# Greedy Algorithms

## Introduction

The topic of Greedy Algorithms is an important (and pretty easy!) topic in the study of algorithms. This topic includes a “general” introduction to greedy methods.

## Learning Objectives

By the completion of this topic, the student should:

* Understand the greedy choice property, and be able to argue that a given problem has the greedy choice property. (It also needs optimal substructure, but we discussed this already when covering Dynamic Programming).
* Be able to write a greedy algorithm that solves a problem, and analyze its running time.
* Be able to determine the optimality of a greedy solution to a problem.

## Books, Videos, Web Sites

### Books:

Cormen, Leiserson, Rivest, and Stein, *Introduction to Algorithms, 3rd ed.*, Chapter 16

Understand the Greedy Choice property. Also, we will definitely cover the Knapsack problems, comparing and contrasting the 0-1 Knapsack problem (solvable by Dynamic Programming) with the Fractional Knapsack Problem (solvable by a Greedy Algorithm).

### Web Sites:

I like the geeks-for-geeks.org pages on [Greedy Algorithms](http://www.geeksforgeeks.org/fundamentals-of-algorithms/#GreedyAlgorithms).

### Videos:

Really, I didn’t put a lot of research into this because Greedy Algorithms are maybe the easiest concept we will cover all semester. A couple good videos are the [Geeks for Geeks Introduction to Greedy Algorithms](https://www.youtube.com/watch?v=HzeK7g8cD0) and the [MIT Open Courseware Greedy Algorithms](https://www.youtube.com/watch?v=-QcPo_DWJk4) introduction.