1. A telephone keypad has letters associated with each number (except 0). It is sometimes possible to spell words using the letters that go with a phone number. For example, if your phone number were 427-2243, you could tell people to dial ‘garbage’, which would be easier to remember. (A case-insensitive search using 427-2243 produces only that one match.) How many words in the word list (/usr/local/dict/web2) can you make using your phone number?

What command did you use to find that answer?

2. How many words in the word list can be made up using only the letters in your first name? (A case-insensitive search using ‘homer’ produces 99 matches.)

What command did you use to find that answer?

3. On Elvis, cd into “kilroy/LABTECH/GrepSed. Then answer these questions:

(a) Run these commands:
   cat file1
   sed 's/time/money/' file1
   The first line should not be changed, but is. Write a replacement command which does the same thing as above, but doesn’t incorrectly change the first line.

(b) Run these commands:
   cat file2
   sed 's/war/hell/' file2
   The fourth line (with Mr. Buffett’s name on it) does not change. Write a command which changes that line too.

4. Sometimes, quotations have parentheses around the speaker’s name, instead of setting it off as I’ve done here. For example, the third line would be:

   "No time for lollygaggin’, I gots dawdlin’ ta do!" (Tigger)

Write a sed(1) command you can use for file1 which will change each line to the parentheses format.

Elvis’s webserver logs all connections; the log command apachelog, gives output like this:

```
192.168.1.2 - - [15/Jan/2002:18:51:51 -0400] "GET /~kilroy/other/ HTTP/1.1" 200 5167 "Mozilla/5.0 (compatible; Konqueror/2.2.2; FreeBSD; en)"
```

That’s a lot of information, which is why it’s in a tiny font. What we want is a list, without duplicates, of all the IP addresses (that’s the first field) which have accessed my website, without any of the other information. What single-line shell command will give that list?
5. Here is a section of the New York Times Magazine Crossword that appeared in the Philadelphia Inquirer on 6 November 2005:

Give complete Unix commands that will find words for 1, 2, and 3 down. Also, 3 down is probably either ‘LATT’ or ‘LETT’. Give a command for 17 across which uses this information.

6. The ls(1) command includes an ‘s’ option which causes the file size to be printed out along with whatever other information is requested. Try it out, and then give a command which will sort files in descending order by size; if two are the same size, sort them alphabetically.

7. It is possible to combine the ‘-s’ flag and ‘-l’ flag to ls(1), thus giving output which looks like this:

<table>
<thead>
<tr>
<th>Filename</th>
<th>Size</th>
<th>Owner</th>
<th>Date</th>
<th>Time</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>README</td>
<td>102</td>
<td>kilroy user</td>
<td>Apr 19 2003</td>
<td></td>
<td></td>
</tr>
<tr>
<td>URL</td>
<td>51</td>
<td>kilroy user</td>
<td>Oct 13 12:38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>al-Sahaf</td>
<td>19789</td>
<td>kilroy user</td>
<td>Apr 19 2003</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The blocksize information is the new column on the left. Give a command that starts with ‘ls -ls’, and sorts the files into decreasing order by blocks, where two files have the same blocksize, sort in decreasing order by bytes; if two files match on both those criteria, sort by name.

8. There is no way, with just ls(1), to specify permissions. Give a command which starts with ‘ls -ls’, and sorts as in the item above, but prints only those files which are world writable.