

Problem Solving / Program Logic

2023-T1 CSD 1133 FSDM Group1

Danny Yoon

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- Master Degree in Computer Science
- Software Developer over 28 years
- Work for Samsung, US Federal Government, and hundreds of clients
- Microsoft Certified Professional
- Microsoft Certified Solution Developer
- Microsoft Certified System Engineer
- Sun Certified Java Programmer
- Teaching Computer Programming over 20 years

Algorithm

A process or set of rules to be followed in calculations or other problem-solving operations, especially by a computer.

- *Definitions from Oxford Languages*-

Algorithm

The developer should implement most efficient system in a development project and find out the best solution to solve the problems.

The solution  Algorithm.

Task: Going to Vancouver from Toronto

1. Take an airplane
2. Take a bus
3. Drive a car

What is the goal?

1. Save time Airplane
2. Save money Bus or Train
3. Sightseeing Car

Algorithm

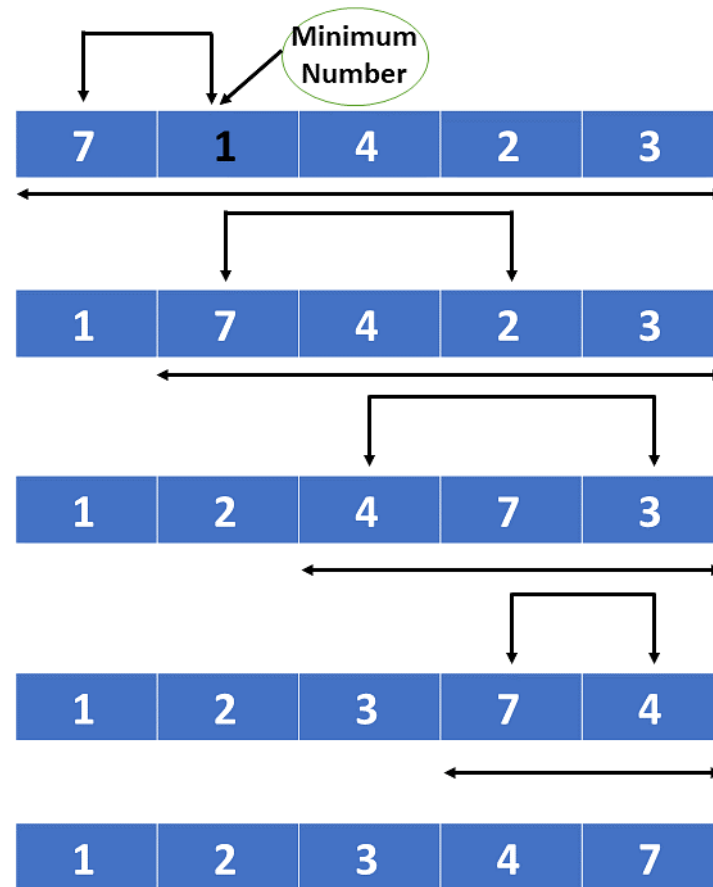
Best solutions to solve the problem

Example: Sort

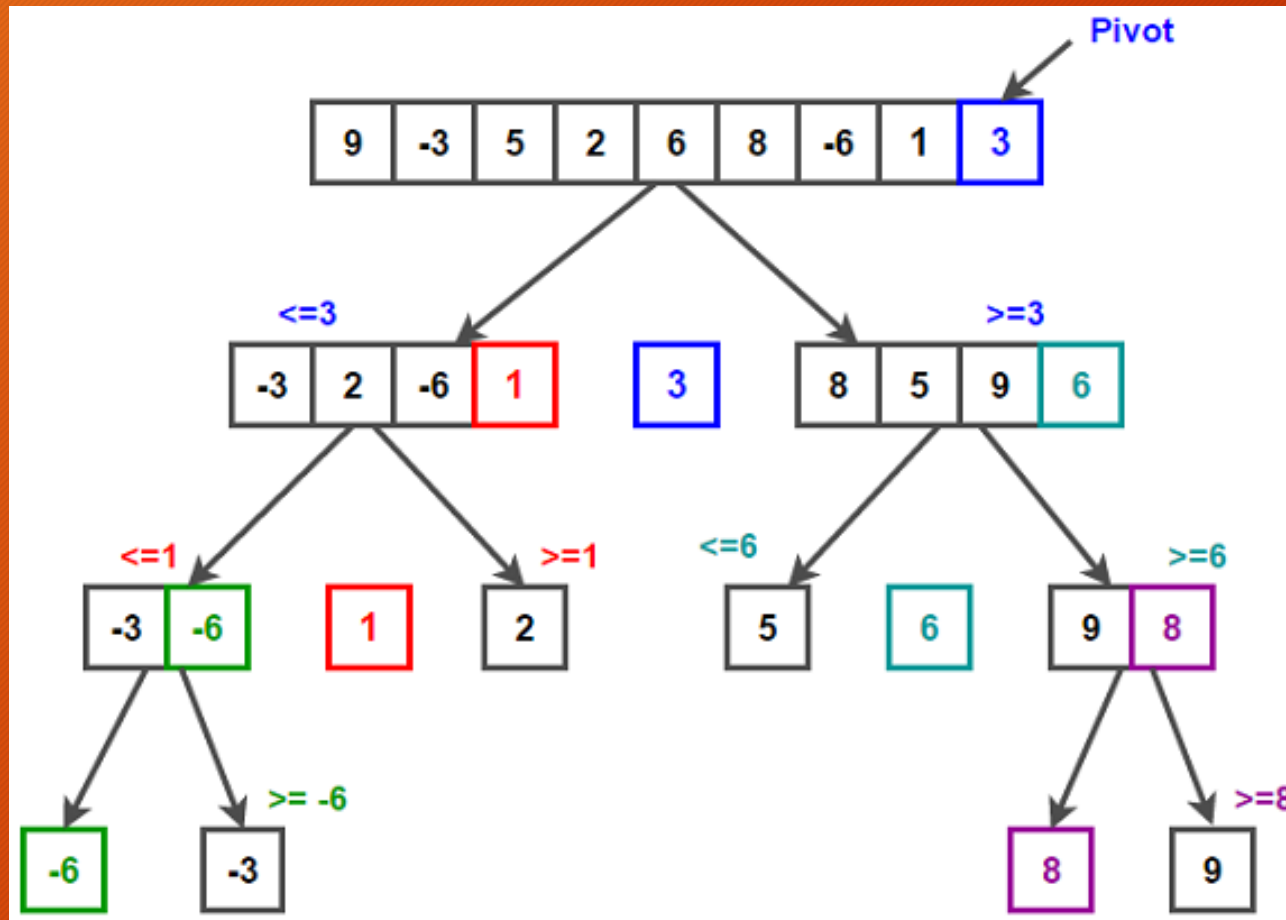
1. Selection Sort

2. Quick Sort

Selection Sort



Quick Sort



Time

1. Selection Sort: $O(N^2)$

2. Quick Sort: $O(N * \log N)$

$N = 1,000,000$

1. Selection Sort: 1,000,000,000,000

2. Quick Sort: 6,000,000

Actual running time

1. Selection Sort: 527.247 s

2. Quick Sort: 0.134 s

Algorithm

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The solution  Algorithm.

What Kind of programmer do you want to be?

Thank You