Lecture 34
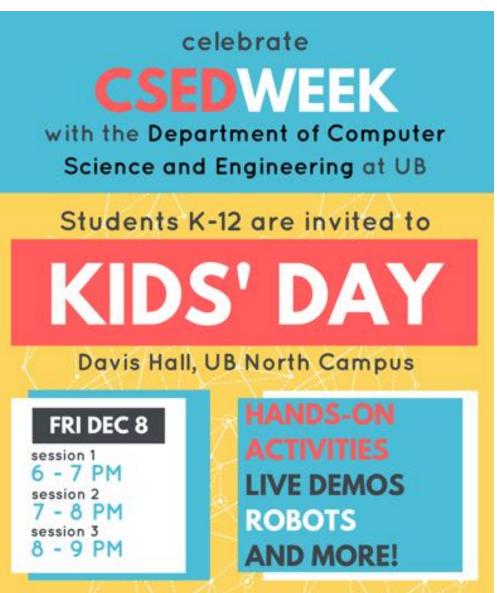
CSE 331

Nov 20, 2017

CS Ed week (Dec 8)

We'll need volunteers!

We need demos!

When to use Dynamic Programming

Richard Bellman

There are polynomially many sub-problems

$$OPT(1), \ldots, OPT(n)$$

Optimal solution can be computed from solutions to sub-problems

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

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

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

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