Name: Elias Werede

Project 1

Due:- Feb 9, 2024

# Project1 Report

The program begins by verifying the presence of a single command line argument, which represents the pattern that the grep command will search for. In case the argument count is not equal to 2, the program displays an error message and terminates. Two pipes, named pipe0 and pipe1, are created for communication between the processes. These pipes are implemented using the pipe function, which generates a pair of file descriptors for reading and writing.

The program then forks into two child processes the Grandchild and the Child. In the Grandchild process, the standard output write end of pipe0 is redirected using the dup2 system calls function. This ensures that the output of the ps command will be written to the pipe. The Grandchild process then executes the ps command using the execlp system calls function, with the -A argument, which displays information about all processes. In the Child process, the standard input stream is redirected to the read end of pipe0 and the standard output stream is redirected to the write end of pipe1 using the dup2 system calls function. This ensures that the input to the grep command will be the output of the ps command, and the final result of the pipeline will be written to the write end of pipe1. The Child process then executes the grep command with the argument passed to the program using the execlp system calls function.

Finally the parent process closes any unnecessary file descriptors and waits for both the grand child and child processes to complete using the wait function. The parent process then reads the output of the pipeline from the read end of pipe1 using the read function and writes it to the standard output using the write function.