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ECE 5460
Homework 1

Problem 1

	Full Custom	Standard Cell
Design Time:	Very time consuming, several man-months	A lower design time then full custom, but higher than full automation
Flexibility:	Very flexible	Moderately flexible
Density:	High density designs	Density is determined by the standard cell size, and cannot be changed later

Problem 2

BB^T represents the connections between j and I.

Problem 3

I arranged them in the following order based on how quickly they get large
Best
n
$n \log^2 n$
$n \sqrt{n}$
n^2
$n^2 \log n$
$n^{(\log n)}$
2^n
$n^{(0.5n)}$
n^{99}
Worst

Problem 4
    A) $O(n^2 + n \log n + n)$
    B) $O(n^2 + n \sqrt{n})$
    C) $O(n \log_e n + \log_2 n)$
    D) $O(2^n + e^n)$

Problem 5
    A) The Big O notation is said to be an 'upper bound' as well as 'in order to be informative, its is customary to choose g(n) to be as small a function of n as one can come up with such that f(n) = O(g(n)).' Therefore if f(n) = O(g(n)) implies g(n) = O(f(n)) because g(n) is the smallest upper bound of f(n).
    B) If f(n) = O(g(n)), then g(n) = O(f(n)). and g(n) = O(h(n)), therefore g(n) = O(f(n)) = O(h(n)). Then f(n) = O(g(n)) = O(h(n)).