

# Having Your Own Automatic Judge: EEWS

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**Abstract.** In this poster we present the way to install any personal computer under linux, a shareware software developed by the University of Valladolid, into the frame of the European project EduJudge. It will facilitate the knowing and use of automated judging, probably the most powerful method to develop the programming skills of the students.

**Keywords:** automatic judge, evaluation engine, web services.

## 1 Introduction

EEWS stands for "Evaluation Engine Web Services". It is a UNIX system service (a so called daemon) that evaluates the submissions received by the Learning Management System (LMS) and returns a verdict on the proposed solution and some feedback. Most of the data returned is produced according to the requirements made by the Learning Object (LO) for which the submission was made. Being a system service it has no Graphical User Interface (GUI) on its own, but an external multiplatform utility is provided for configuration and monitoring, called EEWSGUI. All the interaction between EEWS, the LMS and GUI is done using SOAP-based protocols, allowing the detachment and substitution of any of the modules easily.

## 2 Software Requirements

As EEWS is distributed in source code form; it must be compiled prior to install it into the system. The libraries required for this process are listed in Table 1.

**Table 1.** Libraries required for installing EEWS

Software Package	Version	URL
Qt Toolkit	>=4.5.3	<a href="http://qt.nokia.com">http://qt.nokia.com</a>
gSOAP	>=2.7.12	<a href="http://gsoap2.sourceforge.net">http://gsoap2.sourceforge.net</a>
libqxt	>=0.5.0	<a href="http://libqxt.org/">http://libqxt.org/</a>
QuaZip	>=0.2.3	<a href="http://quazip.sourceforge.net/">http://quazip.sourceforge.net/</a>
QtService	>=2.6	<a href="http://qt.nokia.com">http://qt.nokia.com</a>
sqlite (or mysql)	>=3.0.0	<a href="http://www.sqlite.org">http://www.sqlite.org</a>
mysql (or sqlite)	>=5.0.0	<a href="http://www.mysql.org">http://www.mysql.org</a>

You must follow the installation instruction of each package. But keep in mind that it is very likely that your Linux or UNIX distribution already provides some or all of these packages, so it is important to check it before getting into downloading and installing madness.

### 3 Downloading and Preparing the Source Code

Once your system is ready to proceed with the EEWS installation, you must download the source code from the EduJudge website.

After downloading, you probably obtained a file with the name `eews-x.x.tar.bz2`, where `x.x` is the downloaded version. Put that file in a temporary directory and unpack it with the following command:

```
$ tar xvf eews-x.x.tar.bz2
```

A directory containing the source code will be created with the name `eews-x.x`. Position yourself inside that directory and go to the next section.

### 4 Compiling

Once you are located in the source code root directory, execute the following command:

```
$ qmake
```

The Qt Toolkit can generate the `Makefiles` for your system. Once the files generation has finished, execute the following command:

```
$ make
```

It will start the compilation process. This stage will take a few minutes to complete. After the wait, the software will be ready for installation. It is very important that the next step is done with superuser privileges. You can have that privileges either login into your system as "root" or using a tool like `sudo`. Then, as superuser, execute:

```
# make install
```

The EEWS will be installed in default system locations.

### 5 Initial Configuration

Although every EEWS parameter can be configured using the GUI tool, an initial configuration is needed. The `config` file is located at `/etc/qt4/eews/eews.conf`. You must edit this file using your favourite editor to set the initial parameters. A `config` file example is:

```
[%General]
PluginDir=/usr/share/eews/plugins
SvcPort=8080
AdmPort=8090
AdminEmail=your@email.here
Owner=Your organization here
DBDriver=sqlitec
DBHost=localhost
DBPort=99
DBName=/var/edujudge/eews.sql
DBPrefix=eews_
DBUsername=username
DBPassword=password
loCacheSize=512
loCacheExp=86400
loCacheDir=/var/edujudge/cache
WorkDir=/var/edujudge/tmp
CQSlots=5
JQSlots=5

[ICPC]
Autoload=0

[CAL]
Autoload=1
```

There is no actual need of completing all the configuration items at this point. You can set just a few of them and finish the process using the GUI tool at a later time. The "must have" options are:

- **PluginDir:** The directory where evaluation plugins reside. Usually it will be `/usr/share/eews/plugins`.
- **SvcPort:** The TCP port where the public side (i.e. the evaluation web-services) will be waiting connections.
- **AdmPort:** The TCP port where the administration webservices will be waiting connections.
- The optional parameters are:
- **AdminEmail:** The e-mail of the server administrator. It is a free text field so you can put here what you feel is best, although a validation of the e-mail is done.
- **Owner:** Just a reference to the organization that is running the server.
- **DBDriver:** The driver to access the database. Valid values are `sqlite` (recommended) and `mysql`.
- **DBHost:** The hostname or IP address where the database is running. Only relevant if you are using `mysql`.

- `DBPort`: The TCP port of the database. Only relevant if you are using `mysql`.
- `DBName`: The name of the database. If you are using `sqlite`, it is the filename where the data will be stored.
- `DBPrefix`: The prefix of the tables in the database.
- `DBUsername`: The username for accessing the database. Only relevant if you are using `mysql`.
- `DBPassword`: The password for the username in the previous item. Only relevant if you are using `mysql`.
- `loCacheSize`: The size in megabytes assigned to the LO cache.
- `loCacheExp`: The expiration in seconds of the objects stored in the cache.
- `loCacheDir`: The directory to store the LO cache objects.
- `WorkDir`: The temporary directory where the evaluation process will happen.
- `CQSlots`: The number of simultaneous running processes allowed in the "Compile Queue".
- `JQSlots`: The same but for the "Judge Queue".

The last two parameters are plugin specific and must be set using the GUI tool.

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## References

1. EduJudge: Integrating On-line Judge into Effective E-learning (European project), <http://www.edujudge.eu>
2. UVa Online Judge: Online Judge and Contest system developed by the University of Valladolid (Spain), <http://uva.onlinejudge.org>