The University of Calgary

Programming Contest Control Centre

Contest Administrator's Manual

Revision 1.0 (2007-09-04)

System Requirements

The programming contest control centre requires a host with a web server running PHP 4.4 or higher. In addition, the web server must have .htaccess authentication enabled and correctly configured to ensure that the judge pages are password secured.

This software has only been tested and used on UNIX systems (including Mac OS X), and some of the shell scripts and permissions settings require a UNIX environment. However, it is conceivable that the control centre software may be tweaked to run on other platforms.

For information on how to configure a Mac OS X installation to run the control centre, please refer to Appendix A.

Installation

To install the contest control centre, unzip the archive into the directory of the host system where the contest pages will be served from. Your web server should be configured to serve the files in this directory at a URL accessible to the contestants. We will refer to this location as *http://<contestURL>/* in the remainder of this document.

After unpacking the archive, go into the *judge* directory and run the *setup* shell script. This script will ensure all files and directories are set to the correct permissions for the contest control centre to run. You will also be prompted to create a password to use when accessing the contest judge pages from the web.

The installation can be quickly tested by going to the URL *http://<contestURL>/judge/jtest.php*. This page should do a rapid sanity check to make sure key components are working, and report the status back to you.

It is recommended that a fresh installation of the control centre is used for every contest that is run. In other words, recycling an old contest to run a new contest in the same location by reconfiguring the start time, problems, etc. is highly inadvisable.

A Note on Security

The contest control centre persists contest information to files and other created directories in the installation directory. Thus, it will need to have appropriate permissions to modify files and create directories. On most hosts, this will mean that certain files and directories must be world writeable in order for the software to function.

On a closed server system, this does not pose an issue. The control control centre was designed so that critical files cannot be read or modified externally through the web interface (though no guarantees!). However, on a shared server system, especially one where contestants may have access to the location on disk where the contest files reside, care should be taken not to advertise or disclose the location of these files.

Contest Configuration

A new programming contest can be configured by going to the URL *http://<contestURL>/judge/jconfig.php*. You will be required to authenticate by entering the user "judge" and the password created during the installation step.

Contest & Problem Set

The form on the first half of the configuration page allows you to the contest date, length, and problem set. After completing this information, you must press the "Save Contest" button to commit the new settings.

When specifying the contest problems, the "URL" field dictates which file a particular problem links to, and ultimately what the contestant may sees or downloads. Files uploaded will automatically be renamed to match to the URLs specified, so be sure to have the correct extensions in the URL field for the file types used. New files with the same name will replace old files, but the uploaded files will never be explicitly removed from the server, so that it is unnecessary to re-enter all the file uploads every time a change is made to the contest settings.

You may also wish to upload a ZIP archive of files in addition to or instead of the individual problem statement files. The uploaded ZIP archive will be unpacked into the directory where the problem statements are served from, then deleted. This can be useful if your HTML problem statements require supporting image files, or if you simply wish to save time during configuration by uploading all problem statements in a single file. However, it is important to note that this ZIP unarchiving feature may not be supported on all systems.

Alternately, you may choose to edit the contest configuration file (*judge/config.txt*) directly rather than use the web interface to configure the contest and problem set. Be sure to adhere to the existing format if you do so. Problem statements and supporting files may also be placed directly into the *problems* directory.

Teams

The form on the latter half of the configuration page allows you to configure the teams that will participate in the contest. After completing this information, you must press the "Save Teams" button to commit your changes.

The "Team ID" and "Password" fields specify what the contestants will use to log in to the system. Submissions sent by a team will be stored on the server under a directory named with their Team ID, so you must choose Team IDs that are also valid directory names on the host system. "Official" teams will appear in bold typeface on the scoreboard, while all other teams appear with regular typeface. The "Team Name" specifies the name shown on the scoreboard for a particular team, and defaults to the Team ID if left blank. Optionally, the individual members of a team can also be specified, and will appear at the bottom of the scoreboard.

Alternately, you may choose to edit the team configuration file (*judge/teams.txt*) directly rather than use the web interface to configure the contest and problem set. Be sure to adhere to the existing format if you do so.

Running a Contest

When the contest configuration is complete, refer all contestants of your contest to your main contest URL (*http://<contestURL>/*). The contest control centre uses the system clock on your web server, and will automatically start the contest and begin accepting submissions at the predetermined contest start time. Likewise, the contest will automatically terminate when the contest end time is reached.

Contestants (clients) may connect to the contest host using any standard web browser. The only requirement is that cookies are enabled. Refer clients to the "Help" page for instructions on how to use the contest client pages.

Judging

The judge pages of the control centre can be accessed at *http://<contestURL>/judge/*. If .htaccess authentication is correctly configured, you will need to authenticate with the user name "judge" and the password specified during installation before you can view the judge pages.

Problem solutions submitted by contestants will appear under the "Judgements" page, where you may download the source code, make a judgement, and select a verdict. Any unjudged submissions will be highlighted in red. When clicking on a source file, you will be prompted to save it under a generic, preselected name, care must be taken about (un)intentionally replacing previous submissions from the same or different teams. However, all historic submissions from all teams are kept on the server, so that downloading a source file of a previous submission of the same problem by the same team will still yield the correct file. Also note that sources files submitted in different languages have their appropriate file extensions.

After entering your verdict(s), press the "Judge Them!" button to commit the judgements. The judgements page will automatically poll for and inform you of new submissions in red text near the top of the page. When you are ready, refresh the page (using your browser's refresh or otherwise) to see the new submissions.

The "Clarifications" page allows you to respond to clarifications requests submitted by the contestants, and to communicate new clarifications or messages to the contestants. New clarifications are highlighted in red and unanswered clarifications highlighted in yellow. You may edit both the question and the answer when responding to a clarification. Be sure to check the box in the column labelled * after responding, or else the clarification will not be displayed to the contestants. Press "Answer the Questions" when done. Unlike the judgements page, this page does not poll for new clarification requests, so you should occasionally check for new clarifications as you judge.

The “Scoreboard” navigation tab brings you to the judge scoreboard. This scoreboard differs from the main scoreboard in that it is immune to the scoreboard freeze. The “Configuration” navigation tab takes you to the contest configuration page described in the previous section. Finally, the “Contest Page” tab will open the main contest page in a new window, and is provided as a convenience for the judge to check the configuration, etc.

Advanced Features

The programming contest control centre is also capable of “replaying” a contest that happened in the past. Furthermore, contestants can submit solutions to problems during this replay, so that a competition can be set up against virtual or “ghost” teams from the past.

To enable this feature, simply add all the entries from a previous judgements file to the judgements file (*judge/judgements.txt*) of the new contest. Each line in the judgements file contains the time, team, problem, language, filename, and verdict of a submitted run. Clearly, the format of the old, imported entries must match those generated by the control centre exactly, so care must be taken if this information is to be imported from another contest system. However, the teams in the imported entries need not appear in the teams list for your contest — any unknown Team IDs will simply be treated as unofficial contestants.

During the contest, none of the previous judgements will appear on the scoreboard until the actual time the submission was made by the virtual or ghost team. Judgements on submissions made by any current contestants will be appended to the modified judgements file (so be sure the web server still has write access to judgements.txt).

Several programs used in the past for “reverse engineering” contest scoreboards of various types exist in the *ucpccc* directory. However, this stuff is *undocumented* and *unsupported*, so use at your own peril!

About the UCPCCC

The University of Calgary Programming Contest Control Centre was developed beginning in 2005 for the purpose of training the University of Calgary and other Canadian programming teams. It was designed as a super light-weight, easy to use, and universally accessible front end for running small programming contests.

If you have any questions, comments, or suggestions about the system, please contact the author, Sonny Chan, at sonnyc@gmail.com. The author would also like to thank Kelly Poon and Allan Hart for their contributions to the development of the contest system, as well as numerous others involved the past and present UofC programming contest teams for their support and testing of the software.

Appendix A: Enabling PHP & .htaccess on Mac OS X

This software was primarily developed on the Mac OS X platform, and as it turns out, it is quite easy to get a web server running with the prerequisites for the contest system. This little addendum serves to serves to preserve these tidbits of configuration information, and also to assist any who happen to be in the same boat. The steps are as follows:

1. Editing the Apache web server configuration file */etc/httpd/httpd.conf* to enable PHP. Be sure to edit the file super user, or else you may not be able to save it. Search for and remove comments from the following lines so that they look like this:

```
LoadModule php4_module        libexec/httpd/libphp4.so
AddModule mod_php4.c
```

2. Configure proper handling of .htaccess files by changing the override setting in the httpd.conf file as follows:

```
# This controls which options the .htaccess files in directories can
# override. Can also be "All", or any combination of "Options", "FileInfo",
# "AuthConfig", and "Limit"
#
    AllowOverride All
```

3. If you will be serving the files from the Sites folder of a user account, you must also enable .htaccess handling for that user. Do so by setting “AllowOverride AuthConfig” the specific *.conf* file for that user in */etc/httpd/users/* as follows:

```
<Directory "/Users/<user>/Sites/">
    Options Indexes MultiViews
    AllowOverride AuthConfig
    Order allow,deny
    Allow from all
</Directory>
```

4. Turn on (or restart) the web server by going to “Sharing” in System Preferences, then checking the box labelled as “Personal Web Sharing” service. Now you’re ready to go!

Note that this information is current as of version 10.4 of Mac OS X, but may change in the future. Also refer to http://www.clagnut.com/blog/350/ for information on enabling .htaccess on Mac OS X.