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Week 3

Algorithmic Toolbox

Week 3

Discuss and ask questions about Week 3.

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33 threads · Last post 11 hours ago

Greedy Algorithms



In this module you will learn about seemingly naïve yet powerful class of algorithms called greedy algorithms. After you will learn the key idea behind the greedy algorithms, you may feel that they represent the algorithmic Swiss army knife that can be applied to solve nearly all programming challenges in this course. But be warned: with a few exceptions that we will cover, this intuitive idea rarely works in practice! For this reason, it is important to prove that a greedy algorithm always produces an optimal solution before using this algorithm. In the end of this module, we will test your intuition and taste for greedy algorithms by offering several programming challenges.

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Learning Objectives

- Practice implementing greedy solutions
- Build greedy algorithms
- Create a program for changing money optimally
- Create a program for maximizing the value of a loot
- Create a program for maximizing the number of prize places in a competition

[Less](#)

Introduction



Practice Quiz: Puzzle: Largest Number 4 questions

[Resume](#)



Video: Largest Number 2 min



Practice Quiz: Puzzle: Car Fueling 5 questions



Video: Car Fueling 7 min



Video: Car Fueling - Implementation and Analysis 9 min



Video: Main Ingredients of Greedy Algorithms 2 min



Practice Quiz: Greedy Algorithms 3 questions

Grouping Children



Video: Celebration Party Problem 6 min



Video: Efficient Algorithm for Grouping Children 5 min





Video: Analysis and Implementation of the Efficient Algorithm 5 min


Fractional Knapsack




Video: Long Hike 6 min


 **Video:** Fractional Knapsack - Implementation, Analysis and Optimization 6 min


 **Video:** Review of Greedy Algorithms 2 min


 **Reading:** Resources 2 min

 **Practice Quiz:** Fractional Knapsack 3 questions


Programming Assignment 3

 **Practice Quiz:** Puzzle: Balls in boxes 3 questions

 **Practice Quiz:** Puzzle: Activity Selection 3 questions

 **Practice Quiz:** Puzzle: Touch All Segments 3 questions

 **Programming Assignment:** Programming Assignment 3: Greedy Algorithms 3h Due Aug 9, 1:59 AM CDT

 **Survey** 10 min

