Computer System Modelling And Analysis

Laboratory #2
October 3/5 & 10/12, 2000

Assignment

1. Number of Nodes

   Examine whether, and if so how, the number of nodes in the system influences the relative benefits of the different load sharing policies. Evaluate the cases of $N = 2$, $N = 4$, $N = 8$, for each of the four policies, and provide confidence intervals on your answers. Values for all the parameters are given in the table below:

C	*alpha*	*N*	*D*	*A*	*M*	*I*	*thresh*	*prbcnt*
40,000	.02	{2, 4, 8}	10.0	20.0	3.0	1.0	3	1

   For each number of nodes, indicate the preference ordering among the four strategies. (Be careful to assert dominance of one strategy over another only where it can be justified by the confidence intervals.)

2. Overall System Load

   Examine whether, and if so how, the overall system load influences the relative benefits of the different load sharing policies. Evaluate the cases of $A = 30$, $A = 15$, $A = 10$, for each of the four policies, and provide confidence intervals on your answers. Values for all the parameters are given in the table below:

C	*alpha*	*N*	*D*	*A*	*M*	*I*	*thresh*	*prbcnt*
40,000	.05	6	9.0	{30.0, 15.0, 10.0}	18.0	1.0	3	3

   For each interarrival time and resulting overall system load (which is D / A), indicate the preference ordering among the four strategies. (Be careful to assert dominance of one strategy over another only where it can be justified by the confidence intervals.)

[Continued on the other side.]

3. Cost of Moving a Job

Examine whether, and if so how, the cost of moving a job from one node to another influences the relative benefits of the different load sharing policies. Evaluate the cases of $M = 2$, $M = 4$, $M = 8$, for each of the four policies, and provide confidence intervals on your answers. Values for all the parameters are given in the table below:

C	*alpha*	*N*	*D*	*A*	*M*	*I*	*thresh*	*prbcnt*
40,000	.10	5	30.0	40.0	{10.0, 30.0, 60.0}	1.0	2	3

For each cost of moving a job, indicate the preference ordering among the four strategies. (Be careful to assert dominance of one strategy over another only where it can be justified by the confidence intervals.)

4. Choosing RECIN Parameters

Evaluate the case indicated in the table below for each of the four policies, and using various settings for the two RECIN control parameters, *thresh* and *prbcnt*, and provide confidence intervals on your answers. Seek values for the two RECIN parameters that make RECIN perform as well as possible relative to the other three policies on this case (ideally, beating all the others).

C	*alpha*	*N*	*D*	*A*	*M*	*I*	*thresh*	*prbcnt*
40,000	.20	8	20.0	30.0	50.0	1.0	???	???

For the best parameter settings you find for the RECIN strategy, indicate the preference ordering among the four strategies. (Be careful to assert dominance of one strategy over another only where it can be justified by the confidence intervals.)