Program 2

Due Date: May 6, 2004   **100 Points**

This program asks you to determine whether a user can access a file.

Program Function

You are to write a program that takes the name of a user or a group and a file name. The program prints the access permissions that the user has over the file. The permissions for a file are read, write, and execute. The permissions for a directory are list (read), alter (write), and search (execute).

Command Syntax

Your program must be named *perm*, and must accept the following command-line syntax:

> perm [-p] [-g] *user_or_group_name filename*

where *user_or_group_name* is the name of the user or group, and *filename* is the name of the file to be checked.

If the −p option is given, the program is to print the access permissions for each component in the *filename*.

If the −g option is given, the *user_or_group_name* is to be considered a group name, and if no such group exists an error is to be given. If it is omitted, the *user_or_group_name* is assumed to be a user name unless no such user exists, in which case it is taken to be a group name.

Output

Your program is to print the information in the following form when the −p option is not given:

```
user bishop can read and execute the file /bin/sh
```

or

```
group staff can read, write, and execute the file /tmp/xyzzy
```

If the −p option is given, the output should look like:

```
user bishop can list and search the directory /bin
user bishop can read and execute the file /bin/sh
```

or

```
group staff can list, alter, and search the directory /tmp
group staff can read, write, and execute the file /tmp/xyzzy
```

What To Turn In

Turn in your fully commented source code and a Makefile bundled into a *tar*(1) file. When unpacked, the *tar* file should create a directory called *pr2* that contains the program and the Makefile The Makefile should be constructed so that the grader can *cd* into the newly-created directory, type

```
make
```

and then invoke *perm* as described above. If the grader has to do anything more, you ***will*** lose points!

Extra Credit

For group access, check each member of the group to determine if any of them is the owner of the file. Print that user's access separately.