Final Project

May 4, 2015

A system is composed of four identical units, working in parallel, with their outputs fed to a majority voter. When a unit is determined to be faulty, it is taken off-line and repaired. When two out of four units are off-line, the system is failed. The system is failed also when the voter is not able to identify (and therefore to take off-line) the first failed unit. The probability of identifying a failed unit is the fault coverage c.

Using the Möbius tool,

1. compute the reliability at different times for different values of failure rate λ and fault coverage c. More precisely, design
   (a) an experiment with $c = 0.01$ and λ varying logarithmically from 0.001 to 0.1;
   (b) an experiment with c varying logarithmically from 0.001 to 0.1 and $\lambda = 0.01$.

   In both experiments, let the time vary from 1 to 99, with steps of 2.
2. compute the asymptotic (steady-state) availability for different values of failure rate λ and repair rate μ, with a fault coverage probability $c = 0.01$. More precisely, design
   (a) an experiment with $\mu = 0.01$ and λ varying logarithmically from 0.001 to 0.1;
   (b) an experiment with $\lambda = 0.01$ and μ varying logarithmically from 0.001 to 0.1.

Please note that it is not necessary to model the voter, since its behavior is represented by the fault coverage.

Every student will present his or her implementation of the project at the oral exam.