Washington State University Vancouver

Systems Programming - CS 360

Assignment 3

Instructor:
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Overall Assignment - 100 points

Write a program (in C) called `assignment3.c`. You must follow the interface specified below. If no parameter is present, the pathname of the present working directory is assumed (`getcwd`).

Your program will **recursively** traverse the directories and their files, starting with the specified path, and count every regular file that is readable by the current process. Marks are shown below. Any requirement marked with "(Required)" will result in a score of 0 if not implemented.

Program Interface (Required)

```
int readable(char *inputPath)

Where: <inputPath> is a parameter that specifies a path in the directory system.
If no parameter is present (NULL), then your program will operate on the current
working directory. Your function should return the number of regular files that
are readable.
```

Specifications and Restrictions

- (60 points - Autograder) It must pass tests including relative, absolute, or no path specified. The path may be to a directory or file. If the specified path is a file, but not readable, return 0.
- (20 points - TA) Must be recursive.
- (10 points - TA/Autograder) Error catching. You must catch errors and return the negative value of the appropriate error number. This means you will need `errno.h`. Use common sense for errors. For example, I likely don't want to exit and return an error code as soon as I encounter a directory I cannot enter, because there could be others that I can enter. However, if the first path passed to me is unreadable and a directory, then there is nothing to do and an error should be returned. Use `fprintf` to print errors to `stderr`.
- (10 points - TA) Style. Your code must be properly indented and you must use variable names that make sense. Some general comments are also required if your code is not self documenting.
- Ignore symbolic links (why?).
- (Required) Design one source file `assignment3.c`
- Required functions: `chdir`, `getcwd`, `access`, `opendir`, `readdir`, `closedir`, `lstat`. **Note:** I am fine with you using `strcmp`, `strcat`, `strlen`, `pathconf`, and `sprintf` (consult man pages as needed).

What to turn in (on Autolab):

- assignment3.c (no header files)