Homework #8

Pull the initial files for this homework into your private git repository by changing into that directory and executing the command "git pull". Create a "solution document" in the *hw08* directory (txt, doc, docx, or pdf) that includes your answers to the problems below. Then add, commit, and push the solution document to your GitHub repository, along with any additional files requested.

1. (40 points) Work through Place & Route Tutorial #2. Note that your *hw08/p1* directory has been initialized with the contents of the **pr_tut2.tar.gz** file, as well as the **cortexm0ds.tar.gz** file. Commit the files requested at the end of the tutorial to your *git* repository and push the commit to GitHub.

2. (30 points) Download the **CORTEXM0DS_routed.spef.max, CORTEXM0DS_routed.spef.min,** and **CORTEXM0DS_routed.v** files from the course web-site (provided with this assignment together in the file **CORTEXM0DS_routed.tar.gz**) Copy these files into your *hw08/p3/pr* directory run the *ptsi* step. Commit the files you modified along with the **run_ptsi.log** and **noise_ptsi_fast_routed.rpt** to the *hw08/p3/v/synth* directory of your *git* repository and push the commit to GitHub.

   Next find the worst aggressor for the worst-case noise bump in the design. Based on the capacitances in the SPEF file, calculate an expected noise bump, assuming a 1.1 V supply, lumped capacitances, and a high impedance driver. Add your answer to your solution document.

3. (15 points) Consider a 32nm technology, modeled after the 2010 technology node predicted by the 2007 ITRS.

	capacitance (fF/μm)	resistance (Ω/μm)			
M1	0.18	11.7		R_d (Ω-μm)	548
Intermediate	0.16	11.8		C_d (fF/μm)	0.61
Global	0.18	3.0		γ	1.4

   Calculate the minimum time needed to drive a signal across a chip over a distance of 1 cm using repeaters. Add your answer to your solution document.