

Exp 2

Aim-To analyze the effect of delay on blocking probability of a call for Erlang B and Erlang C systems.

Code:

```
#Code for blocking probability
% Range of traffic offered (A) in Erlangs
A_values = 0.1:0.1:100;

% Number of trunked channels (C)
C_values = [1,2,5,10,50,100];

% Function for Erlang B Blocking Probability
function P_B = erlangB(A,C)
    numerator = A^C/factorial(C);
    denominator = sum(arrayfun(@(k)A^k/factorial(k), 0:C));
    P_B = numerator/denominator;
end

% initialize matrix to store blocking probabilities
blocking_probabilities=zeros(length(A_values), length(C_values));

% Compute blocking possibilities for each combination of A and C
for i = 1:length(A_values)
    A=A_values(i);
    for j=1:length(C_values)
        C=C_values(j);
        blocking_probabilities(i,j)=erlangB(A,C);
    end
end

% Plotting
figure;
hold on;
colors=['r','g','b','c','m','k'];
legends=cell(length(C_values),1);

for j=1:length(C_values)
    plot(A_values, blocking_probabilities(:,j),'Color',colors(j),'LineWidth',2);
    legends(j)=sprintf('C=%d',C_values(j));
end

xlabel('Traffic Intensity (A)');
ylabel('Probability of Call Blocking(P_B)');
title('Traffic Intensity vs Probability of Call Blocking (Erlang B)');
legend(legends);
grid on;
hold off;
```

```

#Code for blocking probability
% Range of traffic offered (A) in Erlangs
A_values = 0.1:0.1:100;

% Number of trunked channels (C)
C_values = [1,2,5,10,50,100];

% Function for Erlang C Blocking Probability
function P_B = erlangC(A,C)
    numerator = A^C;
    denominator = A^C+factorial(C)*(1-(A/C))*(sum(arrayfun(@(k)A^k/factorial(k), 0:C-1)));
    P_B = numerator/denominator;
end

% initialize matrix to store blocking probabilities
blocking_probabilities=zeros(length(A_values), length(C_values));

% Compute blocking possibilities for each combination of A and C
for i = 1:length(A_values)
    A=A_values(i);
    for j=1:length(C_values)
        C=C_values(j);
        blocking_probabilities(i,j)=erlangC(A,C);
    end
end

% Plotting
figure;
hold on;
colors=['r','g','b','c','m','k'];
legends=cell(length(C_values),1);

for j=1:length(C_values)
    plot(A_values, blocking_probabilities(:,j),'Color',colors(j),'LineWidth',2);
    legends(j)=sprintf('C=%d',C_values(j));
end

xlabel('Traffic Intensity (A)');
ylabel('Probability of Call Delay(P_C)');
title('Traffic Intensity vs Probability of Call Blocking (Erlang C)');
legend(legends);
grid on;
hold off;

```