The Role of Algorithm in Computing | 1

1.1 Algorithms

1.1-1
Google Trends requires sorting to give the hoteset searches.

1.1-2
i/o operations, network traffic, etc.

1.1-3
Hash table:
Strengths: very fast ($O(1)$) to access by key
Limitations: To access by value one has to walk through the entire table.

1.1-4
Similarity: both are about finding the shortest path on a graph.
Difference: shortest-path has a known $O(N^2)$ algorithm while traveling-salesman does not.

1.1-5
Only the best will do: You are a TA of your college's algorithm course. And you need to rank the students by their final exam scores.
Appoxiamate solution is good enough: You are a developer working at TAOBAO. And you need to rank the users by their yearly expenses. You don't need to give their exact places. A percentage is good enough.

1.2 Algorithma as a technology

1.2-1
Google Translate requires an algorithm to translate sentences from one language to another. The algorithm takes sentences of some languge as input and output the sentence of target language.

1.2-2
$n \leq 43$

1.2-3
$n = 14$

Problems

1-1 To do