

```

clear

n=2;
k1=0.01;
k2=1;
N=1000; %number of individuals

T=10000

```

T = 10000

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s=N-1;
i=1;
r=0;

t=0;

S=zeros(1,T);
I=zeros(1,T);
R=zeros(1,T);
time=zeros(1,T);

S(1)=s;
I(1)=i;
R(1)=r;

time(1)=0;

for j=2:T
    lambda = [k1*s*i k2*i];
    la=sum(lambda);

    clambda=cumsum(lambda);
    clambda=clambda/clambda(n);

    t=t-log(rand)/la;

    u=rand;

    if(u<clambda(1))
        s=s-1;
        i=i+1;
    else
        i=i-1;
        r=r+1;
    end

    S(j)=s;
    I(j)=i;

```

```
R(j)=r;  
time(j)=t;
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end
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```
plot(time,S,time,I,time,R,time,S+I+R)
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