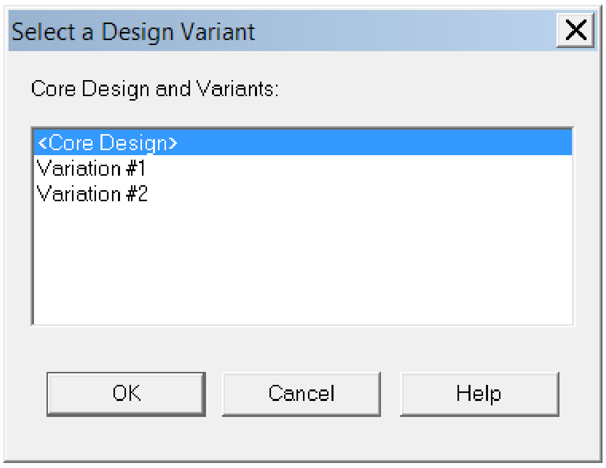
3. Now source the **Variant.tcl** code and run it.

4. `Source {Path to the variant.tcl}`. If file exist at **D:\Variant_DSN**, then command will be like below.

```
> source {D:\Variant_DSN\variant.tcl}
```

5. After successfully running it will return 1. If you get a 0, then re-run the file.

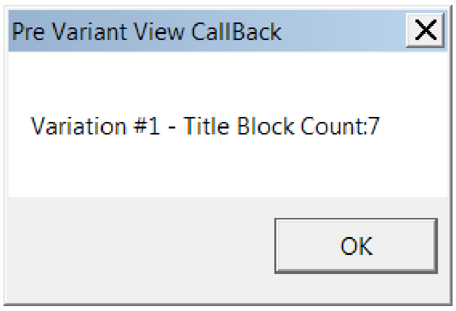
6. Now switch to **View > Variant View** and select any variant.


Select a Design Variant

Core Design and Variants:

<Core Design>
Variation #1
Variation #2

You will get several Call Back Windows.


Pre Variant View CallBack

Variation #1 - Title Block Count:7

Pre Variant Call Back and Post Variant Call Back are common for all variant design on which you run the script and remaining call backs windows are related to number of schematic pages.

Click **OK** on every window and then you will see the changes in titleblock.

Link to TCL code in text file - Variant.tcl

4.7 Customizing Menus and Toolbars

Add Menu permanent

Follow below steps to add a new menu to the Capture tool bar:

1. Close Capture (if already invoked).
2. Go to **%CDSROOT%\tools\capture\tclscripts\capAutoLoad** and paste the attached file **testMenu.tcl.**
3. Invoke Capture. You would see a new menu “MyFileTst1” in tool bar menus.

You can modify the script to add the menus as required.

Add the menu only for current session

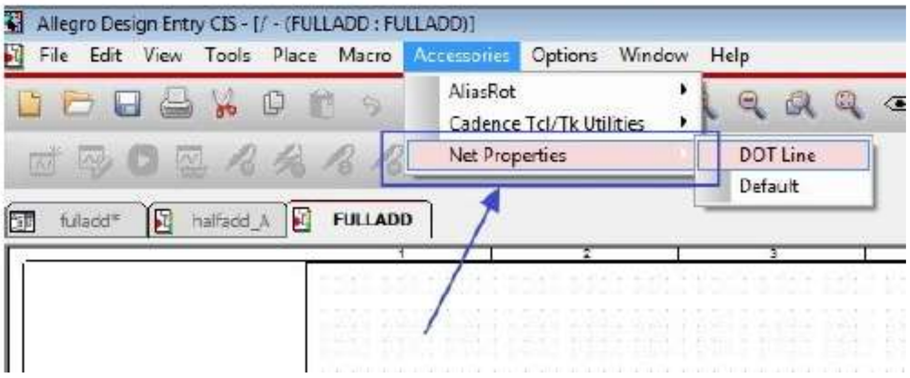
We assume that the .tcl script is placed at **%CDSROOT%\tools\capture\tclscripts\capUtils**.

1. In Capture first open **Command Window**
2. Type below command in Command Line Prompt
3. `source C:\\Cadence\\SPB_16.6\\tools\\capture\\tclscripts\\capUtils\\testMenu.tcl`
4. Now open a design and go to schematic page. You will see the newly added menu **MyFileTst1.**

Note:
When you reboot your machine, sub menu will not appear.

Add Menu in 16.5

The ability to add custom menu under the main Menu-bar is only available in Capture 16.6. In Capture 16.5, we can only add custom menu under 'Accessories' menu. To add a customized sub-menu under **Accessories** menu, use the attached TCL script **capMenuUtil.tcl**, when it runs, it adds a menu named **Net Properties** under the **Accessories** menu of Capture, as shown below.


Allegro Design Entry CIS - [/ - (FULLADD : FULLADD)]
File Edit View Tools Place Macro Accessories Options Window Help
AliasRot
Cadence Tcl/Tk Utilities
Net Properties
DOT Line
Default
fulladd*
halfadd_A
FULLADD

The menu contains popup for Line styles, namely **Dot Line** and **Default**. The user can select single or multiple nets on the schematic page and then choose one of the two options for assigning the desired net Line style. Following are the steps to do add the menu:

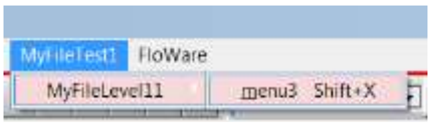
1. Close Capture, if already running
2. Copy the file **capMenuUtil.tcl** to the location,
   $CDSROOT\tools\capture\tclscripts\capAutoLoad
3. Next time Capture is invoked, a menu option named **Net Properties** should be displayed under **Accessories** menu, as shown in the above snapshot.

Also, the script itself can be modified to add a submenu and associated pop-ups for different properties under the same menu.

Link to TCL code in text file - testMenu.tcl and capMenuUtil.tcl.

4.8 Shortcuts

All Capture shortcuts are predefined by the tool and can't be changed. The only way to create your own shortcuts is to create new menu item like descript above and add a shortcut definition to it. You can't overwrite existing shortcuts. Use only not existing keys ore key combinations to create your own shortcuts.



First you need to know what is the command you want to attach to the shortcut. Open command window and execute the command you like in Capture. Our example is to close the current page. The command information from command window is `"57927"`.

Now you need to add the shortkey Shift+X and the command information to your newly created menu. Please see attached code example to create your own shortkey.

Shortkey can be:

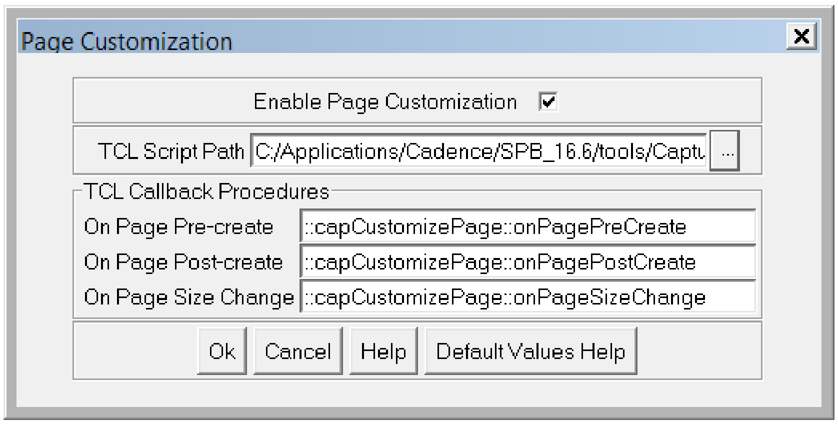
• A single key	
• A combination with	Ctrl (Strg)
• And / or a combination with	Shift
• And / or a combination with	Alt

Link to TCL code in text file - shortcut.tcl

4.9 Customize page

In folder **$CDSROOT\tools\capture\tclscripts\capCustomSamples** Cadence provides several customer samples. **CapCustomizePage.tcl** and **TESTCUSTOMIZEPAGE.OLB** can be used to place more than one symbol (titleblock) during page creation. For example, to place an additional symbol with copyright information on the left edge. The script also includes a function which allows the user to choose page size during page creation.

To execute this custom sample go to **Accessories > Cadence Tcl/Tk Utilities > Utilities > Customize Page > Launch**.


Page Customization

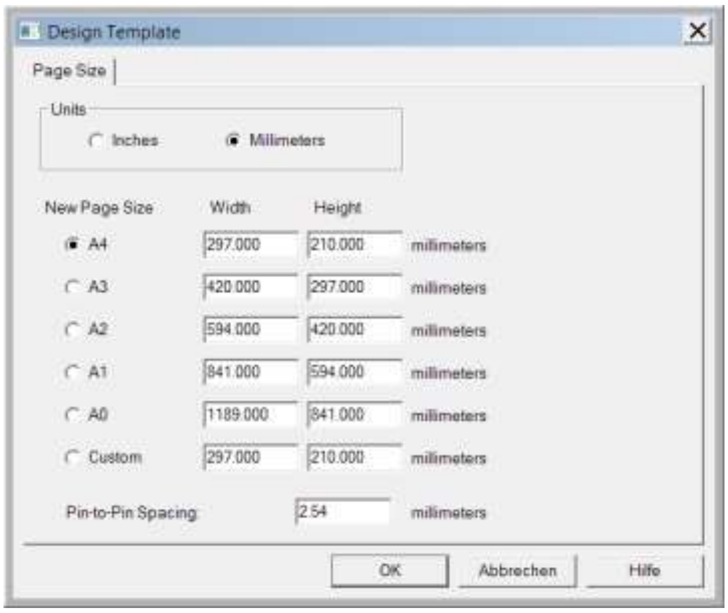
Enable Page Customization [✓]

TCL Script Path: C:/Applications/Cadence/SPB_16.6/tools/Captu

TCL Callback Procedures

On Page Pre-create	::capCustomizePage::onPagePreCreate
On Page Post-create	::capCustomizePage::onPagePostCreate
On Page Size Change	::capCustomizePage::onPageSizeChange

Activate the function with **Enable Page Customization** and close window using **OK**. This action creates new entries in **capture.ini**. Now create a new page. This window opens.


Design Template

Page Size

Units: Inches [✓ Millimeters]

New Page Size	Width	Height	
[✓ A4]	297.000	210.000	millimeters
A3	420.000	297.000	millimeters
A2	594.000	420.000	millimeters
A1	841.000	594.000	millimeters
A0	1189.000	841.000	millimeters
Custom	297.000	210.000	millimeters

Pin-to-Pin Spacing: 2.54 millimeters

Choose the correct page size and continue with **OK.**

Now you need to customize script and OLB to get your own symbols placed. Therefore move Tcl script to your local environment. How to manage script in your local environment you find in chapter 1.4.

5 TCL/Tk Commands for Capture CIS

5.1 Make multible values in database field visible in CIS

In CIS DB you can create multi value fields. Therefor you add several values separated by comma in CIS database. We will use field datasheet as example.

Field value in CIS database:

- Datasheet1.pdf,Datasheet2.pdf,QM-Report.docx

In CIS Explorer only a few fields are defined as multi value. One example is Schematic Part. If you want to define other multi value fields, you can do it using this TCL command:

```
SetCISMultiValuedField "FieldName"
```

Datasheet example:

```
SetCISMultiValuedField Datasheet
SetCISMultiValuedField prop1
SetCISMultiValuedField prop2
```

Now open CIS Explorer through **Place Database part** operation. The above commands would change Datasheet, prop1 and prop2 as multi valued. If the field of the selected part has multi value field in database, then you will see it as drop down list in CIS Explorer.

These commands add a section **[CIS MultiValued Field]** in **capture.ini** file and define these properties as multivalued by setting it to 1. Like, for above 3 commands, INI file will have:

[CIS MultiValued Field]
Datasheet=1
Prop1=1
Prop2=1

To clear all the multivalued field, use below TCL command:

```
ClearMultiValuedField
```

Note:
It is not recommended to make keyed properties like **Part Number** and **Value** as multi-valued.

You can combine the multi value action with EOL Management, explained in next chapter.

5.2 EOL Management

EOL stands for **E**nd **O**f **L**ive

Color and hide parts

Using TCL you can color parts with specific information. We use property **Part_Status** as example. The attached script works with FlowCAD Starter Library.

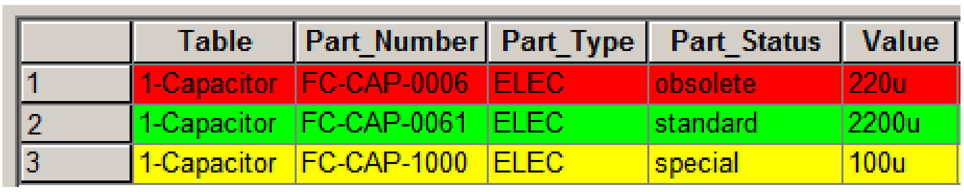


	Table	Part_Number	Part_Type	Part_Status	Value
1	1-Capacitor	FC-CAP-0006	ELEC	obsolete	220u
2	1-Capacitor	FC-CAP-0061	ELEC	standard	2200u
3	1-Capacitor	FC-CAP-1000	ELEC	special	100u

You see the **Part_Status** field and its values. **Obsolete** part are marked in **red**, **special** parts are marked **yellow** and **standard parts** are marked in **green**.

It depends on the settings in TCL script, which property value assigned a color to the part. You need to modify the script to match it with your database.

```
AddCISCriteriaEx <query> <operator> <0/1> <text color> <row color>
```

Example:

```
AddCISCriteriaEx {("Part_Status""=""obsolete")} {1} [CISGetColor 0 0 0]
[CISGetColor 255   0 0]
```

`{("Part_Status""=""obsolete")}` non case sensitive, defines the filter (property value)
`{("Part_Status""contains""obsolete")` case sensitive, defines the filter (property value)

`[CISGetColor 0 0 0]` the first defines text color, the second defines field color

Where operator is `"AND"` or `"OR"`

You can also use property value to filter hidden parts.
- `0` =hide the part
- `1` =show the part

Other examples of the command:

```
AddCISCriteriaEx
{("Status""contains""EOL")"OR"("Status""contains""obsolete")} {0}
[CISGetColor 255 125 192] [CISGetColor 255 255 255]

AddCISCriteriaEx {("Company Part Status""=""In Stock")"and"("Stock
count""<""1500")"or"("Pre-booked""=""0")} {1} [CISGetColor 0 0 0]
[CISGetColor 205 92 92]

AddCISCriteriaEx {("Company Part Status""=""In Stock")"and"("Stock
count""<""1500")"and"("Pre-booked""=""0")} {1} [CISGetColor 0 0 0]
[CISGetColor 205 92 92]
```

Block parts for placement

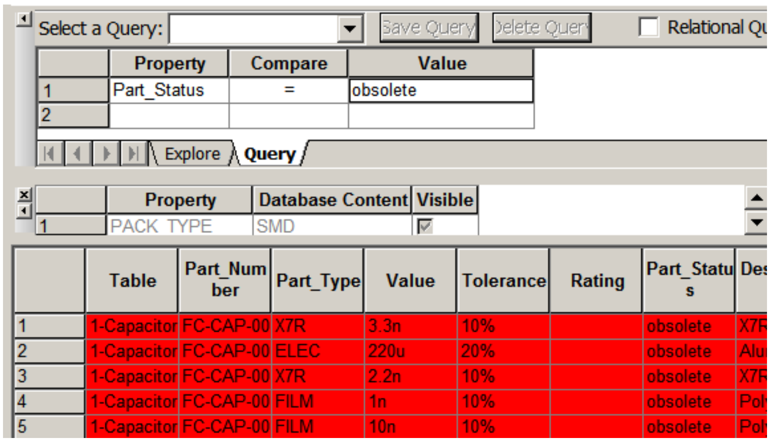
At the end of the TCL Script you find `capPlacePartCheckTrue`. This command blocks all parts with property **Value = obsolete** for placement and create **Warning message** for user.

EOL Management is implemented in FlowCAD example site. Ask FlowCAD Hotline for download.

Link to TCL code in text file - CisTclSetting.tcl.txt

5.3 Save CIS Explorer Viewed table to Text-File

With this command you can export the currently selected table or query result from CIS Explorer. For example all parts with Part_Status = obsolete.

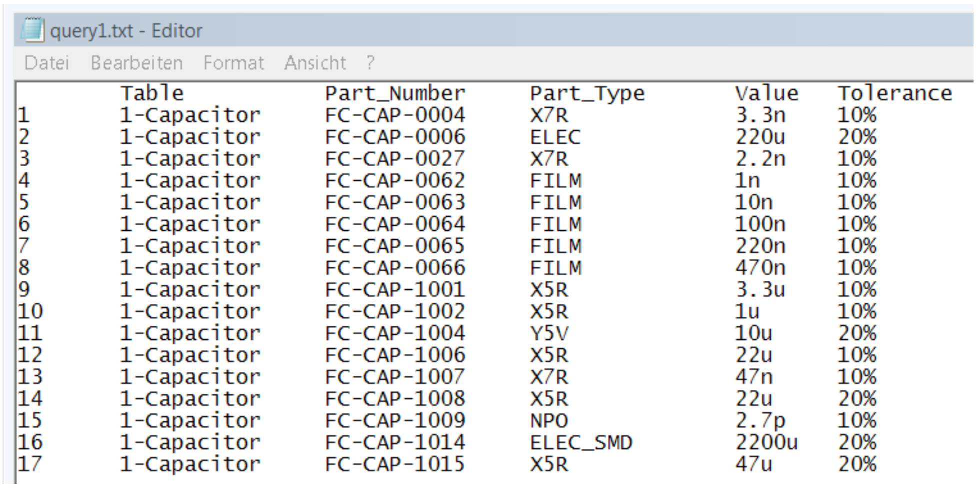


	Property	Compare	Value
1	Part_Status	=	obsolete
2			

	Property	Database Content	Visible
1	PACK TYPE	SMD	✓

	Table	Part_Number	Part_Type	Value	Tolerance	Rating	Part_Status	Des
1	1-Capacitor	FC-CAP-00	X7R	3.3n	10%		obsolete	X7F
2	1-Capacitor	FC-CAP-00	ELEC	220u	20%		obsolete	Alu
3	1-Capacitor	FC-CAP-00	X7R	2.2n	10%		obsolete	X7F
4	1-Capacitor	FC-CAP-00	FILM	1n	10%		obsolete	Pol
5	1-Capacitor	FC-CAP-00	FILM	10n	10%		obsolete	Pol

Result:



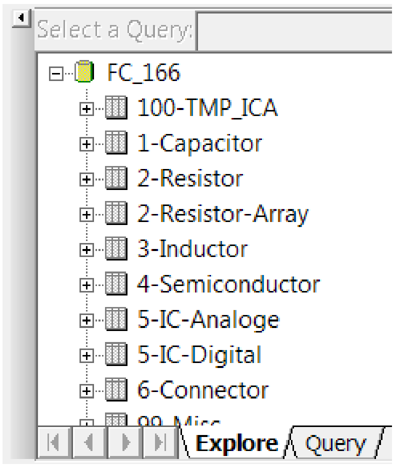
```
        Table           Part_Number     Part_Type       Value   Tolerance
1       1-Capacitor     FC-CAP-0004     X7R             3.3n    10%
2       1-Capacitor     FC-CAP-0006     ELEC            220u    20%
3       1-Capacitor     FC-CAP-0027     X7R             2.2n    10%
4       1-Capacitor     FC-CAP-0062     FILM            1n      10%
5       1-Capacitor     FC-CAP-0063     FILM            10n     10%
6       1-Capacitor     FC-CAP-0064     FILM            100n    10%
7       1-Capacitor     FC-CAP-0065     FILM            220n    10%
8       1-Capacitor     FC-CAP-0066     FILM            470n    10%
9       1-Capacitor     FC-CAP-1001     X5R             3.3u    10%
10      1-Capacitor     FC-CAP-1002     X5R             1u      10%
11      1-Capacitor     FC-CAP-1004     Y5V             10u     20%
12      1-Capacitor     FC-CAP-1006     X5R             22u     10%
13      1-Capacitor     FC-CAP-1007     X7R             47n     10%
14      1-Capacitor     FC-CAP-1008     X5R             22u     20%
15      1-Capacitor     FC-CAP-1009     NPO             2.7p    10%
16      1-Capacitor     FC-CAP-1014     ELEC_SMD        2200u   20%
17      1-Capacitor     FC-CAP-1015     X5R             47u     20%
```

TCL command - `CISDumpExplorerView`

Example with export file name - `CISDumpExplorerView {D:\query.txt}`

5.4 How to open Part Type tree in expanded mode

When you open CIS Explorer, the database tables are always shown in collapsed format.



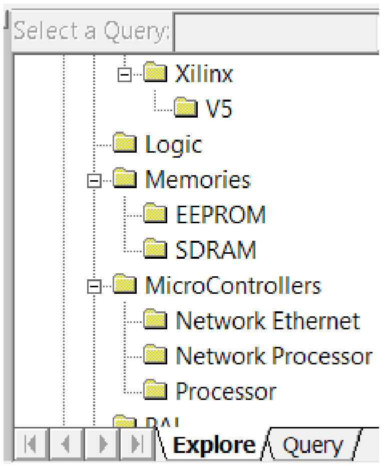
To open **CIS Explorer tables** and **Part Type** in expand mode use

- `SetOptionString CisExplorerPartTypeTreeExpand TRUE`

You get this new entry in **Preferences** section of **capture.ini**:

- `CisExplorerPartTypeTreeExpand=TRUE`

When you open CIS Explorer again, all **tables** and **Part Type** are shown in expand mode.



To revert this action use Tcl command:

- `SetOptionString CisExplorerPartTypeTreeExpand FALSE`

5.5 CIS TCL data access sample

This script is a custom example. In current version it works with standard Cadence installation but can also be modified.
The current file location is
%CDSROOT\tools\capture\tclscripts\capCustomSamples\capCIS.tcl. It includes several examples to manage CIS data.

Included Variant Editor functions:

- Dump CIS Data
- Add / Remove Group,
- Add / Remove SubGroup ,
- Add / Remove Parts on Schematic to Group
- Add / Remove Parts with Occurrence to Group
- Add Variant BOM
- Add Group to BOM
- Add SubGroup to BOM

6 FlowCAD App

Ask FlowCAD Hotline for Download of these files.

6.1 FloWare Tortoise SVN Integration

This module enables import of a design into SVN without leaving PCB design environment. You can import the complete project structure into SVN, including all external files which are not created by OrCAD/allegro tools (e.g. datasheets or other documents).

6.2 Test point Checker

This tool checks, if you have placed a test point on each net in the schematic. When on a net a test point is missing, the net is listed in the session log window.

Link to Datasheet - FlowCAD_Check_TestpointOnNet_help.pdf

7 Appendix

7.1 How to Update Variant Information in the Titleblock in variant view?

```
proc GetCISDesign {} {
     set lDesign [GetActivePMDesign]
     set lCISDesign [CPartMgmt_GetCisDesign $lDesign]
     return $lCISDesign
}

proc VariantPropSetEnabler {args} {
    return true
}

proc DisplayAllVariant { } {
     set pCISDesign [GetCISDesign]
     set lBOMVariantContainer [$pCISDesign GetBOMVariantContainer]
     set lBOMVariantCount [$lBOMVariantContainer GetBomCount]

     set lBOMVariantName [DboTclHelper_sMakeCString]

     for {set i 0} {$i<$lBOMVariantCount} {incr i} {
          $lBOMVariantContainer GetBomName $i $lBOMVariantName
          set lBOMVariantNameStr [DboTclHelper_sGetConstCharPtr
$lBOMVariantName]
          puts $lBOMVariantNameStr
     }
}

proc VariantPropSetCallBack { aBaseObject } {

     # capDisplayMessageBox "Setting the Variant" "Variant CallBack"
     set lPropNameTitle [DboTclHelper_sMakeCString {Title}]
     set lPropNameDoc [DboTclHelper_sMakeCString {Doc}]
     set lPropNameRevDoc [DboTclHelper_sMakeCString {RevCode}]

     set lActiveVariant [GetActiveVariant]
     capDisplayMessageBox $lActiveVariant "Variant CallBack"

     if {$lActiveVariant=="Variation #1"} {
          set lStr [concat $lActiveVariant _Title#1]
          set lPropValue [DboTclHelper_sMakeCString $lStr]
          $aBaseObject AddVariantProp $lPropNameTitle $lPropValue

          set lStr [concat $lActiveVariant _Rev1]
          set lPropValue [DboTclHelper_sMakeCString $lStr]
          $aBaseObject AddVariantProp $lPropNameRevDoc $lPropValue
          set lStr [concat $lActiveVariant _Doc1]
          set lPropValue [DboTclHelper_sMakeCString $lStr]
          $aBaseObject AddVariantProp $lPropNameDoc $lPropValue
     }

     if {$lActiveVariant=="Variation #2"} {
          set lStr [concat $lActiveVariant _Title#2]
          set lPropValue [DboTclHelper_sMakeCString $lStr]
          $aBaseObject AddVariantProp $lPropNameTitle $lPropValue

          set lStr [concat $lActiveVariant _Rev2]
          set lPropValue [DboTclHelper_sMakeCString $lStr]
          $aBaseObject AddVariantProp $lPropNameRevDoc $lPropValue

          set lStr [concat $lActiveVariant _Doc2]
          set lPropValue [DboTclHelper_sMakeCString $lStr]
          $aBaseObject AddVariantProp $lPropNameDoc $lPropValue
     }
}

proc VariantPartPropSetCallBack { aBaseObject } {

     # capDisplayMessageBox "Setting the Variant" "Variant CallBack"
     set lPropNameTitle [DboTclHelper_sMakeCString {TestVariant}]

     set lActiveVariant [GetActiveVariant]
     #capDisplayMessageBox $lActiveVariant "Variant CallBack"

     if {$lActiveVariant=="Variation #1"} {
          set lStr [concat $lActiveVariant _Test#1]
          set lPropValue [DboTclHelper_sMakeCString $lStr]
          $aBaseObject AddVariantProp $lPropNameTitle $lPropValue
     }

     if {$lActiveVariant=="Variation #2"} {
          set lStr [concat $lActiveVariant _Test#2]
          set lPropValue [DboTclHelper_sMakeCString $lStr]
          $aBaseObject AddVariantProp $lPropNameTitle $lPropValue

          $aBaseObject AddVariantProp $lPropNameDoc $lPropValue
     }
}

proc GetTitleBlockCount { aInstOcc } {
     set lStatus [DboState]
     set lTitleBlockOccIter [$aInstOcc NewChildrenIter $lStatus
$::IterDefs_TITLEBLOCKS]
     set lTitleBlockOcc [$lTitleBlockOccIter NextOccurrence $lStatus]
     set i 0
     set lNullObj NULL
     while {$lTitleBlockOcc!=$lNullObj} {
          incr i
```

```
         set lTitleBlockOcc [$lTitleBlockOccIter NextOccurrence
$lStatus]
     }
     return $i
}

proc PreVariantViewSetCallBack { aDesign } {
     set lActiveVariant [GetActiveVariant]
     set lStatus [DboState]
     set lDesignOccIter [$aDesign NewOccurrencesIter $lStatus]
     set pDboInstOcc [$lDesignOccIter NextOccurrence $lStatus]
     set varNullObj NULL
     set lTitleBlockCount 0
     while {$pDboInstOcc!=$varNullObj} {
          set lTitleBlockCount [expr
$lTitleBlockCount+[GetTitleBlockCount $pDboInstOcc]]
          set pDboInstOcc [$lDesignOccIter NextOccurrence $lStatus]
     }
     delete_DboDesignOccurrencesIter $lDesignOccIter
     set lMessage [concat $lActiveVariant - Title Block
Count:$lTitleBlockCount]
     capDisplayMessageBox $lMessage "Pre Variant View CallBack"
}

proc PostVariantViewSetCallBack { aDesign } {
     set lActiveVariant [GetActiveVariant]
     capDisplayMessageBox $lActiveVariant "Post Variant View CallBack"
}

RegisterAction "_cdnOrVariantViewSetTitleBlockProp"
"VariantPropSetEnabler" "" "VariantPropSetCallBack" ""
RegisterAction "_cdnOrPreVariantViewMode" "VariantPropSetEnabler" ""
"PreVariantViewSetCallBack" ""
RegisterAction "_cdnOrPostVariantViewMode" "VariantPropSetEnabler" ""
"PostVariantViewSetCallBack" ""
RegisterAction "_cdnOrVariantViewSetPartProp" "VariantPropSetEnabler"
"" "VariantPartPropSetCallBack" ""
```

7.2 Property Visibility

```
set lStatus [DboState]
set lDesign [GetActivePMDesign]
set lSchematicIter [$lDesign NewViewsIter $lStatus
$::IterDefs_SCHEMATICS]
#get the first schematic view
set lView [$lSchematicIter NextView $lStatus]
set lNullObj NULL
while { $lView != $lNullObj} {
     #dynamic cast from DboView to DboSchematic
     set lSchematic [DboViewToDboSchematic $lView]
     #placeholder: do your processing on $lSchematic
     set lPagesIter [$lSchematic NewPagesIter $lStatus]
     #get the first page
     set lPage [$lPagesIter NextPage $lStatus]
     set lNullObj NULL
     while {$lPage!=$lNullObj} {
          #placeholder: do your processing on $lPage
          set lPartInstsIter [$lPage NewPartInstsIter $lStatus]
          #get the first part inst
          set lInst [$lPartInstsIter NextPartInst $lStatus]
          while {$lInst!=$lNullObj} {
               #dynamic cast from DboPartInst to DboPlacedInst
               set lPlacedInst [DboPartInstToDboPlacedInst $lInst]
               if {$lPlacedInst != $lNullObj} {
                    #placeholder: do your processing on $lPlacedInst
                    set lPropsIter [$lPlacedInst NewDisplayPropsIter
$lStatus]
                    set lNullObj NULL
                    #get the first display property on the object
                    set lDProp [$lPropsIter NextProp $lStatus]
                    while {$lDProp !=$lNullObj } {
                         #placeholder: do your processing on $lDProp
                         #Get the name of Display Property
                         set lName [DboTclHelper_sMakeCString]
                         $lDProp GetName $lName
                         set lNameString [DboTclHelper_sGetConstCharPtr
$lName]
                         if { $lNameString == "Value" } {
                              # setting the display property to DND
                              $lDProp SetDisplayType 0
                         }

                         #if {$lDProp == "VALUE"} {
                              #SetDisplayType "VALUE" 0
                         #}
                         set lDProp [$lPropsIter NextProp $lStatus]
                    }
                    delete_DboDisplayPropsIter $lPropsIter
                    #set lStatus [$lPlacedInst
SetEffectivePropStringValue $lPropNameCStr $lPropValueCStr]
```

```
                   #set varNullObj NULL
                   #set pDispProp [$lPlacedInst GetDisplayProp
$lPropNameCStr $lStatus]
                   #set lStatus [DboState]
                   #set pNewDispProp [$lPlacedInst NewDisplayProp
$lStatus $lPropNameCStr $displocation $rotation $logfont $color]
                   #DO_NOT_DISPLAY = 0,
                   #VALUE_ONLY = 1,
                   #NAME_AND_VALUE = 2,
                   #NAME_ONLY = 3,
                   #BOTH_IF_VALUED = 4,
                   #$pNewDispProp SetDisplayType
$::DboValue_NAME_AND_VALUE
              }
              #get the next part inst
              set lInst [$lPartInstsIter NextPartInst $lStatus]
         }
         delete_DboPagePartInstsIter $lPartInstsIter
    #get the next page
    set lPage [$lPagesIter NextPage $lStatus]
    }
delete_DboSchematicPagesIter $lPagesIter
#get the next schematic view
set lView [$lSchematicIter NextView $lStatus]
}
delete_DboLibViewsIter $lSchematicIter
```

7.3 Customizing Menus and Toolbars

TCL Code testMenu.tcl

```
package provide testMenu 1.0

namespace eval ::testMenu {

    proc registerMenuActions { args } {
         catch {

                InsertXMLMenu  [list [list "MyFile1"] "" "" [list
"popup" "MyFileTest1"  "" "" "" "" ""] ""]
                InsertXMLMenu  [list [list "MyFile1"
"MyFileLevelpopup1"] "" "" [list "popup" "MyFileLevel11"  "" "" "" ""
""] ""]
                InsertXMLMenu  [list [list "MyFile1"
"MyFileLevelpopup1" "MyFileLevelAction1"] "" "" [list "action"
"&MyFileLevel22"  "0" "ActioForMenu1" "UpdateForMenu1" "" "" "" "This
is my menu test2"] ""]
                InsertXMLMenu  [list [list "MyFile1"
"MyFileLevelpopup1" "MySeparator1"] "1" "MyFileLevelAction1" [list
"separator"] ""]
                InsertXMLMenu  [list [list "MyFile1"
"MyFileLevelpopup1" "MyFileLevelAction2"] "" "" [list "action"
"My&FileLevel33"  "0" "UpdateForMenu2" "UpdateForMenu2" "" "" "" "This
is my menu test3"] ""]

                RegisterAction "ActioForMenu1"
"::testMenu::shouldProcess" "" "::testMenu::testActionProc1" ""
         RegisterAction "UpdateForMenu1" "::testMenu::shouldProcess" ""
"::testMenu::testUpdateProc1" ""
                RegisterAction "ActioForMenu2"
"::testMenu::shouldProcess" "" "::testMenu::testActionProc2" ""
         RegisterAction "UpdateForMenu2" "::testMenu::shouldProcess" ""
"::testMenu::testUpdateProc2" ""
         }
     }

    proc shouldProcess { args } {
        return 1
    }

    proc testActionProc1 { args } {
     puts "Got in testActionProc1!"

    }

    proc testUpdateProc1 { args } {

     return true;
    }

     proc testActionProc2 { args } {
     puts "Got in testActionProc2!"

    }

     proc testUpdateProc2 { args } {

     return false;

    }

}

::testMenu::registerMenuActions
```

TCL Code capMenuUtil.tcl

```
#package require TCL 8.4
package provide capMenuUtil 1.0
namespace eval ::capMenuUtil {
}
proc ::capMenuUtil::addPageAccessoryMenu { } {
# AddAccessoryMenu <User menu under Accessories> <SubMenu under user
menu> <TCL callback #handler with 2 parameters pPage and pOcc>
AddAccessoryMenu "Net Properties" "DOT Line" "::capMenuUtil::dotStyle"
AddAccessoryMenu "Net Properties" "Default"
"::capMenuUtil::defaultStyle"
}

#proc ::capMenuUtil::addDesignAccessoryMenu { } {
# AddAccessoryMenu <User menu under Accessories> <SubMenu under user
menu> <TCL callback #handler with 1 parameter pLib>
#AddAccessoryMenu "Text Editors" "Design in Notepad"
"::capMenuUtil::OpenDesignNotepad"
#AddAccessoryMenu "Text Editors" "Design in Scite"
"::capMenuUtil::OpenDesignScite"
#AddAccessoryMenu "Process Viewer" "Process Explorer"
"::capMenuUtil::OpenDesignProcessExplorer"
#}
proc ::capMenuUtil::dotStyle { pPage pOcc } {
set selectedobjs [GetSelectedObjects]
set dbostate [DboState]
     foreach wireobj $selectedobjs {
                if {[$wireobj
GetObjectType]==$::DboBaseObject_WIRE_SCALAR
                    || [$wireobj
GetObjectType]==$::DboBaseObject_WIRE_BUS} {
                   set netObj [$wireobj GetNet $dbostate]
                      $netObj SetEffectiveColorValue
$::DboValue_DEFAULT_OBJECT_COLOR $::DboValue_DOT_LINE
$::DEFAULT_LINE_WIDTH [GetInstanceOccurrence]
                 }
              }
}
proc ::capMenuUtil::defaultStyle { pPage pOcc } {
set selectedobjs [GetSelectedObjects]
set dbostate [DboState]
     foreach wireobj $selectedobjs {
                if {[$wireobj
GetObjectType]==$::DboBaseObject_WIRE_SCALAR
                    || [$wireobj
GetObjectType]==$::DboBaseObject_WIRE_BUS} {
                   set netObj [$wireobj GetNet $dbostate]
                      $netObj SetEffectiveColorValue
$::DboValue_DEFAULT_OBJECT_COLOR $::DboValue_DEFAULT_LINE_STYLE
$::DEFAULT_LINE_WIDTH [GetInstanceOccurrence]
                 }
              }
}

proc ::capMenuUtil::capTrue { } {
return 1
}
RegisterAction "_cdnCapTclAddPageCustomMenu" "::capMenuUtil::capTrue"
"" "::capMenuUtil::addPageAccessoryMenu" ""
RegisterAction "_cdnCapTclAddDesignCustomMenu" "::capMenuUtil::capTrue"
"" "::capMenuUtil::addDesignAccessoryMenu" ""
```

7.4 EOL Management

```
proc capTrue { args } {
               return 1
}

RegisterAction "_cdnOrPreCisExplorerCreate" "capTrue" ""
"CisExplorerPreCreate" ""

proc CisExplorerPreCreate { args } {
      set result 1

      AddCISCriteriaEx {("Part_Status""=""obsolete")} {1} [CISGetColor
0 0 0] [CISGetColor 255   0 0]
      AddCISCriteriaEx {("Part_Status""=""special")}  {1} [CISGetColor
0 0 0] [CISGetColor 255 255 0]
      AddCISCriteriaEx {("Part_Status""=""standard")} {1} [CISGetColor
0 0 0] [CISGetColor   0 255 0]
      return $result
}

proc capPlacePartCheckTrue { args } {
      return 1
}
proc PlacePartCheck { args } {
      set result 1
      foreach {name val} $args {
            if {[string compare -nocase $val "obsolete"]==0} {
                   capDisplayMessageBox "Place Part Warning For
Condition $name=$val" "Place Part Warning"
                   set result 0
              }
      }
      return $result
}
RegisterAction "_cdnOrPreCisPlacePart" "capPlacePartCheckTrue" ""
"PlacePartCheck" ""
```