图

图的实现

Expressed as big-O	Edge List	Adj. Matrix	Adj. List
Space	$n+m$	n^2	$n+m$
`insertVertex(v)`	1	n	1
`removeVertex(v)`	m	n	$\deg(v)$
`insertEdge(v, w, k)`	1	1	1
`removeEdge(v, w)`	1	1	1
`incidentEdges(v)`	m	n	$\deg(v)$
`areAdjacent(v, w)`	m	1	$\min(\deg(v), \deg(w))$

最小生成树

Kruskal's Algorithm

Priority Queue	Total Running Time
Heap	$O(m \log(m))$
Sorted Array	$O(m \log(m))$

Prim's Algorithm

Priority Queue	Adj. Matrix	Adj. List
Binary Heap	$O(n \log(n) + n^2 \log(n))$	$O(n \log(n) + m \log(n))$
Fibonacci Heap	$O(n \log(n) + n^2)$	$O(n \log(n) + m)$
Unsorted Array	$O(n^2)$	$O(n^2)$

最短路径

Dijkstra

同

Prim's Algorithm

Priority Queue	Adj. Matrix	Adj. List
Binary Heap	$O(n \log(n) + n^2 \log(n))$	$O(n \log(n) + m \log(n))$
Fibonacci Heap	$O(n \log(n) + n^2)$	$O(n \log(n) + m)$
Unsorted Array	$O(n^2)$	$O(n^2)$

Floyd-Warshall's Algorithm