Test assignment for candidates for the position of C developer intern

The tasks are to be completed on the Linux operating system. Any of the popular distributions will do, for example, Ubuntu (installation instructions: https://ubuntu.com/tutorials/install-ubuntu-desktop#1-overview; it can be installed on a virtual machine, for instance, using the VirtualBox emulator).

You may complete one task in Bash and one of your choice in C.

Task #1

Write a bash script that finds all files containing C programming language texts (the names of such files are determined by the *.c mask) in the working directory and its subdirectories and makes a copy of each file, adding the .orig extension to the file name.

Example: let the working directory be /home/some_project. The structure of the directory and its subdirectories is as follows

```
/home/some_project
        Makefile
        Include
                Common.h
                util.h
        src
                Main.c
                util.c
```

After the script runs, the directory structure will change to:

```
/home/some_project
        Makefile
        Include
                common.h
                util.h
        src
                main.c
                main.c.orig
                util.c
                util.c.orig
```

Additional materials:
Shell Scripting Tutorial
find(1) - Linux manual page

Task #2

Write in C the simplest analog of the ls utility that prints the contents of the working directory and all its subdirectories. The program's output should be listings similar to those presented in the first task. To accomplish this, use the following library functions: opendir(), readdir(), closedir().

Task #3

Write a program that takes 4 arguments: prog1, prog2, prog3, and file, and implements with the standard library and system calls the shell command: prog1 && prog2 | prog3 > file