```
lambda=9;mu=5;
R = [0 lambda 0;mu 0 lambda;0 2*mu 0];
t=4;r=14;epsilon=0.00000001;
r_i = [9,14,10];
```

Computing $\widehat{P}$:

```
P_hat=zeros(3,3); % initializing 3by3 zeroes matrix

for i=1:3
    for j=1:3
        if i==j
            P_hat(i,j)= 1-(r_i(i)/r);
        else
            P_hat(i,j)=R(i,j)/r;
        end
    end
end
P_hat
```

```
P_hat = 3×3
    0.3571    0.6429         0
    0.3571         0    0.6429
         0    0.7143    0.2857
```

Translating pseudocode to compute P(4):

```
I=eye(3,3);

A=P_hat; B=exp(-r*t)*I; c=exp(-r*t);s=c;k=1;

while s<1-epsilon
    c=c*r*t/k;
    B = B+c*A;
    A=A*P_hat;
    s=s+c;
    k=k+1;
end
B
```

```
B = 3×3
    0.2262    0.4072    0.3665
    0.2262    0.4072    0.3665
    0.2262    0.4072    0.3665
```