

ex. 30

$w = 15$

i	p_i	w_i	$\frac{p_i}{w_i}$
1	64	4	16
2	90	6	15
3	91	7	13
4	48	4	12
5	33	3	11
6	10	1	10

total weight = $w_t + \sum_{j=i+1}^{k-1} w_j$

bound = $(p_i \sum_{j=i+1}^{k-1} \frac{p_j}{w_j}) + (w - \text{tot wt}) \cdot \frac{p_k}{w_k}$

weight $\geq w$

best bound to be exploited next

Root node

bound
"what profit could we achieve?"

$\frac{90}{6} + \frac{91}{7} = 181$
 $\frac{90}{6} + \frac{91}{7} = 13$

$f(p_i) + w_{i+1} (\frac{p_{i+1}}{w_{i+1}}) = \text{Best actual profit}$

Greedy Approach

$p_1 \rightarrow p_2 \rightarrow p_4 = f(p_1, p_2) = 64 + 90 + 48 + 10$

$\rightarrow p_6$

$= \$212 \text{ profit}$

$w_1 + w_2 = 6 + 4 + 4 + 1$

$= 15 \text{ lbs}$

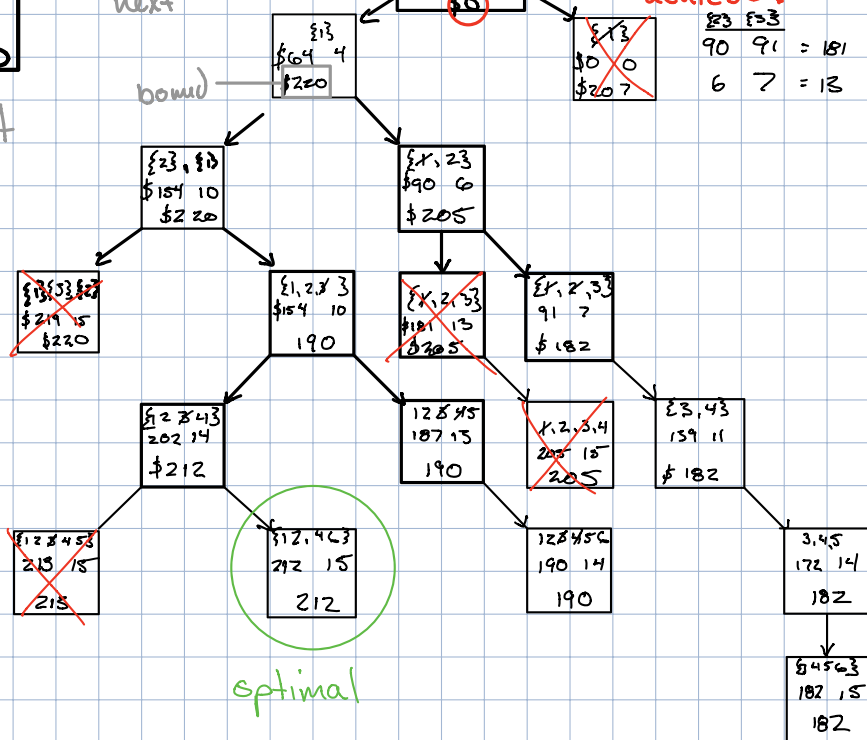
Back First

node:	1	2	3	4
profit:	\$64	\$90	(13(5)) \$65	\$212
wt:	4	6	5	15

remaining wt

1 2	3	{2,3,3}	{2,3,4}
\$90 6	\$91 7	\$181 13	\$205 15

$z(12) + 181$



optimal