

Computer Science Notes

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Zach Leach

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The University of Texas at Dallas

Contents

I	Computer Networks	3
1	Exam 1	5
II	Advanced Algorithms	7
1	Exam 1	9
2	Assignment 1	11
3	Assignment 2	13
3.1	Problem 1	13
3.2	Problem 2	13
3.3	Problem 3	13
3.4	Problem 4	13
3.5	Problem 5	13
3.6	Problem 6	13
III	Software Engineering	15
1	Exam 1	17
IV	Operating Systems	19
1	Exam 1	21

Preface

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

February 5, 2024

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Part I

Computer Networks

Exam 1

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?
What does "polynomially bounded" mean?
How do you determine whether a function is "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 $k = \Theta\left(\frac{n}{\lg n}\right)$.
- 3.4 Are either 2^{n+1} or 2^{2n} big- O of 2^n ?
- 3.5 For each pair of functions (A, B) , indicate whether A is O, o, Ω, ω , or Θ of B . Assume $k \geq 1$, $\epsilon > 0$, $c > 1$ are constants.
- 3.6 Order the following functions such that $f_1 = \Omega(f_2)$, $f_2 = \Omega(f_3)$, ..., $f_{29} = \Omega(f_{30})$, and partition them into equivalence classes such that each function is big- Θ of each other.

Part III

Software Engineering

Exam 1

Part IV

Operating Systems

Exam 1

