Educational package for PSM projects March 2023

Installation

1. Install Linear Technology "LTspice" (Schematic Editor and Simulator)

> 1.1 Download the executable setup program from:
>   https://www.analog.com/en/design-center/design-tools-and-calculators/ltspice-simulator.html#
> 1.2 Execute the setup (.exe) program.
> 1.3 For Linux operative systems, it is possible to use LTspice using the Wine environment. See
>   for example: http://ltwiki.org/index.php5?title=Running_Under_Linux

2. Install Glade Layout Editor:

> 2.1 Download the compressed glade folder from PDK directory. For 2023 the file is:
> glade_5_0_48.zip.
> The latest glade cersion can be downloaded from https://peardrop.co.uk/
> The version available on March 2023 (version 5_0_58) is unfortunately bugged, thus it is
> recommended to use the older version that can be downloaded from the PSM course site.
> .   2.2 Unzip the downloaded file into an empty directory. Check that the full path of the chosen
>   empty directory does not include spaces. Best option: create the directory as a subdir of c:\
>   A sub-dir should be created (named "glade_5_0_48"). The
>   glade executable (glade.exe) is located into this directory.
> 2.3 Windows users: Run the vcredist_x64 application, included in the glade_win64 directory,
>   to install the required VC++ redistributables. You can skip this step and try next step
>   (launch of the glade executable). If it runs with no error messages, your operating system
>   does not require the "vcredist" execution. If glade does not start, then launch vcredist_x64.
> 2.4 Launch glade (no set-up is required, simply execute the glade.exe executable) to check
>   that the installation is complete.
> 2.5 Windows users: do not follow the README.txt instructions included into the glade
> directory, since most operation are already performed by a script of the Design Kit. (see next
> section). Other platform users (different from Windows) should follow the README
> instructions.

3. Download the minimal design kit (created by the teacher) and customize it

> 3.1. Download the .zip work directory (psm_work_v5.zip). Note that the version number may
>   change depending on the last update.
> 3.2 Uncompress it into a known location. Again, choose a directory with a path that does not
>   includes whitespaces. Two sub-dirs "LTSpice" and "glade" should have been created.
> 3.3 The LTSpice directory includes an example sub_dir. The file work_bench.asc can be
>   launched to check if LTSpice works correctly.
> 3.4 Set-up the glade environment by entering the sub.dir glade (it is inside "psm_work"). Right
>   click on the file "layout.bat" and choose "modify", The batch file should be opened by
>   a text editor (typically notepad.exe).

3.5 Modify the line where the
     "set GLADE_HOME=C:\Program Files\glade4_win64" line appear, by substituting your
     actual path to the glade install directory. Note that lines beginning with "rem" are
     comments.

3.6 Test glade by executing the layout.bat batch file. Glade should open normally. After that,
     open the example library by the menu command: file->Open Lib.
     Navigate up to your
     psm_work\glade directory and then select the "psm" directory.
     Note that a library is a directory. After selecting the library, press OK in the original
     window. The library psm should be added on the left window of the glade program. Expand
     the psm library and check if a cell (inverter) with a view (layout) is present and shows
     regularly

To start a new project:

- Schematic project:
  -) Get into the LTSpice directory of your psm_work dir.
  -) Create a copy of the "New_Project" directory and rename it with the name of your project
  -) Start your schematic view in LTSpice ("new schematic") and save it into your LTSpice
  project dir

- Layout project
  -) Open Glade by launching the layout.bat script
  -) Create a new library and choose the technology file: psm025.tch (located in
    psm_work\glade) and give it the name of your project.
  -) Save the library (choose the "glade" directory of the psm_work dir as target directory)
  -) Create a new cell (view: layout)