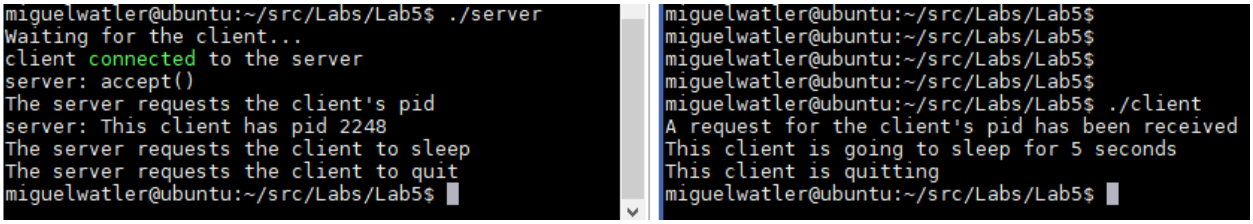
UNX511 Lab 6: Server/Client Communications

Due: Sunday, July 13, 2025 (11:59pm)

In this lab you will create two processes: **server** and **client**. They will communicate with each other through a socket connection. The relationship of the **server** to the **client** is that of a master to a slave. The **server** will send commands to the **client** and the **client** will obey and respond. This type of communications is called synchronous, in that the **server** does not send any more data until it has received a response from the **client**.

- The **server** and **client** will communicate via a socket file **/tmp/lab6**.
- The socket type is **AF_UNIX**, **SOCK_STREAM**. The socket family is **AF_UNIX**.
- The **client** will run inside an infinite while loop whereas the **server** will send specific commands then quit.
- The sequence of commands are as follows:
    1. The **server** will send the command "**Pid**" to the **client** to request the client's pid.
    2. The **client** will respond with "**This client has pid <pid>**", where <pid> can be obtained from **getpid()**.
    3. The **server** will print out the response from the **client**.
    4. The **server** will then send the command "**Sleep**" to the **client** to request the **client** to sleep for 5 seconds.
    5. The **client** will sleep for 5 seconds then respond to the **server** with "**Done**".
    6. When the **server** receives "**Done**" from the **client**, the **server** will send the command "**Quit**" to tell the **client** to shutdown.
    7. The **client** will break out of its infinite while loop, close the socket connection, then return 0.
    8. The **server** will close all socket connections, unlink the socket file **/tmp/lab6**, then return 0.
- Be sure to add error handling in your code.
- Please add debug printf's/cout's throughout your code to keep track of what your **server** and **client** are doing.

- A sample run for the **server** and **client** are as follows (be sure to run the **server** first):



Assignment Submission:

- Complete all steps, Add all output-screenshot and explanations (if required) to a MS-Word file.
- Add the following declaration at the top of MSWORD file and source code

```
/*************************************************************************
* UNX511-Lab6
* I declare that this lab is my own work in accordance with Seneca Academic Policy.
* No part of this assignment has been copied manually or electronically from any other source
* (including web sites) or distributed to other students.
*
* Name: _____ Student ID: _____ Date: _____
*
*
*************************************************************************/
```

- Please answer the following two declarations:
    - D1) On a scale from 1 to 5, **How much did you use generative AI to complete this assignment?**
        - where:
        - **1** means you did not use generative AI at all
        - **2** means you used it very minimally
        - **3** means you used it moderately
        - **4** means you used it significantly
        - **5** means you relied on it almost entirely
        - **Your answer :**
    - D2) On a scale from 1 to 5, **How confident are you in your understanding of the generative AI support you utilized in this assignment, and in your ability to explain it if questioned?**
        - where:
        - **1** means "Not confident at all – I do not understand the generative AI support I used and cannot explain it."
        - **2** means "Slightly confident – I understand a little, but I have many uncertainties."
        - **3** means "Moderately confident – I understand the majority of the support, though some parts are unclear."

- **4** means "Very confident – I understand most of the AI support well and can explain it with minor gaps."
- **5** means "Extremely confident – I fully understand the generative AI support I used and can clearly explain or justify it if asked."
- **Your answer :**

- Please submit the Source code (zip all .c, .h, and makeFiles)

Important Note:

- **LATE SUBMISSIONS for labs**. There is a deduction of 10% for Late assignment submissions, and after three days it will grade of zero (0).
- This labs should be submitted along with a video-recording which contains a detailed walkthrough of solution. Without recording, the assignment can get a maximum of 1/3 of the total.
    - Note: In case you are running out of time to record the video, you can submit the assignment (source code + screenshots) by the deadline and submit the video within 24 hours after the deadline.