Midterm Overview

Basic Information

1

Midterm Information

- 75 minutes
- 200 points
- May contain multiple choice and short answer questions

2

Exam Time & Date

- Tuesday, October 12
- Normal class time

3

What Will Be Covered

- Exam will cover all parts 1 to 8
- No question will be asked that is not in the lecture notes
- Download from: *devincook.com/csc/130*

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Exam Format

- Canvas supports multiple choice and fill in the blank
- If you fill in an answer – use lowercase (they are case sensitive)

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Exam Format

- Bring scratch paper! **You will need it!**
- Many questions will have you hand-sort or hand-compute a result

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Canvas & Apple Safari

- Apple Safari is an excellent web browser, however…
- Student's have reported malfunctions when using Canvas – in particular, *images do not work properly*

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Canvas & Apple Safari

- The Final will make use of multiple images
- So please use:
  - Firefox
  - Edge
  - Chrome

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Exam Format

- You can enter the Zoom lecture during the exam
- This is also so I can talk to the class if necessary and you can ask questions
- You <u>don't</u> have be on camera

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Analysis of Algorithms

Part 1

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Part 1 – Important to Understand

- Algorithmics
- Time complexity basics
- Big-O notation
- Big-O math
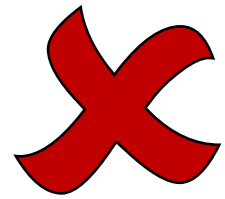
11

Part 1 – <u>Don't</u> Worry About

- Well Known Problems section
- Example time-complexities
- Big-Theta, Big-Omega
- Towers of Hanoi

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Abstract Data Types

Part 2

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Part 2 – Important to Understand

- What a ADT specifies
- Bags
- Queues
- Stacks
- Deques

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Part 2 – <u>Don't</u> Worry About

- Cheese example

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Recursion

Part 3

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Part 3 – Important to Understand

- Variable Scope
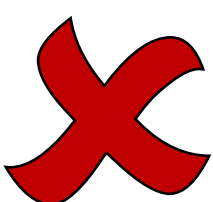- System Stack
- System Heap
- Loitering
- Pools
- Recursion

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Part 3 – <u>Don't</u> Worry About

- Historical Perspective

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Queues & Stacks in Practice

Part 4

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Part 4 – Important to Understand
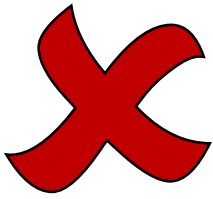
- Prefix, Postfix, Infix
- Shunting Yard Algorithm

20
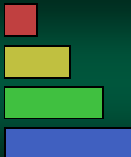
Part 4 – Don't Worry About

- Implementing the Shunting-Yard Algorithm (we didn't have an assignment)

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Binary Search & Basic Sorting

Part 5

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Part 5 – Important to Understand

- Binary Search
- Bubble Sort
- Selection Sort
- Insertion Sort
- Shell Sort
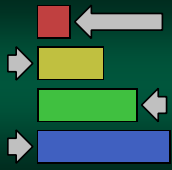- …. and all their attributes

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Part 5 – Don't Worry About

- The fact that Shell Sort is named after a person!
- Gap values of Shell Sort
- You won't be asked to manually sort any of these algorithms

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Recursive Sorting

Part 6

25

- Merging arrays
- Merge Sort
- Quick Sort

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- *Know it all*

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Non-Comparative Sorting

Part 7

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- Dictionaries
- Bucket Sort
- Radix Sort

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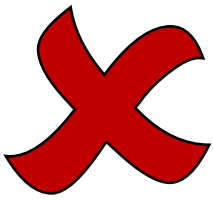
- The Census Crisis & the history of the Radix Sort

30
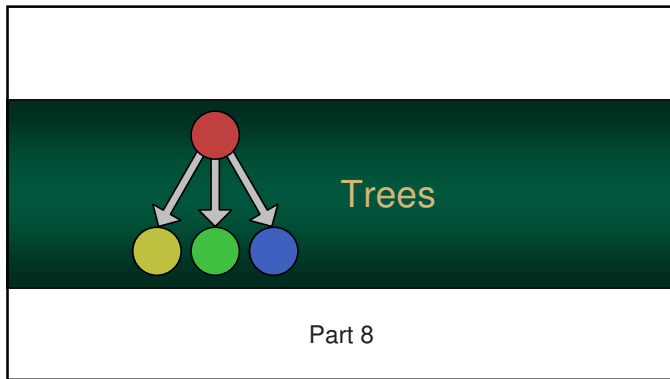
Trees

Part 8

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Part 8 – Important to Understand

- Tree terminology
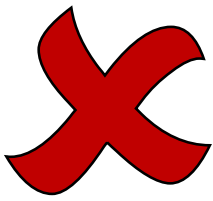- Tree are recursively defined
- Tree traversals
- Binary trees

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Part 8 – Don't Worry About

- Example trees
- …especially the Cheese one

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