

COMP3821 Homework 4

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Question 1.

1.1 Nature of LP.

Since each jewellery item is discrete, the burglar cannot e.g., take 'half' a necklace. Thus burglar must formulate an integer LP problem.

1.2 Variables.

n items.

c_i is the value of the i th item, $1 \leq i \leq n$

w_i is the weight of the i th item.

M is the weight capacity of the backpack.

1.3 Constraints.

$$\sum_{i=1}^n w_i \leq M$$

1.4 Objective.

We want to get the most value out of the items looted such that $\sum_{i=1}^n c_i$ is maximized.