Algorithms

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What is Algorithm?

생각하는 방법을 터득한 것은
미래의 문제를 미리 해결한 것이다

- 제임스 왓슨

Algorithm

- Unambiguously describes the process of problem solving
- Problem
  - Defined by input and output
  - An algorithm describes the process from input to output

Examples of Input/Output

Problem

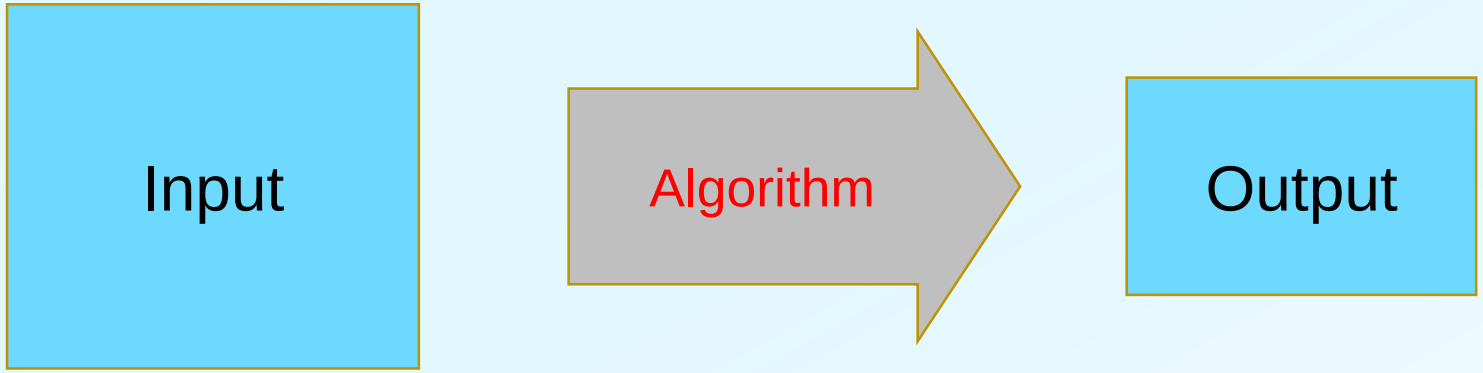
- Find the maximum exam point of 100 students

Input

- 100 examination points

Output

- The maximum point out of 100 points



Purpose of Algorithms

- Knowing how to solve a particular problem
- Constructing intellectual abstraction
  - Training systematic thinking
  - Leveling up intellectual abstraction
  - Important for maintaining comfortability and confidence in research and development

Abstract = summarizing in a high-level viewpoint

Abstraction ~ simple view
~ high-level view
~ selective view

생각하는 방법의 훈련

- Learns an appropriate algorithm for a problem
- Not less important:

  Learns the thinking processes in the course

  Provides intellectual building blocks for future problems

Algorithm = Extension of Data Structures

Prerequisites

- Programming skill
- Data structures

Data structures

- Similar to materials or modules for construction
- Similar to components or modules of automobiles

Solving Future Problems

If you learn an algorithm for a problem,

you know the particular algorithm for the problem.

If you focus on the process of thinking,

you've solved future problems in advance.

Dejavu

Metaphor: 고등교육의 중요한 목표 중 하나

(A key purpose of high-level education)

- 긴장도 높은 은유를 감지하는 능력을 기른다

Contents와 도구들