Applications

Date _____

1. Insertion Sort
   - ↳ used when number of elements is small
   - ↳ Sorting short lists
   - ↳ sorting "almost sorted" lists

2. Merge Sort
   - ↳ used in sorting linked lists
   - ↳ Inversion Count Problem

3. Quick Sort
   - ↳ Commercial Computing
   - ↳ Information Searching
   - ↳ Used to implement primitive type methods

4. Binary Search
   - ↳ Used for indexing IP addresses
   - ↳ Used to manage virtual ~~Area~~ Memory Areas

5. Heap Sort
   - ↳ Priority Queues
   - ↳ Finding the order in statistics

Date

⑥ Count Sort

↳ used in computer science to collect objects according to keys that are small positive integers.

⑦ Radix Sort

↳ used for very large in-memory sorts in a multiprocessor or cluster.

⑧ BFS

↳ in Peer-to-Peer networks to find neighbor nodes
↳ in GPS navigation to find neighboring places

⑨ DFS

↳ Topological Sorting can be done through DFS.
↳ used to detect cycles in a graph.

⑩ Kruskal's Algorithm

↳ LAN networks
↳ Single link cluster

⑪ Prim's Algorithm

↳ Travelling Salesman Problem
↳ Cluster Analysis

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(12) Bellman-Ford Algorithm
- ↳ distance-vector routing protocol.
- ↳ Used in geographical maps.

(13) Dijkstra's Algorithm
- ↳ Designate a file server in LAN
- ↳ Digital Mapping Services in Google Maps.

(14) Floyd-Warshall Algorithm
- ↳ finding inversion of real matrices
- ↳ finding transitive closure of directed graphs.

(15) Minimum Spanning Trees
- ↳ Network Design
- ↳ Image Processing
- ↳ Cluster Analysis
- ↳ Useful primitive

(16) Knapsack Problem
- ↳ Financial Modelling
- ↳ Production and inventory management Systems

(17) Longest Common Subsequence
- ↳ used in computational linguistics & bioinformatics.

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(18) Matrix Chain Multiplication
- ↳ graphs algorithms
- ↳ Signal processing
- ↳ Network industry

(19) Greedy Algorithm
- ↳ CPU Scheduling
- ↳ MST's

(20) Coin Change Problem
- ↳ distribute change (vending machines)

(21) Vertex Cover Problem
- ↳ edges = roads ; vertices = cross roads => place security cameras at the crossroads (cover the whole city but use less cameras)

(22) Travelling Salesman Problem
- ↳ vehicle routing problems
- ↳ Planning and scheduling problems

(23) Set Covering Problem
- ↳ Airline Crew Scheduling
- ↳ Optimal Route Selection.

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(24) Geometric Algorithms
- ↳ Data Mining
- ↳ Computer Graphics
- ↳ Geographic Information System.

(25) Convex HULL
- ↳ Combinational Optimization
- ↳ Geometric Modelling

(26) Closest Pair Algorithm
- ↳ Hierarchical clustering
- ↳ Greedy Matching

(27) Pattern Matching (Brute Fore, KMP, Boyer Moore)
- ↳ Text editors
- ↳ Search engines
- ↳ Biological Research