

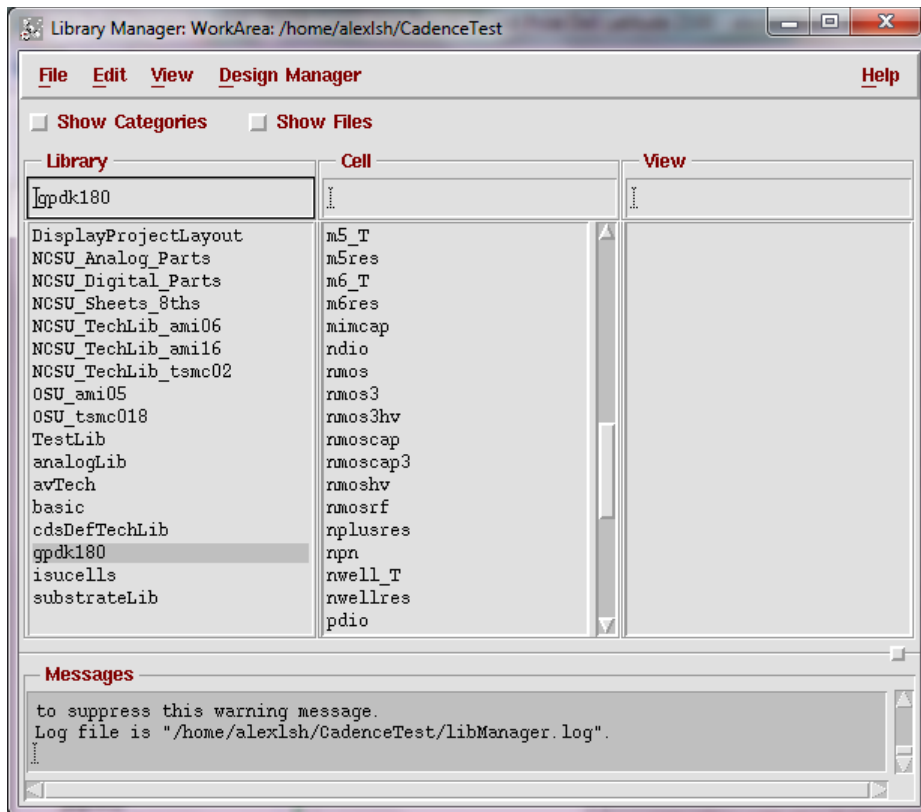
Cadence Spectre Model Library Tutorial

Step 1: Edit “cds.lib” file

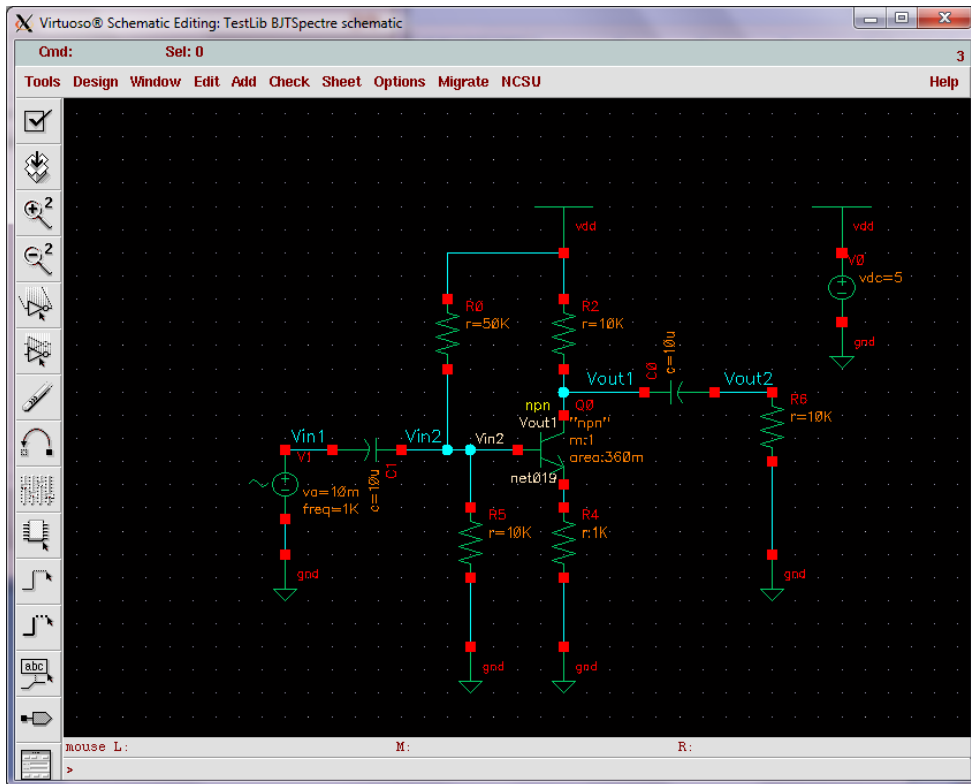
Recall Lab 1 early in the semester. To setup Cadence to the specific model library, you need to define or include the available model library. There are two level of “cds.lib” files set up, one in your home folder, another in your specific folder, i.e. EE330.

Here are the simplified steps

1. Open up the Linux terminal.
2. Goto your specified lab folder, i.e. EE330 or as you’ve defined in lab.
3. Type “gedit cds.lib” in the terminal.
4. Keep everything that’s in there and add the following line:
INCLUDE /remote/cadencelib/pdk180/gpdk180_v3.2/cds.lib
5. Launch Cadence Virtuoso.
6. In the Library column, you should see “gpdk180” library



7. For illustrations, a simple BJT circuit is made. Notice that the npn BJT has the properties shown.



Edit Object Properties

Apply To: only current instance

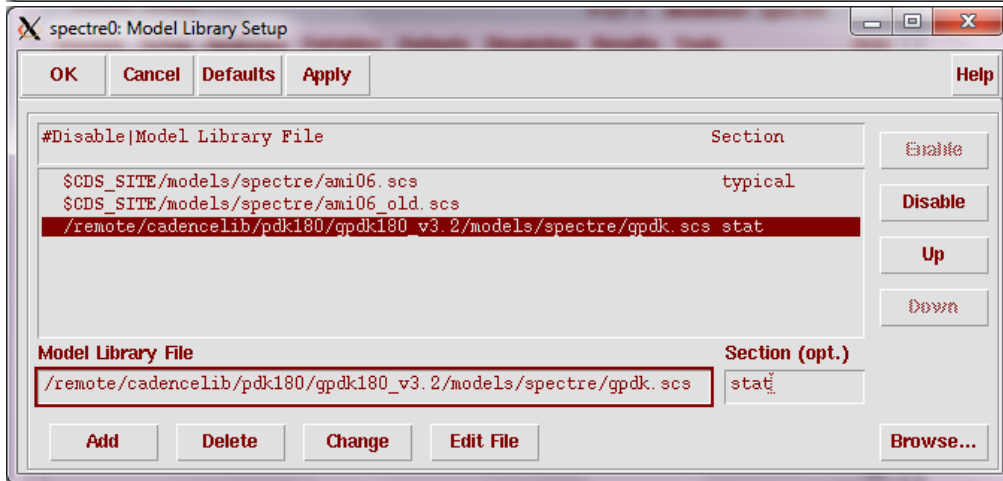
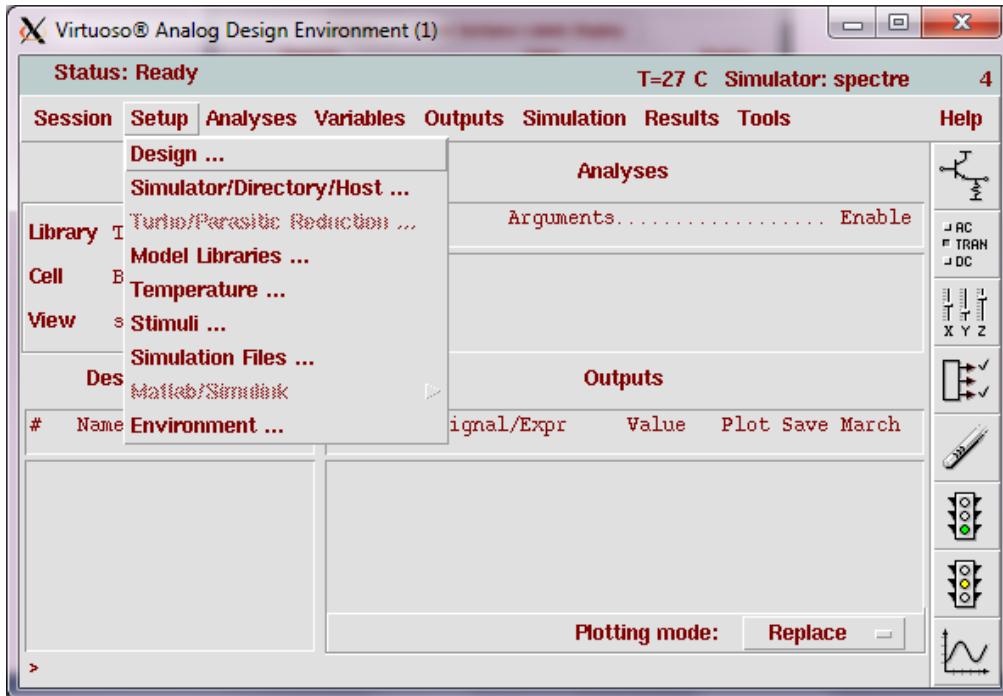
Show: system user CDF

Property	Value	Display
Library Name	gpdk180	off
Cell Name	npn	value
View Name	symbol	off
Instance Name	Q0	off

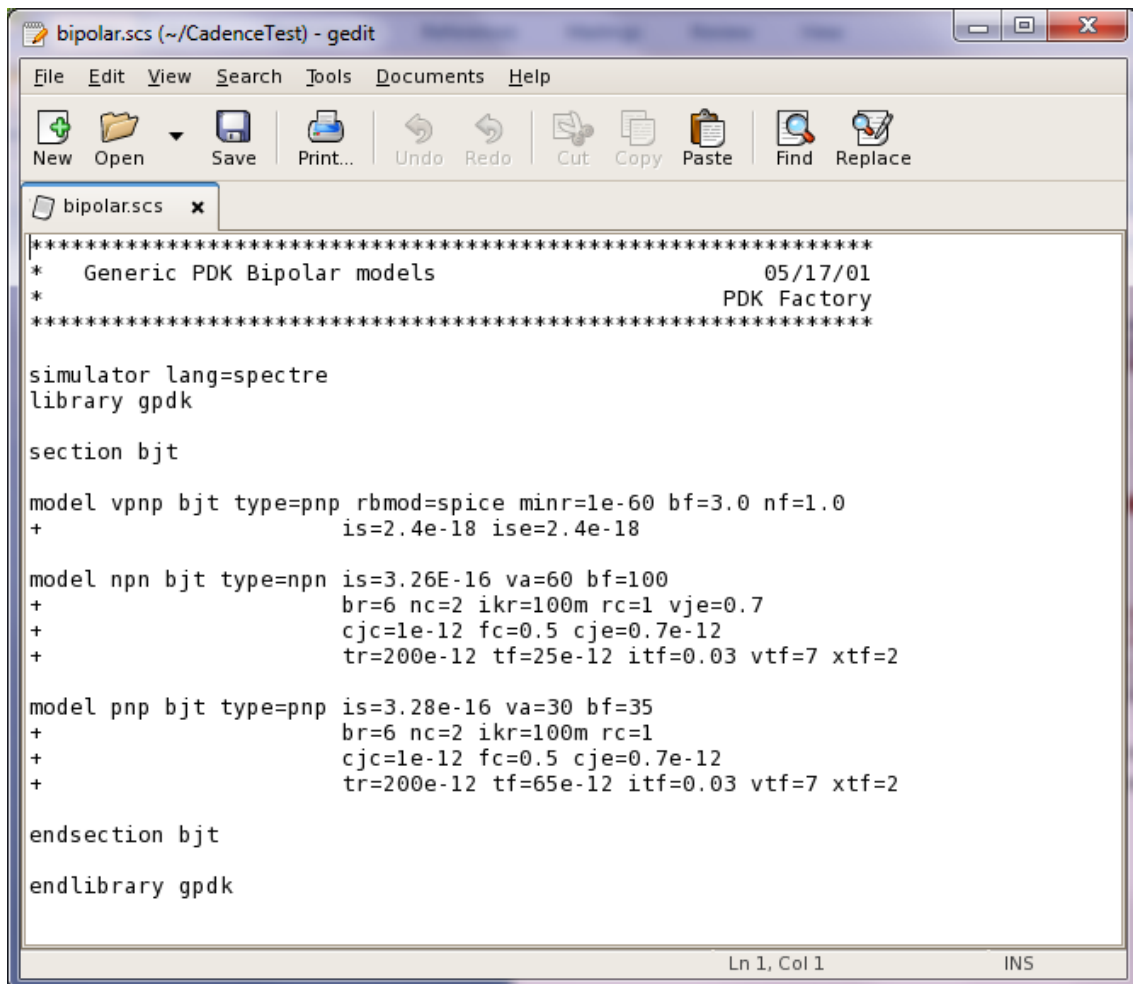
Add Delete Modify

CDF Parameter	Value	Display
Model name	npn	off
Emitter width	0.6	off
Area	0.36	off
Multiplier	1	off
Scale Factor	1	off

8. To define or analyze the Spectre model of the BJT, open up the Analog Design Environment.
9. Goto Setup -> Model Libraries to add/remove/edit the Model Library files.



10. Note that the included model library files are read-only. But you can copy the parameters out and paste them to a new .scs file of your need.



```
*****
*   Generic PDK Bipolar models                               05/17/01
*                                                                 PDK Factory
*****

simulator lang=spectre
library gpdk

section bjt

model vnpn bjt type=npn rbmod=spice minr=1e-60 bf=3.0 nf=1.0
+
+               is=2.4e-18 ise=2.4e-18

model npn bjt type=npn is=3.26E-16 va=60 bf=100
+
+               br=6 nc=2 ikr=100m rc=1 vje=0.7
+               cjc=1e-12 fc=0.5 cje=0.7e-12
+               tr=200e-12 tf=25e-12 itf=0.03 vtf=7 xtf=2

model pnp bjt type=npn is=3.28e-16 va=30 bf=35
+
+               br=6 nc=2 ikr=100m rc=1
+               cjc=1e-12 fc=0.5 cje=0.7e-12
+               tr=200e-12 tf=65e-12 itf=0.03 vtf=7 xtf=2

endsection bjt

endlibrary gpdk
```

The syntax in the model file for Spectre is fairly simple to read.

- simulator lang=spectre : This model is defined for Spectre simulator.
- library/endlibrary gpdk : Library name
- section/endsection bjt : Define section for the BJT model. Note that you can have multiple sections in one scs file.