D: File System

Given a series of file system commands and queries, output the contents of the file requested by each query (a query is a filename to be printed out). If the query is invalid (e.g. path does not exist), the text *invalid* must be printed. The following commands must be supported:

- echo "<content>" <file>, Creates <file> with <content> if <file> does not exist. If <file> exists, the contents of <file> will be replaced with <content>. <content> will only contain ASCII numbers, letters, *, ?, <, and >.
- cp <source> <destination>, Copies <source> to <destination>
- mv <source> <destination>, Moves <source> to <destination>
- rm <file>, Deletes <file>
- mkdir <dir>, creates a directory <dir>
- rmdir <dir>, Removes <dir> and all of its contents

<dir>, <file>, <source>, and <destination> components will only contain numbers and letters, with components separated by a /.
cp and mv commands to the same destination will not appear.
Current (.) and parent (..) directory designations will not appear.

Input

There may be multiple test cases. Each case consists of a series of commands followed by a series of files to print. The first line of a case contains two integers C ($0 < C < 100$), indicating the number of commands and Q ($0 < Q < 20$), indicating the number of filenames that will have their contents printed. The next C lines will contain commands to generate the filesystem. The folder that the filesystem starts in may be ignored. In other words, the current directory (./) may be assumed. The next Q lines will contain filenames (or a path & filename, e.g. myfolder/myfile) to print out the contents of a given file. Following the last case will be a line containing just 0 0 (zeroes).

Output

For each case, display the case number on one line, then the query number followed by the file contents, one per line, formatted as in the sample. Output the contents of the file that a query requests or 'invalid' if the file does not exist.

Sample Input

```
2  2
echo "This is foo" foo
cp foo bar
foo
bar
3  1
mkdir dir
echo "Bar" bar
mv bar dir/bar
bar
```

Sample Output

```
Case 1:
Query 1: This is foo
Query 2: This is foo
Case 2:
Query 1: invalid
```