

Greedy Method.

Algorithm Greedy for knapsack

eg: $P = [25, 24, 15]$

$$W = [18, 15, 10]$$

$$M = 20.$$

$$N = 3.$$

[Arrange Elements in increasing order of weight.]

by $W = [10, 15, 18]$
 $P = [15, 24, 25]$

Greedy weight.

$$\therefore \text{Solution} = \underset{\text{1st chd.}}{10} + \underset{\text{2nd chd.}}{10} = 20$$

\therefore Profit earned for second chd.

$$\frac{10}{15} \times 24 = 16$$

$$\text{Total profit earned} = 15 + 16 = 31$$

Arrange elements in decreasing order of Profit

$$P = [25, 24, 15]$$

$$W = [18, 15, 10]$$

Greedy by profit

fraction of second elem. need = 2

$$\text{profit earned} = \frac{2}{15} \times 24 = 3.2$$

$$\therefore \text{Total profit earned} = 25 + 3.2 = 28.2$$

Greedy by Profit/weight.

Arrange elements $P[i]/W[i] \geq P[i+1]/W[i+1]$

$$P = [25, 24, 15]$$

$$W = [18, 15, 10]$$

$$P/W = [1.3, 1.6, 1.5]$$

$$P/W = [1.6, 1.5, 1.3]$$

$$\therefore P = [24, 15, 25]$$

$$W = [15, 10, 18]$$

1st. 15

$$25 - 15 = 10$$

2nd. ~~20~~ 20 - 10 = 10

$$10 \times 1.3 = 13$$

$$24 + 15 + 13$$

$$= 52$$

let $m = 20$.

Put first weight $15 < 20$.

put second weight $15 + 10 > 20$.

\therefore put fraction

$$15 + 5 = 20.$$

profit earned

$$= 24 + 7.5$$

$$= 31.5$$