**Genetic Algorithm: The Knapsack Problem**

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**Introduction:**

In this project, we have used Genetic Algorithm to solve the 0-1 Knapsack problem (an optimization problem) where one has to maximize the benefit of all the items in a bag without exceeding its total capacity. A large variety of resource allocation problems can be cast in the framework of Knapsack problem. General idea is to think of the capacity of the knapsack as the available amount of a resource and the item types as activities to which the resource can be allocated.

Suppose we are given following parameters:

wt = weight of each item, for t = 1,2,….,N

vt = value of each item, for t = 1,2,….,N

c = capacity of the knapsack

The, our problem can be formulated as :

N

∑ wt vt <= c

k=1