**Solve ODE System Function Documentation**

**Description**

The **solveODESystem** function numerically solves a system of ordinary differential equations (ODEs) using the fourth order Runge-Kutta (RK4) method. It discretizes the time domain and iteratively computes the solution over the given time span.

**Input Arguments**

* **f**: Function handle representing the system of ODEs 𝑓(𝑡,𝑦)**f**(*t*,**y**).
* **tspan**: Time span [𝑡0,𝑡𝑓][*t*0​,*tf*​] over which the solution is computed.
* **y0**: Column vector of initial conditions at 𝑡0*t*0​.
* **N**: Number of time steps.

**Output Arguments**

* **t**: Array of time points.
* **y**: Matrix of solution values at corresponding time points. Each row corresponds to a component of the solution vector 𝑦(𝑡)**y**(*t*), and each column corresponds to a time point.

**Method Explanation**

1. **Initialization**: Initialize parameters such as time span, initial conditions, and number of time steps.
2. **RK4 Method**: Perform the fourth order Runge-Kutta (RK4) method to approximate the solution of the system of ODEs over the given time span.
3. **Output**: Return arrays of time points and solution values corresponding to each time point.

**Inputs**

* **f**: Function handle representing the system of ODEs 𝑓(𝑡,𝑦)**f**(*t*,**y**). It should accept two arguments: the current time 𝑡*t* and the solution vector 𝑦**y**.
* **tspan**: Time span [𝑡0,𝑡𝑓][*t*0​,*tf*​] over which the solution is computed.
* **y0**: Column vector of initial conditions 𝑦(𝑡0)**y**(*t*0​).
* **N**: Number of time steps. The time span will be divided into 𝑁*N* intervals.

**Outputs**

* **t**: Array of time points at which the solution is computed.
* **y**: Matrix of solution values. Each row corresponds to a component of the solution vector 𝑦(𝑡)**y**(*t*), and each column corresponds to a time point.