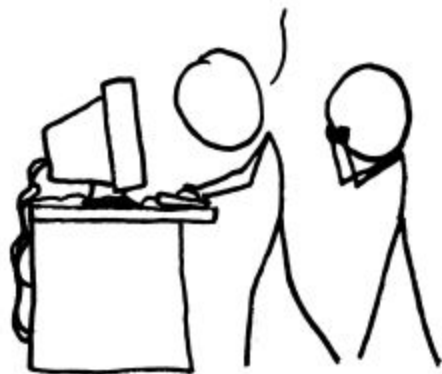


SEE, I'VE GOT A REALLY GOOD SYSTEM:
IF I WANT TO SEND A YOUTUBE VIDEO
TO SOMEONE, I GO TO FILE→SAVE, THEN
IMPORT THE SAVED PAGE INTO WORD. THEN
I GO TO "SHARE THIS DOCUMENT" AND
UNDER "RECIPIENT" I PUT THE EMAIL
OF THIS VIDEO EXTRACTION SERVICE...



I'LL OFTEN ENCOURAGE RELATIVES TO TRY TO SOLVE
COMPUTER PROBLEMS THEMSELVES BY TRIAL AND ERROR.
HOWEVER, I'VE LEARNED AN IMPORTANT LESSON: IF THEY
SAY THEY'VE SOLVED THEIR PROBLEM, *NEVER* ASK HOW.

Find single source **shortest paths** in a **DAG**

$G(V,E)$ is a DAG. Let 'S' be a source vertex. Assuming there are no incoming edges into node 'S'. $w(u,v)$ is weight of edge (u,v) .

ALGORITHM:-

1. Find topological ordering of vertices in G
2. Initialize for all $u \in V$ $\text{dist}(u) = \infty$
3. $\text{dist}[S] = 0$;
4. for each $u \in V$ in the topological ordering
5. for each edge (u,v) in E
6. $\text{dist}(v) = \min (\text{dist}(v), \text{dist}(u) + w(u,v))$

Running time : $O(m+n)$

Find single source **longest simple paths** in a **DAG**

Find single source longest simple paths in a DAG

$G(V,E)$ is a DAG. Let 'S' be a source vertex. Assuming there are no incoming edges into node 'S'. $w(u,v)$ is weight of edge (u,v) .

ALGORITHM:-

1. Find topological ordering of vertices in G
2. Initialize for all $u \in V$ **dist(u) = $-\infty$**
3. **dist[S] = 0;**
4. for each $u \in V$ in the topological ordering
5. for each edge (u,v) in E
6. **dist(v) = max (dist(v), dist(u) + w(u,v))**

Running time : $O(m+n)$

Longest Path Problem in a General Graph

- Optimal substructure property **does not hold** for longest simple path problem in a general graph.

Document Printing problem