

# CAPASet 2001 - A Web Interface for CAPA Tools

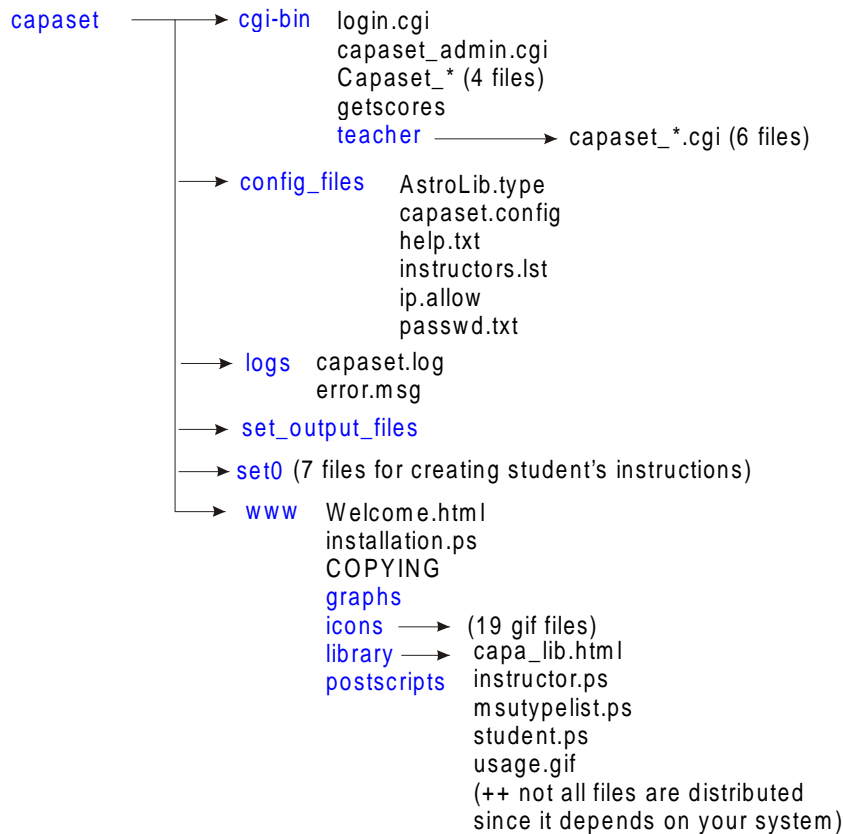
by

Prof. Hon-Kie Ng  
Department of Physics and  
Center for Materials Research and Technology  
Florida State University  
Tallahassee, FL 32308-4350  
ng@phy.fsu.edu

CAPASet is a web interface for CAPA tools. It performs most of the common functions of quizzer, grader and (partially) manager. It is complete in that for routine use of CAPA, i.e., homework assignments, timed exams etc., one does not have to use telnet to access the CAPA tools. CAPASet lets you configure a specific menu for each user based on his/her duties.

It is assumed that your CAPA setup is as described in CAPA 5.1 distribution. I have setup CAPASet as a sub-directory of /home/teacher/PublicWeb. The chart below shows the file distribution and the directory structure. If you have the previous version of CAPASet, the setup has changed.

## CAPASet directory structure



Note: `set_output_files`, `graphs` and `postscripts` directories are distributed empty. They are used to write temporary files. These three directories must be **group writable**.

## Files descriptions by sub-directories and configuration instructions:

When installing *CAPASet* login as teacher unless indicated otherwise. All the programs are written in PERL. Your machine must have Perl installed. I have only tested it using Perl 5.004 running under Red Hat Linux 6.2.

### Steps.

1. Create a subdirectory called /home/teacher/PublicWeb/capaset.
2. Then move the capaset.tar.Z into the capaset directory and unpack the files. It should unfold to the correct subdirectories.
3. Below is a list of the files and their functions and configurations. Edit the files as needed.

### CAPASet:

#### cgi-bin:

1. login.cgi - the front end program. All other programs are called by this program after successful login. You may need to change the path pointing to the perl program (on the first line) for all the perl files. The two most "common" cases are `#!/usr/bin/perl` and `#!/usr/local/bin/perl`. (See Note 1 below.)
2. capaset\_admin.cgi – Program that takes care of administrative things like adding a new user. Both login.cgi and capaset\_admin.cgi must be set to s mode, *i.e.*, `chmod u+s *cgi`.
3. Capaset\_common\_functions, Capaset\_global\_definitions, Capaset\_problem\_common and Capaset\_set\_functions - If your path configurations for CAPA5.1 is different from the "standard" configurations, you need to edit the Capaset\_global\_definitions file. Edit the lines under Global variables and Contact information to suit your system. These lines are near the top of the file.
4. getscores – getscores is an accessory program used by students to retrieve hand graded quiz/miniexam scores. The program is called after you post the scores by clicking on "Post Quiz Scores". If you want to use this program you need to provide a link to the file from the student's access page. It is called by `http://<your machine name>/capa-cgi/getscores`. The program is distributed for completeness and is **not necessary** for *CAPASet* to function.

#### cgi-bin/teacher:

1. capaset\_\*.cgi (8 files) – These are the programs that do the actual work. The files (almost) correspond to the divisions in the main menu. For example, capaset\_roster.cgi handles the Class List menu. In order to keep the files to < 100 k, some larger group of functions are split into two files. For example, capaset\_new.cgi and capaset\_print.cgi go under Problem Set. Again, the first line of each of the files may have to be modified. (See Note 1 below.)
2. All the cgi script files must be set to s mode, *i.e.*, `chmod u+s *cgi`.

**Note 1:** In addition to the first line you may have to change the path for the `$cgi_path` variable. This variable has to be modified for **ALL** the cgi files and is near the top of each file.

**Note 2: Access for other system users.** The above configuration will allow access to all files owned by teacher. To configure capaset to allow access to other user directory create a new directory using the user name under cgi-bin and copy all the files from cgi-

bin/teacher to that directory. Then make sure that the files are owned by that user and the files set to s mode, *i.e.*, `chmod u+s *cgi`. For example, if you have a (system) user called prof then create a prof directory under cgi-bin, *i.e.*, `cgi-bin/prof`. All the files under the prof directory must be owned by prof and set to s mode. You need to login as root to change the ownership.

Directory listing for `/home/teacher/PublicWeb/capaset/cgi-bin`

```
-rw-r--r-- 1 teacher cai 15844 May 13 15:05 cgi-bin/Capaset_common_functions
-rw-r--r-- 1 teacher cai 1542 Apr 20 08:22 cgi-
bin/Capaset_global_definitions
-rw-r--r-- 1 teacher cai 56640 May 13 14:19 cgi-bin/Capaset_problem_browse
-rw-r--r-- 1 teacher cai 15544 May 13 14:27 cgi-bin/Capaset_problem_common
-rw-r--r-- 1 teacher cai 16793 Apr 20 08:22 cgi-bin/Capaset_set_functions
-rwsr-xr-x 1 teacher cai 71933 May 13 14:05 cgi-bin/capaset_admin.cgi
-rwxr-xr-x 1 teacher cai 8427 Apr 20 08:22 cgi-bin/getscores
-rwsr-xr-x 1 teacher cai 34096 Apr 20 08:22 cgi-bin/login.cgi

cgi-bin/teacher:
total 328
drwxr-xr-x 2 teacher cai 4096 May 13 14:50 .
drwxrwxr-x 5 teacher cai 4096 May 14 14:15 ..
-rwsr-xr-x 1 teacher cai 21172 May 13 14:24 capaset_edit.cgi
-rwsr-xr-x 1 teacher cai 42666 May 13 14:33 capaset_grader.cgi
-rwsr-xr-x 1 teacher cai 24867 May 13 14:22 capaset_misc.cgi
-rwsr-xr-x 1 teacher cai 17183 May 13 14:19 capaset_new.cgi
-rwsr-xr-x 1 teacher cai 32229 Apr 20 08:22 capaset_print_set.cgi
-rwsr-xr-x 1 teacher cai 56772 May 13 14:23 capaset_roster.cgi
-rwsr-xr-x 1 teacher cai 53211 Apr 20 08:22 capaset_stat.cgi
-rwsr-xr-x 1 teacher cai 53152 May 13 14:32 capaset_view.cgi
```

### config\_files:

1. `AstroLib.type` - the description for the AstroLib problem library from MSU. This file is distributed as an example on how to configure the problem library that does not have standard names like `typexx`.
2. `capaset.config` - the main configuration file. In it you will find the *instructions for modifying* to suit your environment.
3. `help.txt` - a very rudimentary help file for a couple of *CAPASet* function. (It seems easier to tell the users how to do it and people don't read!)
4. `instructors.lst` - the list of instructors who have or will use *CAPA* in their courses. This file is used for creating class roster. You can add new instructors to the file in exacting the same format as the sample file manually or when login as `caparoot`, click on "Add/Remove User" and complete the box under Add Instructor. This list is different from the `passwd.txt` list in that not all the people on this list have login privileges to *CAPASet*. However, the first entry (first 8 characters) contains the login username if you were to give him/her a user account.
5. `ip.allow` - this file contains the list of ip's and the username. It controls which machine has access to *CAPASet*. However, if you prefer to make *CAPASet* visible to all machines, then delete this file. (Similar in function to `hosts.allow` in Linux.) Edit this file and *put your own machine ip address*. Users' ip addresses are added in by *CAPASet* when you add a user. If you do use `ip.allow` and you find that you need to login from an unregistered computer, then type `http://<server name>/capa-cgi/login.cgi?BROWSERip=<local machine ip address>`. Note it is case sensitive.
6. `passwd.txt` - the password file, the root username is `caparoot` and the password is `2UGrant` (the password is case sensitive).

### logs:

Used to record login logs and error messages produced by the *CAPASet* programs.

**set\_output\_files:**

Empty directory. Course subdirectory will be created under this directory the first time the course requires output to disk. For example, as in preparing to print or viewing a postscript file. Make sure that this directory is *group writable*. Clean out this directory periodically.

**www:**

1. Welcome.html - activated by clicking on the logo after you have successfully login. In later version the link will be a help page.
2. installation.ps - this file.
3. COPYING - license agreement. Please read the agreement. *CAPASet* is distributed under GNU General Public License.

**www/icons:**

1. 19 gif files used as icons by the programs.

**www/library:**

1. *CAPA\_lib.html* - the file called by *CAPASet* when you click on "Library" to display problem libraries on your system. *Edit this file to suit your configuration.*
2. instructor.ps – sample file only, instructions on preparing a problem set for instructors.
3. msutypelist.ps - sample of msuphysicslib types.
4. student.ps - sample file only, instructions on using *CAPA* for students.
5. usage.gif - example for printing course specific instructions for students.

Not all the files linked from the *CAPA\_lib.html* are distributed since the files are system specific. The postscript files are distributed as examples.

**set0:**

In addition to the above files, the following seven files are included for completeness.

1. set0.qz
2. HWTopInstructions
3. login.txt
4. prefix.txt
5. baseunits.txt
6. derivedunits.txt
7. credit.txt

They are used to produce the instructions on *CAPA* usage for students; activated when you click on "Print Usage Info". set0.qz should be in all the course directory from which you plan to print the student's instructions. *Edit the files to suit your environment.* In each course records sub-directory, *date0.db* and *set0.db* must exist. Else, you will not be able to print for the whole class.

**Additional external files**

*CAPASet* uses the following two modules, CGI.pm and GD.pm. CGI.pm is distributed with Perl 4.0(?) and up. However, you may need to download GD.pm. The most recent version can be obtained from <http://stein.cshl.org/WWW/software/GD/>. My version produces GIF files though the later version produces PNG files. The copy of GD.pm that produces GIF files is still available on the web. As far as I can ascertain the function calls are identical, only the output format is changed. PNG format is supported by

Netscape 4.0 and up and IE 4.0 and up (I think.) To ensure maximum compatibility, I chose to use the GIF format. (The last version that produces GIF files is 1.19. Subsequent versions produce PNG files.)

## Modifications to HWTtop, capa.config and srm.conf (or httpd.conf)

The following files need to be modified for *CAPASet* to work properly.

### 1. HWTtop

*CAPASet* uses the configurations from HWTtop and *CAPA.config* as much as possible. Due to my ignorance (in the beginning), the following two lines need to be added to HWTtop for *each* course.

```
/LET forcepagebreak=tex("\newpage \strut ", "")
/LET oddcols=stdendline+forcepagebreak
```

If you wish *CAPASet* to provide email links at the beginning of each problem set on the web, then add

```
/LET emailto=web
```

*CAPASet* looks for `/LET emailto=web` each time you create a new `class1`. It updates the instructors email links for that course. It automatically fills in the rest based on whom you check as the instructors/TA for the course when you click on "Create Roster". Then somewhere at the beginning of each problem set (`setx.qz`) insert this line. This can be done automatically by adding the line below in HWTtop.

```
/DIS (emailto)
```

This link is also used by `getscores` if you choose to use the program.

### 2. capa.config (may not have to modified)

Make sure that the print command lines in `capa.config` include the absolute path. For example,

```
LprOneSided_command = "/usr/bin/lpr ..." instead of
LprOneSided_command = "lpr ..."
```

### 3. srm.conf or httpd.conf

Add/Edit the following lines to `srm.conf` or `httpd.conf` (typically located in `/etc/http/conf`). You need to login as root to edit the file.

Under Aliases add:

```
Alias /capaset/ /home/teacher/PublicWeb/capaset/www/
```

Under ScriptAlias:

```
ScriptAlias /capa-cgi/ /home/teacher/PublicWeb/capaset/cgi-bin/
```

After editing the conf file you need to re-start `httpd`.

## Differences w/ telnet version

1. Average tries are calculated differently from grader. If a student does not submit any try for a problem but does submit for other problems, the student's entry is recorded as valid record. The non-submission is then counted as 0 try rather than null try. For this reason you may see some problems with an average try of less than 1.

## Notes on Running CAPASet

1. At your browser URL, type <your.machine.name>/capa-cgi/login.cgi. Enter caparoot for username and 2UGrant for password. You can change your password by clicking on "Edit Profile".
2. New users are added by clicking on "Add/Remove User". The permission settings refer to the options you want to give that user. For example, if a course is taught by multiple instructors, it is preferably to give only one person the ability to "Create/Edit roster" to avoid the possibility of accidentally erasing the classl file.
3. As root you can let other users add new users but the permission settings will never be more than that user and the account expiration date will be the same as the user. This option is desirable since for a course w/ large number of instructors you can delegate the responsibility of adding new users to the person in charge of *CAPA* for that course.
4. The following files are modified by *CAPASet*: classl, setx.qz, HWTTop (only if emailto is enabled), datex.db and setx.db.

## User Notes:

1. *CAPASet* requires a postscript viewer on your browser machine in order to take full advantage of its capabilities.
2. When going through a few iterations of preparing a problem set, your postscript viewer may display the older copy. If this occurs, you need to set the select "Check newer version every time you visit the page" under IE Internet Options/General/Settings. If you are using Netscape, there is a similar option, Edit/Preferences/Navigator/History.
3. When you create/edit a problem set using the "Form Format", the "Std. Header" is read from capa.config every time. If you wish to manually change the header or keep your modified header, then use the "Quizzer Format".

## Distribution

The *CAPASet* programs are copyrighted by H. K. Ng and are distribution under GNU license. See <http://www.gnu.org/copyleft/gpl.html>. If you choose to use *CAPASet*, the copyright notices on the login page and menu selection page must not be removed.

**Warranty:** NO WARRANTY, EXPRESS OR IMPLIED, TO END USER OR ANY OTHER PERSON OR ENTITY IS GIVEN. SPECIFICALLY, NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF *CAPASet* SOFTWARE OR DOCUMENTATION IS PROVIDED. I WILL NOT BE LIABLE FOR SPECIAL, INCIDENTAL, CONSEQUENTIAL, INDIRECT OR OTHER SIMILAR DAMAGES, EVEN IF AFTER BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. *CAPASet* IS DISTRIBUTED WITHOUT ANY USER SUPPORT.

## Changes to Version 2001

1. This version supports multi-users. Having said that, it works best under a single (Linux) account. Since all the functionality can be done through the web, it should not be a problem.
2. Supports different paths for problem libraries.

3. Subjective grading has been added. Click on “Hand Grading”, then select the set for which you have a subjective problem. Click on “Retrieve Record”. It does not matter which student you select. If the student has submitted an answer for the subjective problem, then a link (“Subjective Grading”) will appear next to the problem number. If no answer was submitted the link will say “Search for Next Student”.
4. Fix a number of display problems with tables when used with IE.
5. Changed e-mail program from mail to sendmail.

#### **Changes to Version 2002**

1. Add ability to create and edit problems online.
2. Remove symbolic links when browsing. File is now sent directly to the browser via `capaset_2client.cgi`.

#### **Known problems with CGI.pm and IE 5/5.5 (and possibly later versions).**

1. CGI.pm version 2.76 does not seem to handle the cookies properly. I am not sure about the versions between 2.46 and 2.76. However, version 2.46 works fine and the modular version 3.01 also works.