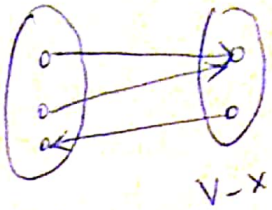
Dijkstra's Algorithm - running time analysis.

heap: logarithmic time for finding/ pushing a node.

log(n).

store vertices on heap.



heap holds all vertices such that tail is in X and head in (V-X).

heap has every vertex with value = ∞

for every node that was added to X, find its tail & update the key for that tail nodes in heap.

∴ the heap will be built once with all keys = ∞ = constant time.

for every edge we need to update the heap
= m log n.

for every node we need to find min in heap
= n log n

∴ n log n + n log n.

keys are vertices
key.repr = l(S,v) + l(v,w).
ge function to be modified