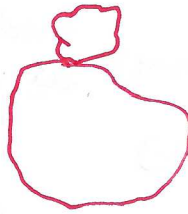


(9)

Another very famous problem where recursion is applied. and the notion of choice can be seen evidently is "Knapsack Problem" in which case

1) One is given a bag and a collection of items with their weights and prices.

Bag =
with capacity
 W



Items = $\bigcirc \quad \bigcirc \quad \bigcirc \quad \bigcirc \quad \bigcirc$
 $w_1 \quad w_2 \quad \dots \quad w_i$
 $p_1 \quad p_2 \quad \dots \quad p_i$

2) Our goal is to fill the bag such that we are able to maximize the total amount of items in the bag satisfying the weight constraints associated with the bag.

3) The notion of choice can be clearly seen here as we could fill in a subset of all items provided to us; so we could choose to put I_1 or I_2 or I_3 or I_4 or I_5 and some thing we could do for all other items as well. The question we ask is as follows:

↓

"Should we include this ~~item~~ item in the knapsack or not?"

Now that we understand as to how to spot the applicability of recursion to a problem we now try to figure out the applicability of Dynamic programming to the problem for which we will need to understand how recursion takes its course while solving the problem