Final Exam
ST: Systems Programming 43203/1432, 53203/1447
Fall 1994

This exam is due by Friday December 16 at 11:59 AM. A tar file of a directory containing the answers to all but the oral question must be mailed to bennett@mcs.kent.edu by this time. Answers received after this time will receive no credit.

10 pts Modify one of the programs in ~/bennett/public/class_source/X/xlib/ so that the lines that the user draws are redrawn on an expose event. Change the behavior of the buttons so that one deletes all of the lines and the other deletes the last line drawn.

10 pts Compare and contrast the three Unix interprocess communications mechanisms.

1. Sockets
2. System V shared memory, semaphores, and message queues.

5 pts Create a makefile with rules to perform the following transformations.

1. LaTeXto dvi (.tex files to .dvi)
2. dvi to postscript (.dvi to .ps)

10 pts Write an X based program which will check the uptime on multiple machines. The program should read a configuration file which contains a list of machines. For each machine, it should create a button and a label. The button should contain the machine name, and when the button is pressed, the program contacts port 9876 on that machine. Local, port 9876 returns the uptime on a machine. Your program should place the current uptime, days, minutes and hours, in the label. Currently, Condor and Nimitz return uptime on port 9876.

10 pts Write a program which will read a startup file consisting of the size of a matrix, and it's values, and using four processors, calculates the following sum.

$$b[x,y] = \sum_{i=1}^{3} a_i[x,y]$$

where

$$a_i[j,k] = \begin{cases} \sum_{x=j-1}^{j+1} \sum_{y=k-1}^{k+1} a_{i-1}[x,y] & 0 < j < x_{size}, 0 < k < y_{size} \\ a_{i-1}[j,k] & otherwise \end{cases}$$

5 pts Oral Question. Please schedule 10 to 15 minutes with the instructor sometime furring finals week for an oral question. The instructor will be available during the final examination period, Monday December 12, 5:45 - 8:00, and at other times during the week. This must question must be completed by Friday the 16th at 11:59 AM.