

Lecture 34

CSE 331

Nov 20, 2017

CS Ed week (Dec 8)

We'll need
volunteers!

We need
demos!

celebrate
CSEDWEEK
with the Department of Computer
Science and Engineering at UB

Students K-12 are invited to

KIDS' DAY

Davis Hall, UB North Campus

FRI DEC 8

session 1
6 - 7 PM
session 2
7 - 8 PM
session 3
8 - 9 PM

**HANDS-ON
ACTIVITIES
LIVE DEMOS
ROBOTS
AND MORE!**

When to use Dynamic Programming

There are polynomially many sub-problems

$$\text{OPT}(1), \dots, \text{OPT}(n)$$

Optimal solution can be computed from solutions to sub-problems

$$\text{OPT}(j) = \max \{ v_j + \text{OPT}(p(j)), \text{OPT}(j-1) \}$$

There is an ordering among sub-problem that allows for iterative solution

$$\text{OPT}(j) \text{ only depends on } \text{OPT}(j-1), \dots, \text{OPT}(1)$$



Richard Bellman

Scheduling to min idle cycles

n jobs, i^{th} job takes w_i cycles

You have W cycles on the cloud



What is the maximum number of jobs you can schedule?

Today's agenda

Dynamic Program for Subset Sum problem

May the Bellman force be with you

