Consider a mass $M$ placed somewhere in space, and a second mass $m$ that is a distance $r$ from $M$. The two masses share gravitational potential energy, which is stored in their gravitational field. This energy is the work done in bringing the two masses to their current positions from an infinite position. We consider $M$ to be fixed in space and so it is just the small body of mass $m$ that is moved.

The energy belongs to both of the masses and not one of them. No kinetic energy is involved as they are moved at a very small constant speed.

The work (gravitational potential energy) of the two masses when their centres are separated by a distance $r$.

$$E_p = \frac{GMm}{r}$$

($G$ is the gravitational constant)

This energy is negative, which implies that the force of gravity is a force of attraction.
If the total energy is positive, the object will follow a hyperbolic path and never return.
If the total energy is zero, the object will follow a parabolic path to infinity, where it will never return.
If the total energy is negative, the object will go into a circular or elliptical orbit (or crash into the planet if the launching speed is too low).