Computer Science Notes

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Preface

These are my exam review notes taken throughout the Spring semester.

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Computer Networks

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Part II

Advanced Algorithms

Exam 1

Assignment 1

Assignment 2

3.1 Are either $\lceil \lg n \rceil !$ or $\lceil \lg \lg n \rceil !$ polynomially bounded?

3.2 Use induction to prove $F_i = \frac{\phi^i - \hat{\phi}^i}{\sqrt{5}}$; where $F_i = F_{i-2} + F_{i-1}$, and ϕ is the golden ratio $\frac{1+\sqrt{5}}{2}$.

3.3 Show that $k \lg k = \Theta(n)$ implies $k = \Theta\left(\frac{n}{n \ln n}\right)$.

3.4 Are either 2^{n+1} or 2^{2n} big-O of 2^n?

3.5 For each pair of functions , indicate whether is. Assume $k \geq 1$, $\epsilon > 0$, $c > 1$ are constants.

3.6 Order the following functions such that $f_1 = \Omega(f_2), f_2 = \Omega(f_3), \ldots, f_{29} = \Omega(f_{30})$, and partition them into equivalence classes such that each function is $\Theta()$ of each other.

Part III

Software Engineering

Exam 1

Part IV

Operating Systems

Exam 1