

**CS172A Spring 2015**  
**Homework Number 3.**  
**Due Tuesday, February 24, 2015, 17:00 PST**

Email to me a single PDF, or LibreOffice/OpenOffice, attachment of your homework. Call it hw3.pdf or hw3.odt as appropriate.

This homework has 3 parts. The first part is a configuring your Linux system to send email. The second exercise involves writing a script to create and use a mysql database. The third exercise has to do with packaging.

**Part 1.**

[40%]. Create a new gmail account to use for this exercise. Don't use an existing account. Then configure your system to send email via that account. Test this by sending email to your self with the mail command. This article should be helpful. <https://rtcamp.com/tutorials/linux/ubuntu-postfix-gmail-smtp/>.

After you get it working, show that you can send email from the command line by doing the command: ( date ; uptime; uname -a ; echo <your name> ) | mail -s "from <your name> homework3 q1 \$(curl [http://50.193.39.102:999/\\$\(date +%s\)\)](http://50.193.39.102:999/$(date +%s)))" cs172aspr2015@gmail.com

Of course for <your name> you should put your own name.

**Part 2.**

[40%] Write a BASH script that does the following (refer in book to pages starting on page 456 or use the tutorial:[https://www3.ntu.edu.sg/home/ehchua/programming/sql/MySQL\\_Beginner.html](https://www3.ntu.edu.sg/home/ehchua/programming/sql/MySQL_Beginner.html))

- Creates a mysql database called hw3 and then uses it
- Create a table called COMMANDS, with the columns path VARCHAR(100), size DECIMAL(8), perm VARCHAR(9)
- Loop over a generated a list of all files in /bin, /sbin, /usr/bin, /usr/local/bin, and /usr/sbin that are dynamically linked (use the file command to determine) and from this list extracts the full pathname, their size in bytes, and their permission modes.
- Put these three values in an "insert statement" and in the loop send the statement to mysql to fill up the table. You can use this as a start. You need to change the loop and send the output to the appropriate mysql command

```
for i in *
do
perm=$(ls -ld "$i" |sed 's/^\.//' |sed 's/ .*$//')
size=$(ls -ld "$i" |tr -s " " |cut -f5 -d" ")
p="$i"
echo insert into commands VALUES "( '$p', '$size', '$perm');"
done
```

- After loading up the table, select the five largest files and show the output. The output should be of the form: path, size
- Then, generate a list of all files that have the SUID bit set. The output should be of the form: path, perm

**Part 3. [20%]** Make a new script that uses your part of the script above that generates the list of all files

that have the SUID bit set. Loop over this list and print out which package provided that file. The output should be in the form: path, package-name