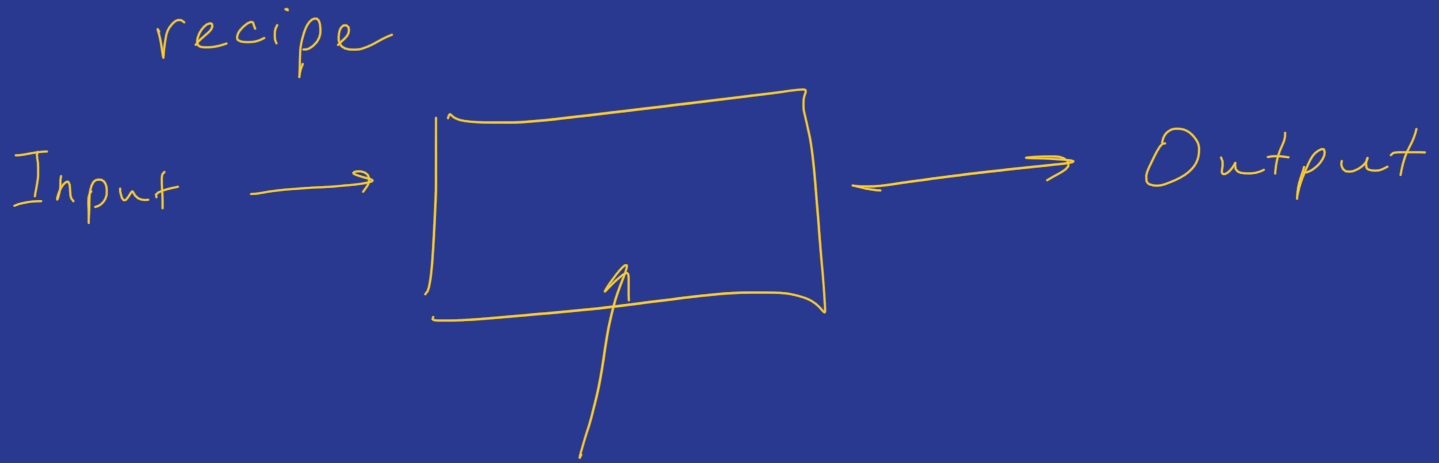
Algorithm Design & Analysis II

What is an algorithm?



What makes a *good* algorithm?

→ efficiency — time & space *

→ modularity → compatibility

→ correctness *

→ well-defined & specific

→ consistency

→ security → no crashing!

→ extensibility

What is a data structure and what makes a *good* data structure?

→ structure that holds data

→ abstract

→ reusable on multiple data types

→ manipulate data in an efficiency

→ (functionality)

Why is it important to think about data structures when you are implementing an algorithm?

→ algorithms require certain data structures

Does efficiency really matter?

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More efficient algorithms and data structures can…

- enable new research.
- enable new technology.
- enable faster response times for different applications.
- enable faster processing for large amounts of data.
- make it less likely that your program will crash.
- potentially break some cryptographic systems!
- make coding a little easier.

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greedy	builds a global solution to a problem by repeatedly making the best possible local choice	Dijkstra’s Algorithm