

Question

Q/11 Object : 1 2 3 4 5 6 7
 profit : 5 10 15 7 8 9 4
 weight : 1 3 5 4 1 3 2

Max weight = 15 kg. [weight cannot be exceed more than 15 kg]

Soln: Let find Profit/weight for each object.

obj →	1	2	3	4	5	6	7
P/w:	5	10	15	7	8	9	4
w:	1	3	5	4	1	3	2

P/w:	5	3.3	3	1.75	8	3	2
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$$x_0 = (1 \quad 1 \quad 1 \quad 0 \quad 1 \quad 1 \quad 1)$$

$x_1 \quad x_2 \quad x_3 \quad x_4 \quad x_5 \quad x_6 \quad x_7$

Max weight = 15 kg

Let start including object one by one.

- ⇒
- 15 - 1 = 14 kg
 - 14 - 1 = 13 kg
 - 13 - 3 = 10 kg
 - 10 - 5 = 5 kg
 - 5 - 3 = 2 kg
 - 2 - 2 = 0 kg

Total weight

$$\sum x_i w_i = (1 \times 1) + (3 \times 1) + (5 \times 1) + (4 \times 0) + (1 \times 1) + (1 \times 3) + (2 \times 1)$$

$$= 1 + 3 + 5 + 0 + 1 + 3 + 2 = 15 \text{ kg}$$

Max

Total Profit

$$\sum x_i p_i = (1 \times 5) + (1 \times 10) + (15 \times 1) + (7 \times 0) + (8 \times 1) + (9 \times 1) + (4 \times 1) = (5 + 10 + 15 + 8 + 9 + 4)$$

$$= 51$$

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