

Algorithms

CS/APMA 202

Rosen section 2.1

Aaron Bloomfield

What is an algorithm?

- An algorithm is “a finite set of precise instructions for performing a computation or for solving a problem”
 - A program is one type of algorithm
 - All programs are algorithms
 - Not all algorithms are programs!
 - Directions to somebody's house is an algorithm
 - A recipe for cooking a cake is an algorithm
 - The steps to compute the cosine of 90° is an algorithm

Some algorithms are harder than others

- Some algorithms are easy
 - Finding the largest (or smallest) value in a list
 - Finding a specific value in a list
- Some algorithms are a bit harder
 - Sorting a list
- Some algorithms are very hard
 - Finding the shortest path between Miami and Seattle
- Some algorithms are essentially impossible
 - Factoring large composite numbers
- In section 2.2, we'll see how to rate how "hard" algorithms are