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**CSCI586 Fault Tolerant Computing**

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**Homework 2**

1. Assume a program takes T to finish, but has a failure rate of .

1. What is the expected program execution time, E?
2. If checkpoints are used to tolerate failures, what is the optimal checkpoint interval I?
3. If it takes one hour to checkpoint, what is the approximate I if MTTF is 1 day?
4. What is the optimal execution time E?
5. Is it possible to reduce E by 90% if tc is reduced by 1%?

2. Explain domino effect in poorly chosen checkpoints of two process system.

3. Given a 2 process system with the plan to take checkpoints every hour, and assuming the clocks are within 3 microseconds of each other and that messages take at least 1 microsecond to send, describe 2 approaches to prevent orphan messages in this system.