any real spring has mass. if this mass has taken into account explain qualitatively how this will affect the period of oscillation of spring mass system?

The mass of spring is different from zero in the real spring pendulum. It means that in the event of undamped oscillations mechanical energy of the pendulum consists of:

$$E = E_{sinker} + E_{spr} + U_{spr}$$

E_{sinker} - kinetic energy of the sinker,
E_{spr} - the kinetic energy of the spring,
U_{spr} - the potential energy of the elastic deformation of spring.
The turns of the spring move at different speeds: at the suspension point speed of turns is zero, at the point of attachment of sinker - the current speed of sinker. In this case, the kinetic energy is defined as:

$$E_{spr} = \int dE_{spr}$$

dE_{spr} - the kinetic energy of the layer of spring with the thickness *dx.* If we assume that the velocity of layers of spring linearly depends on the coordinates x, then:

$$dE_{spr} = \left(V\frac{x}{l}\right)^2 \cdot \frac{1}{2}dm$$

V - velocity of the sinker,
l - length of the spring,
x - coordinate of layer dm.
For a homogeneous spring with mass m_{spr} the mass of layer with thickness *dx* is

$$dm = m_{spr}\frac{dx}{l}$$

Then:

$$dE_{spr} = \left(V\frac{x}{l}\right)^2 \cdot \frac{1}{2}m_{spr}\frac{dx}{l}$$

The kinetic energy of the spring in this case is:

$$dE_{spr} = \int_0^l \left(V\frac{x}{l}\right)^2 \cdot \frac{1}{2}m_{spr}\frac{dx}{l} = \frac{m_{spr}V^2}{2l^3}\int_0^l x^2 dx = \frac{m_{spr}V^2}{2l^3}\frac{l^3}{3} = \frac{(m_{spr}/3)V^2}{2}$$

See that frequency of oscillation of the spring pendulum with nonzero mass is defined as:

$$V_0 = \frac{\omega_0}{2\pi} = \frac{1}{2\pi}\sqrt{\frac{k}{m_{sinker} + \frac{m_{spr}}{3}}}$$