

Operating Systems Lab 2016

Assignment 2

Exercise 1

Write two C programs (send.c and receive.c) which use message passing to pass information among them.

'send.c' takes input text from the user and passes it to a message queue. 'receive.c' retrieves the message from the message queue and prints the text on screen.

If the user inputs a text as "END", both 'send.c' and 'receive.c' terminate.

(Hint: use functions like msgget, msgctl, msgsnd, msgrcv defined in sys/msg.h header file.)

Exercise 2

Write a multithreaded program that calculates various statistical values for a list of numbers. This program will be passed a series of numbers on the command line and will then create three separate worker threads. One thread will determine the average of the numbers, the second will determine the maximum value, and the third will determine the minimum value. For example, suppose your program is passed the integers: 90 81 78 95 79 72 85

The program will report

The average value is 82

The minimum value is 72

The maximum value is 95

The variables representing the average, minimum, and maximum values will be stored globally. The worker threads will set these values, and the parent thread will output the values once the workers have exited. (We could obviously expand this program by creating additional threads that determine other statistical values, such as median and standard deviation.)