Semin Bae

Tony Mione

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Report_HW5

Summarizing development experience including each step or function that implemented

- First, I worked on making my custom shell exit properly when the exit command is entered. This was achieved by safely terminating the shell using exit(0) when the input value matches exit.
- Second, I proceeded with forking child processes for piping. I split the commands into left and right based on the pipe symbol "|", creating separate argument arrays left_arguments and right_arguments. For creating the left and right processes, I called fork() to create child processes. If redirection was needed, I used dup2() to reassign the standard input. By redirecting the write end of the pipe to the standard output, I set it up to transmit data through the pipe. I called the command_line_execute() function to execute the left and right commands.
- Lastly, I worked on using waitpid() to wait until the two child processes had terminated.

Challenges faced

- I found the method of handling pipes to be very complex. Processing the combination of input/output redirection and pipes felt too difficult, which made it challenging. Additionally, I had initial difficulties in learning how to use the library functions like dup2(), pipe(), fork(), etc... However, based on the course content, I gradually understood the return values of pid and was able to complete the code.

What I've learned

I learned a lot about the roles and usage of system calls for flow control.

- fork(): A system call that creates a new child process by duplicating the currently running process.
- execvp(): A system call that replaces the memory space of the current process with a new program to execute the specified command.
- dup2(): A system call that duplicates or reassigns an existing file descriptor to another file descriptor.
- pipe(): A system call that creates a pipe with two file descriptors for inter-process communication.
- waitpid(): A system call that waits for a specific child process to terminate and collects its termination status.