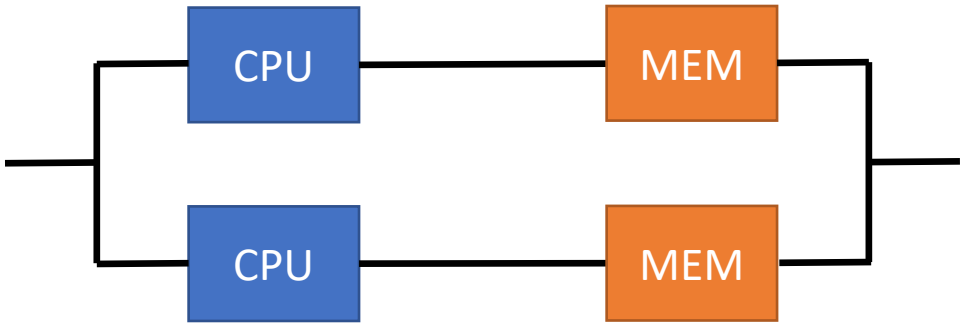
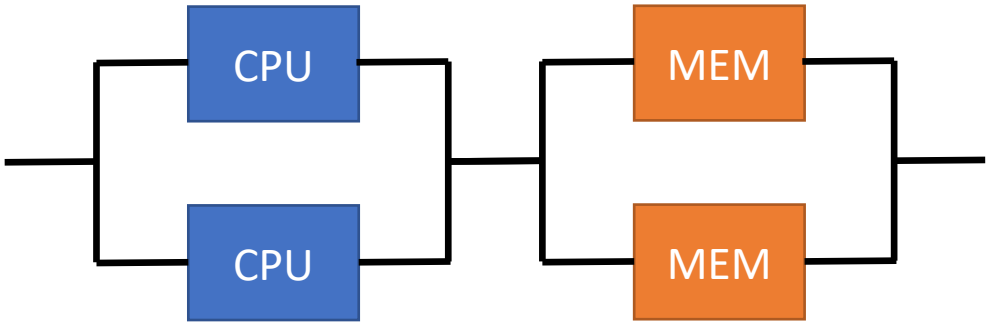
ECE 6930-004 HPC Fault Tolerance
Homework 1
Due: 5:00 PM 10 September 2018

Consider the following two configurations of CPUs and memories from Lecture 2:

A)



B)



Part 1:

Derive a reliability function R(t) for each system.

Part 2:

Using the reliability functions from part 1, determine which system is more reliable. Fully explain your reasoning and show your work. Assume that failures in each module are independent and exponentially distributed. The mean time between failure (MTBF) of a CPU module is 9 hours and the memory (MEM) module is 6 hours.

Part 3:

Memory modules are easier to protect than CPU modules, what would the MTBF of a memory module need to be to change your decision (if at all)? Explain.