2) Also imagine that you are given a bunch of items. each with their associated weight and the monetary value they have associated with them in USD $

items collection {
I1 = a watch , $w_1 = 0.5$ kg, $P1 = \$1000$

I2 = a macbook , $w_1 = 2$ kg, $P2 = \$2500$

⋮

In

All the Knapsack problem asks us to do is to fit the Knapsack with a subset of items in such a manner that the following constraints are satisfied:

1) The capacity of the bag is not breached

i.e

$$\sum_{i=1}^{K} w_i \leq W$$

$$\underbrace{O \; O \; O \; O \; O \cdots O}_{\text{subset of items in Knapsack}}$$

2) The total value of the items put into the Knapsack is "maximized" i.e

$$\sum_{i=1}^{K} P_K$$ is the maximum possible value out of all the possible subsets of items you can fit into the Knapsack.

↳ We are also not necessarily concerned with filling the knapsack in its entirety that is we don't really care if the K.S is full or not at the end of the process.