% parameters of the problem

DI=0.001; % diffusion coefficient of I

KN=2;

KI=0.3;

A=7.7; % actin mass conservation parameter

DN=0.1; % diffusion coefficient of N

xmax=100 % x domain is [0,100]

tmax=400 % t domain is [0,400]

nt=1000; % number of time steps

dt=tmax/nt; % time step

nx=1000; % number of space steps

dx=xmax/nx; % space step

% initial conditions

for

end

% boundary conditions

for n=1:nt+1

N(max(j),n)=N(1,n);

S(max(j),n)=S(1,n);

I(max(j),n)=I(1,n);

time(n)=(n-1)\*dt;

end

% explicit method

if 2\*DI\*dt/(dx\*dx)<=1 % stability=<1

for n=1:nt % time loop

for j=2:nx % space loop

if sum(N)+sum(S)==A % int [N(x)+S(x)]=A

N(j,n+1)=N(j,n)+dt\*(DN\*((N(j+1,n)-2\*N(j,n)+N(j-1,n))/(dx^2))-N(j,n)+(S(n,j)\*(N(j,n))^2)/(1+I(j,n)));

S(j,n+1)=S(j,n)+dt\*(((S(j+1,n)-2\*S(j,n)+S(j-1,n))/(dx^2))+N(j,n)-(S(n,j)\*(N(j,n))^2)/(1+I(j,n)));

I(j,n+1)=I(j,n)+dt\*(KN\*N(j,n)-KI\*I(j,n)+DI\*((I(j+1,n)-2\*I(j,n)+I(j-1,n))/(dx^2));

else

err

end

end

end

end