

C Homework - Minimalist shell

A classical C challenge

Requirements for the project

- Must be uploaded to github.com as a public repository
 - Send link to us via e-mail
- Must be written in C (C99)
 - Must compile and run on linux (RHEL 6/7, Ubuntu 20 or Fedora 32)
- Must include a short README with instructions for how to run the project
- Documentation, tests, CI, etc. is not required, but appreciated if you have experience creating those things
- Code, comments and documentation must be in English

Functionality

1. Implement a basic interactive shell (like bash) in C which presents a prompt, reads a line of input, and executes a command (and then repeats).
2. Implement the following commands as built-ins:
 - Print the current directory: `pwd`
 - Change current directory: `cd <DIRECTORY>`
 - List contents of current directory: `ls`
3. When the user enters something that is not a built-in, assume it is a binary executable:
 - Use the common “fork and exec” pattern to execute the binary in a new process
 - Implement a way for the user to examine the exit code of the previously run command / executable, explain how in README

Optional features

4. When a user types a command that is not a built in, and does not start with `/` or `.` / or `~`, search through the directories in the `PATH` variable to find the correct binary to run.
5. When a line ends with `&`, run it in the background / do not wait for it to finish.
6. Implement piping of `stdout` / `stdin`
 - When a line contains one or more `|` split it on those characters, run each command in a separate process and redirect the output of one command to the input of the next