EECS 22L: Software Engineering Project in C Language

Lecture 10

Rainer Dömer

doemer@uci.edu

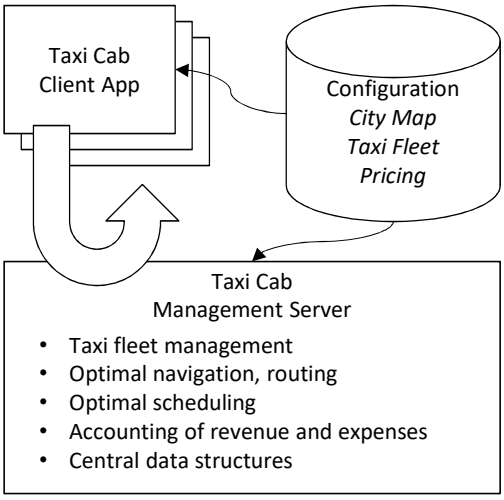
The Henry Samueli School of Engineering
Electrical Engineering and Computer Science
University of California, Irvine

Lecture 10: Overview

- Project 2 Technical Discussion and Advise
  - Software architecture and components
- Discussion on GUI programming
  - GTK+ library
  - GTK clock server example

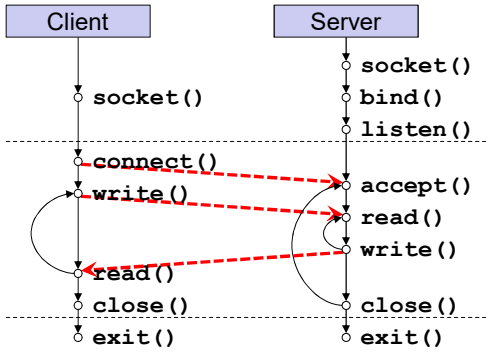
Project 2: Software Architecture

- Overall System Specification (designed by consultant)



Project 2: Client-Server Communication

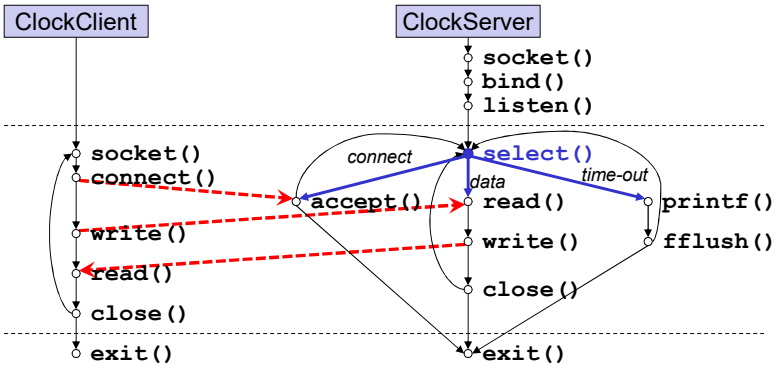
- Discussion on Socket Communication
  - Sequence Diagram for client-server example



- This simple example can handle only one client at a time, others have to wait for their turn to connect (they are blocked)
- *Blocking communication* can stall both the client and the server!

Project 2: Client-Server Communication

- Multiplexing multiple client connections with **`select()`**
  - ClockServer example: **`~eecs22/ClockServer.tar.gz`**



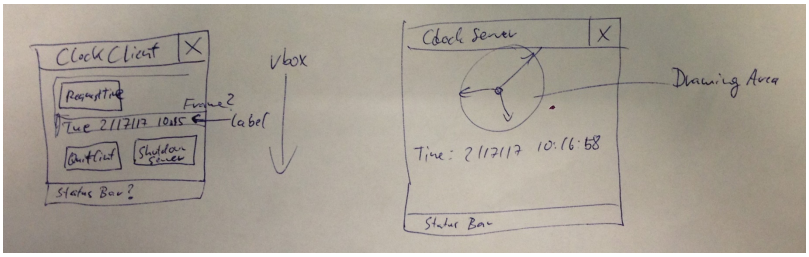
  - Wait simultaneously to connect, to transfer data, or for time-out!
  - Keep sequential execution short
  - Limit client-server interaction to one request at a time

Project 2: GUI Programming

- GTK+ 2.0 Library Infrastructure
  - Tutorial: https://developer.gnome.org/gtk-tutorial/stable/
  - Reference: https://developer.gnome.org/gtk2/2.24/
  - Widgets: https://developer.gnome.org/gtk2/2.24/ch02.html
  - Cairo graphics: https://cairographics.org/samples/
  - Cairo tutorial: http://zetcode.com/gfx/cairo/
- GUI clock server example:
  - **`~eecs22/GTK_ClockServer.tar.gz`**
    - **`GTK_ClockClient.c`**
    - **`GTK_ClockServer.c`**
    - **`Makefile, README`**
  - Online demonstration!

Project 2: GTK Clock Server Example

- Sketch of the Client and Server Windows



Project 2: GTK Clock Server Example

- Screenshot of the Client and Server Windows