Assignment 3
STRICT DEADLINE: 11:59 PM, 20th April, 2009

RULE: Add the last digits of the roll numbers of the group members and divide with 4. Add 1 to the remainder and solve that problem. **You have to solve only one problem.** e.g. if your roll numbers are 08CS3004 and 01ME1033 then you should do problem number (4+3)%4 + 1 = 4.

PROBLEMS:

1. Design a 32 bit adder using pipelined architecture using
a) 16 bit ripple carry adders
b) 8 bit ripple carry adders
c) 4 bit ripple carry adders

2. Design 32 bit adder using parallel architecture in the following way
a) single adder (Vdd=1.5V)
b) two adders in parallel
c) four adders in parallel
for low power with the same throughput.
What will be the Vdd for case b and case c.

3. Realize 16-bit ripple carry adder using
a) static CMOS
b) dynamic CMOS
c) LEAP cells
compare area, power, delay and energy (power-delay product).

4. Implement Bus Invert Encoding for a 32 bit bus using
a) 32bit bus + 1 invert bit
b) partition in two 16 bit buses + 2 invert bits
c) partition in four 8 bit buses + 4 invert bits