Algorithm to obtain the imprecise availability on MATLAB

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This algorithm helps to find the imprecise availability of an MSS. Imprecise availability is in term of intervals, so we use a toolbox for interval calculation called "INTLAB". To find the availability we need to solve: $\Pi \cdot Q = 0$, and find $\Pi = [\pi_1 ... \pi_n]$ with $\pi_i = [\underline{\pi}_i, \overline{\pi}_i]$, the vector of probabilities of being in a state i, Q is the transition matrix where its elements are intervals. We will obtain different results:

- Contraction technique: we apply the algorithm of the contraction technique (Contraction_generale.m)
- Exact method: we apply an algorithm to do all the possible combination between the transition matrix and Π (Methode_exacte_generale.m)
- Precise method: to verify that the results obtained by the contraction technique are conservative, we take the center of all the intervals that we have and find the precise value of the availability of the system (PrecisGeneral.m)

We should know that the system could have ether binaries components or multi-state components, for the binary components it will be (matrice_de_transition_binaire.m) where we will enter our transition rates and for multi-state components we will enter the upper and lower bounds of the transition matrix Q. So, our algorithm is:
% Calculation by the contraction technique
Contraction_Generale
****
% Save the transition matrix
$W = Q;$
%Availability is the sum of the intervals of the working states
% Calculation by the exact method
%Pay attention to modify the line 52 in the code (availability depends on the working states)
Methode_exacte_generale
****
%Refolmulate the initial transition matrix
$Q = W;$
%Precise calculation
PrecisGeneral
%Availability is obtained by doing the sum over the working states
****
Or simply, just run the code: CODE_GENERAL.m

At the command window we will see:
If all the components are binaries write 1 else 0
0
Introducing B the lower bound of the transition matrix Q
$[-0.0047 \quad 0.0041 \quad 0; 0.0082 \quad -0.0126 \quad 0.0029; 0 \quad 0.0058 \quad -0.0064]$
Introducing C the upper bound of the transition matrix Q
$[-0.0026 \quad 0.035 \quad 0; 0.074 \quad -0.0085 \quad 0.0034; 0 \quad 0.0068 \quad -0.0054]$
If you want to determine c the number of contractions write 1 else 0
1
If you want to determine e the precision write 1 else 0
0
****