

1.1 Algorithms

1.1-1

Google Trends requires sorting to give the hottest 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.

Approximate solution is good enough: You are a developer on TAOBAO. And you need to rank the users by their expenses. You don't need to give their exact places. A percentage is good enough.