Packing Knapsacks

Assume you are given a knapsack which can hold at most weight B grams (B an integer), and an (infinite) supply of items of type T_i for $1 \leq i \leq n$ where each item of type t weighs a_i grams and costs c_i dollars. If you wan to choose the set of items which fit in the knapsack and have maximum total cost then you are solving the following IP

$max \quad \sum_{i=1}^{n} c_i x_i$
$subject\ to$
$\sum_{i=1}^{n} a_i x_i \leq B$
x_i nonnegative for all i.
x_i integer for all i.

This is the Knapsack IP. If you have only one item of each type then you need to solve the 0-1 Knapsack IP:

$max \quad \sum_{i=1}^{n} c_i x_i$
$subject\ to$
$\sum_{i=1}^{n} a_i x_i \leq B$
$for\ 1 \leq i \leq n, \quad x_i \leq 1.$
x_i nonnegative for all i.
x_i integer for all i.