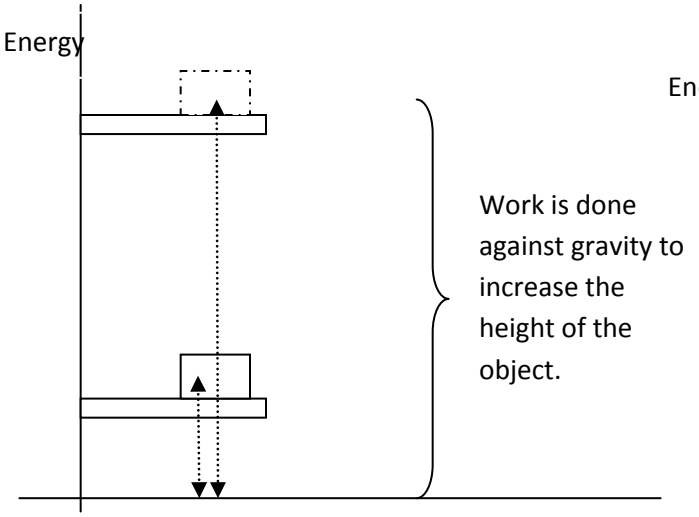
Potential Energy from Physics Point of View



$E_p = (mg)h$

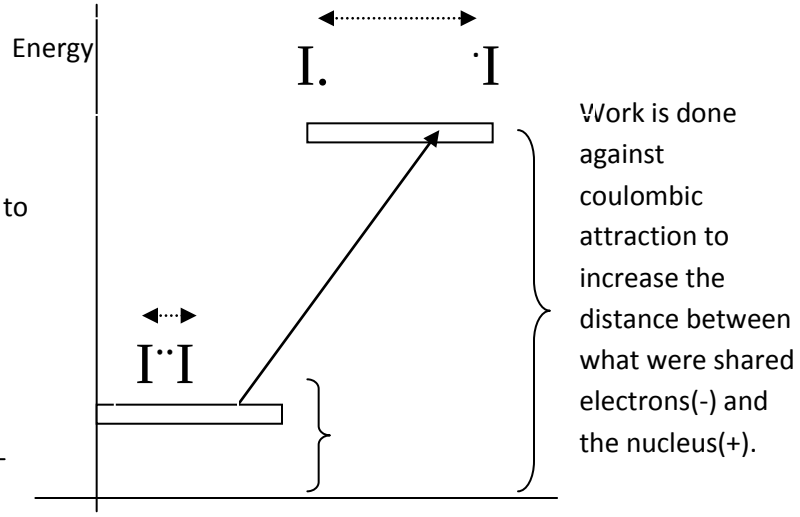
Work = $(F_g)d$

After work is done against the force of gravity(Fg) to raise the object to a greater height, the energy is conserved as potential energy .

If the box falls it will release the energy in the form of kinetic energy, which can do "work " on the floor, a spring, or whatever your fancy.

Potential Energy from the Chemistry Point of View but with Physics also in Mind

$I_{2(g)} + \text{energy} = 2\ I_{(g)}$



Work = $(F_c)d$
= chemical potential energy

When iodine atoms are sharing two electrons in the I_2 molecule, the shared electrons are much closer to each other's nucleus. The separation distance, d, is small, just like the height in the physics analogy.

To break up the bond requires energy because you are separating the shared electrons as they become two separate atoms. "d" has increased and so has the potential energy. We have an endothermic reaction.

In every form of chem. potential energy(intraatomic, intramolecular or intermolecular, the same idea is at work.)

When neutral Na and Cl react, we have at first a big distance between Na's valence electron and Cl's nucleus. The "d" is high. But when the Cl practically snatches the electron away, it becomes a(-) ion and attracts what is now a Na(+) ion. *The separation distance has been reduced*. We have moved towards something with *less* potential energy. The difference in potential energy is released in what is an exothermic reaction.