Comp 352 Winter 2019

Tutorial 7

April 10, 2019

Outline

1. Announcement
2. 0-1 Knapsack
3. Credits

Announcement

1. Ordered tree

0-1 Knapsack

0-1 property: You cannot break an item, either pick the complete item, or don't pick it.

0-1 Knapsack

Give a dynamic-programming solution to the $0-1$ knapsack problem that runs in $O(nW)$ time, where n is number of items and W is the maximum weight of items that the thief can put in his knapsack.

$value$	$weight$
1	1
4	3
5	4
7	5

$(value)weight/weight$	0	1	2	3	4	5	6	7
$(1)1$	0	1	1	1	1	1	1	1
$(4)3$	0	1	1	$4+0$	$4+1$	$4+1$	5	5
$(5)4$	0	1	1	4	$5+0$	$5+1$	6	$5+4$
$(7)5$	0	1	1	4	5	$7+0$	$7+1$	$7+1<9$

Credits

1. https://www.geeksforgeeks.org/0-1-knapsack-problem-dp-10/