

* Start w/ WHY this approach makes sense!

MATH F113X: Backflow and Critical Path Algorithms

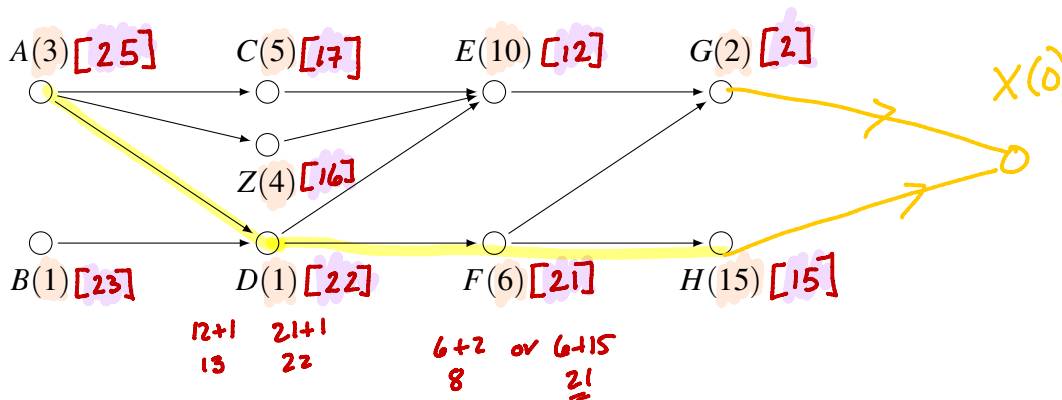
lecture notes

Goal: Learn the Backflow Algorithm and implement the Critical Path Algorithm.

1. Backflow Algorithm

- (a) Introduce an "end" vertex, say X, with a time of [0].
- (b) From X, move back through every vertex assigning it the maximum time to reach vertex X.

2. Apply the Backflow Algorithm to the digraph below.



3. Use your work above to answer the questions below.

- (a) Find a critical path and the critical time in the digraph above. What do you observe about the numbers you produced in the Backflow Algorithm?

Path: A D F H
time: 25

The vertex w/ highest number (ie A) is weighted with the critical time.

- (b) Determine the priority list using the Decreasing Time Algorithm.

According to these numbers

15 10 6 5 4 3 2 1 1
H E F C Z A G B D

- (c) Determine the priority list by ordering the the vertices according to decreasing critical time (the labels from the Backflow Algorithm).

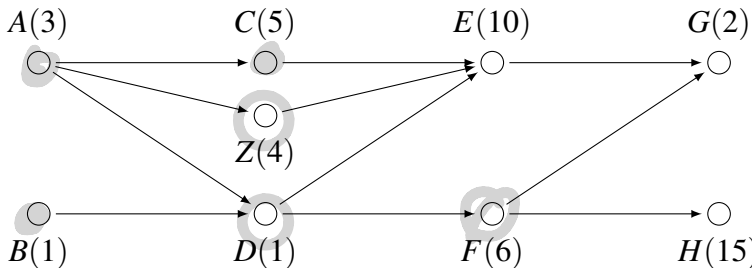
According to these numbers

25 23 22 21 17 16 15 12 2
A B D F C Z H E G

4. Critical Path Algorithm

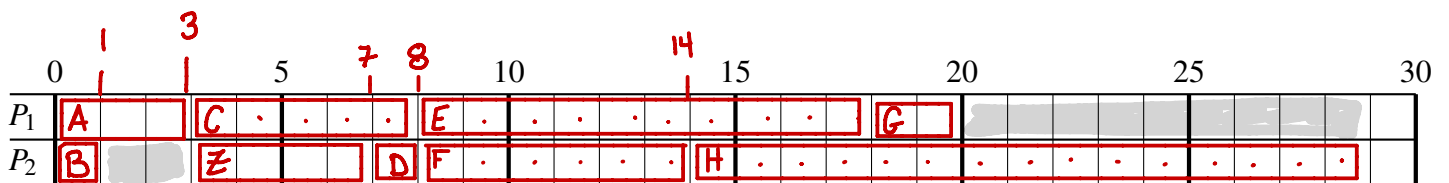
Schedule according to a priority list ordered by decreasing critical time labels from the Backflow algorithm.

5. Use your two priority lists from the previous page to construct a schedule using two processors.



(a) decreasing time priority list: ~~H~~ ~~E~~ ~~F~~ ~~C~~ ~~Z~~ ~~A~~ ~~G~~ ~~B~~ ~~D~~

time	0	1	3	7	8	14	15	20	29
done		B	A	Z	C, D	F	E	G	H
ready	A B	-	C Z D	D	E, F	H	G		



~~A~~ ~~B~~ ~~D~~ ~~F~~ ~~C~~ ~~Z~~ ~~H~~ ~~E~~ ~~G~~

(b) decreasing critical time priority list: _____

time	0	1	3	4	8	10	12	22	24	25
done		B	A	D	C	F	Z	E	G	H
ready	A B	-	C Z D	Z F	Z	H	E	G	-	

