Problems. Solve the following initial value problem using Euler's method:

$$\frac{\mathrm{d}^2y}{\mathrm{d}t^2} + t\frac{\mathrm{d}y}{\mathrm{d}t} + t^2y = t^3,\ y(0) = 1,\ y'(0) = 0$$

1. To apply Euler's method, convert this second-order differential equation into a system of first-order equations.

2. Use a step size of $h = 0.5$ to find $y(1)$. Show each iteration.

3. Use computer programming to find $y(1)$ with a step size of $h = 0.01$. Only show the answer, and attach your code.