

Problem 1: Remote System Monitoring using RPC

Due: 11:59PM, Sunday, February 16, 2025 (same for both on- and off-campus students)

I. OVERVIEW

The objective of the machine problem is to write a network management application that tracks user logins, CPU usage, and other statistics on a host and allows querying by an RPC-based network management system. Its output can be used to feed into an analysis component for deciding on corrective actions in self-managing distributed systems. The system will have multiple clients and single/multiple servers. Clients can send requests to a server running on a different machine to get the current system statistics of the server machine. Track, for example:

- 1) Current system time (can be in different formats such as date, time, or a combination of both.)
- 2) CPU usage
- 3) Memory usage
- 4) Load procs per minute

Please take a look at the sample RPC code for this machine problem posted on the Canvas.

RPC mechanism must be used for communication between clients and the server.

Note: We expect that each student will design and implement this programming assignment individually.

II. WHAT TO HAND IN

The running system will consist of a client and server program. As a platform, you should be using the UNIX/Linux workstations and developing the program in C. Before starting hacking, create a design document. The result should be a system-level design document, which you hand in along with the source code through Canvas. Please make sure that it convinces the reader that you know how to attack the problem. List and describe the components of the system.

You will have to show the demo of this project virtually in Webex between Feb. 17 - 21, 2025. TA Md Shafiqul Islam (shafiqul@iastate.edu) will allocate the time slot and discuss in detail in Canvas. Note that the demo requirement is for both on-campus and off-campus students. For students who do not show a demo, the project will be graded manually by the TA on Canvas.