```
clc;                                                    % Clears the screen
clear all;
l = 8;
m = 2;
I = m*(l^2);
h=0.05;                                                  % step size
t(1)=0;
tfinal = 30;
N=ceil(tfinal/h);
theta(1) = 0.0873;
theta_dot(1) = 0;

F_theta = @(t,theta,theta_dot) theta_dot;
F_theta_dot = @(t,theta,theta_dot) m*9.8*l/I*sin(theta);
for i=1:(N-1)
    t(i+1) = t(i) + h;
    k_1_theta = F_theta(t(i),theta(i),theta_dot(i));
    k_1_theta_dot = F_theta_dot(t(i),theta(i),theta_dot(i));
    k_2_theta = F_theta(t(i)+0.5*h,theta(i)+0.5*h*k_1_theta,theta_dot(i)
+0.5*h*k_1_theta_dot);
    k_2_theta_dot = F_theta_dot(t(i)+0.5*h,theta(i)+0.5*h*k_1_theta,theta_dot(i)
+0.5*h*k_1_theta_dot);
    k_3_theta = F_theta(t(i)+0.5*h,theta(i)+0.5*h*k_2_theta,theta_dot(i)
+0.5*h*k_2_theta_dot);
    k_3_theta_dot = F_theta_dot(t(i)+0.5*h,theta(i)+0.5*h*k_2_theta,theta_dot(i)
+0.5*h*k_2_theta_dot);
    k_4_theta = F_theta(t(i)+h,theta(i)+h*k_3_theta,theta_dot(i)+h*k_3_theta_dot);
    k_4_theta_dot = F_theta_dot(t(i)+h,theta(i)+h*k_3_theta,theta_dot(i)
+h*k_3_theta_dot);

    theta(i+1) = theta(i) + (1/6)*(k_1_theta + 2*k_2_theta + 2*k_3_theta +
k_4_theta)*h;  %  main equation
    theta_dot(i+1) = theta_dot(i) + (1/6)*(k_1_theta_dot + 2*k_2_theta_dot +
2*k_3_theta_dot + k_4_theta_dot)*h;
end

subplot(1,2,1);
plot(t,theta,'-');
xlabel('t');
ylabel('Theta (rad)');
subplot(1,2,2);
plot(t,theta_dot,'-');
xlabel('t');
ylabel('Theta Dot (rad/s)');
```