**Lab 10 Solutions**

**Problem1: Solution**

Text, letter

Description automatically generated

**Problem2: Solution**

The running time is O(nW) where n is the number of items and W is the limit on the weight.

No, in this case DP has not changed the exponential running time although it has minimized the running time of the brute force method.

**Problem3: Solution**

The running time complexity as shown above is O(nW). Inputs have two parameters in general - value and size. The number of items, n usually is not very large (although it can be theoretically). But the weight W can be very large. To represent this W we would need

size = lg b(W) where "b" is the base and "size" is the number of bits to represent "W". This means that W = bsize.

If b = 2, we have the running time as O(n x 2size) which is exponential.