

Week 12 - Wednesday

COMP 2230

Last time

- Exam 3
- Before that:
 - Review
- Before that:
 - Analysis of algorithms
 - Exponential and logarithmic functions

Questions?

Assignment 6

Logical warmup

- There are ten baskets of apples
- The number of apples in each basket ranges from 10 to 20
- Nine of the baskets contain apples weighing 4 ounces each
- One basket has apples weighing 5 ounces each
- Unfortunately, we've lost track of the basket of heavy apples, which your boss wants
- All the apples look the same
- You have a weighing scale measuring in ounces, and an empty basket
- But we're just about to ship these apples out!
- You only have time to make one measurement with your scales
- How do you find the heavy basket?



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Exam 3 Post Mortem

Formal Languages and Regular Expressions

Three-Sentence Summary

Formal Languages

Formal languages

- Computer science grew out a lot of different pieces
 - Mathematics
 - Engineering
 - Linguistics
- Describing an algorithm precisely requires that it be framed in terms of some formal language with exact rules

Rules

- We say that a **language** is a set of strings
- A **string** is an ordered n -tuple of elements of an alphabet Σ or the empty string ε (which has no characters)
- An alphabet Σ is a finite set of characters

Examples

- Let alphabet $\Sigma = \{a, b\}$
- Define a language L_1 over Σ to be the set of all strings that begin with the character a and have length at most three characters
 - Write out L_1
- A **palindrome** is a string which stays the same if the order of its characters is reversed
- Define a language L_2 over Σ to be the set of all palindromes made up of characters from Σ
 - Write 10 strings in L_2

Ticket Out the Door

Upcoming

Next time...

- **No class Friday!**
- Finish introduction to formal languages
- Finite state automata

Reminders

- Start Assignment 6
- Read 12.2 for Monday
 - Prepare a three-sentence summary
 - Extra credit if you get called on