FreeHEP 2000

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Abstract

FreeHEP is a database containing a collection of software packages and programs that are useful in high-energy physics and related fields. FreeHEP was one of the first databases interfaced to the web back in 1992, but unfortunately it has become old and rusty over the years. In these days of increasing reliance on open source software, and many small projects written for one experiment but useful for many experiments, the need for a database like FreeHEP seems more vital than ever. Hence FreeHEP 2000, an attempt to revive the old FreeHEP with an updated web interface and methodology and improved tools for ensuring the continued accuracy of the information. FreeHEP 2000 can be found on the web at http://www.freehep.org.

keywords   Software, Servlets, Java, JDBC, Database

1. History

The FreeHEP database was conceived in 1991 at the HEPLIB workshop at the SSC with the goal of making it easier for High-Energy physicists around the world to share software and program development techniques. The FreeHEP database was implemented early in 1992 using the newly invented World Wide Web and the SPIRES database at SLAC plus an anonymous FTP site at Florida State University.

The original database was very successful and soon grew to contain several hundred entries. The original implementation was one of the first examples of a database interfaced to the web, but over time the advantage of being one of the first web-database interfaces has transformed into the disadvantage of being one of the most obsolete web-database interfaces. In particular the mechanism for updating the database has proved somewhat cumbersome, and its reliance on a few individuals to do the work of updating the database has meant that much of its content has become outdated.

FreeHEP 2000 is an attempt to update the FreeHEP database to use the latest web technologies, and at the same time to change the way the database works to make the maintenance of the data more distributed and so hopefully able to maintain its relevance over time.

As we see reusable, open source software becoming a more important component of HEP technology we believe that a forum for exchange of information will become increasingly useful over time.

2. Goals

The goals of FreeHEP 2000 are to provide a central database where anyone in the HEP community can register software they have created or found useful. Commercial software can be listed in the database provided it is "sponsored" (*i.e.* entered and maintained) by a member of the High Energy Physics community. Entries are not restricted to large software packages but may include simple classes or subroutines of general interest, algorithms, methodologies *etc*.

The database will contain the following information on each software component:

Field	Description
Name	Name of the program or package
Version	Most recent version number
Title	Short (one line) description
Authors	List of authors
Maintainers	Record maintainer(s)
Abstract	Longer description of the package.
Keywords	Keywords (used for searching)
Sections	Section(s) under which this entry will be listed.
License	Commercial, GPL, etc.
Requirements	Compilers, OS, etc required to use package.
Cross-References	Cross-references to other entries in the database.
Home Page	Link to home page for package
Documentation	Link to documentation page for package
Download	Link to download page for package
Creation Date	Date when the record was created
Last Modified Date	Date when the record was last updated or checked for accuracy.
Active Flag	Flags if this entry is active (see text)

A web interface will allow addition of new packages and maintenance of existing entries. During the original registration of a piece of software one or more maintainers must be specified, and these maintainers will be able to update the information at any point in the future, or transfer maintenance responsibilities to someone else.

FreeHEP will also allow entries to be imported or exported using XML. One use of this feature will be to allow automatic import of sets of entries from other repositories, such as Fermitools[1]. Entries imported in this way will be marked in the database as read-only and will not be modifiable via the web interface. Similarly, entries in the FreeHEP database will be exportable as XML so that other databases of academic software will be able to maintain mirrored entries. The XML import/export capabilities will also enable the setting up of FreeHEP mirror sites elsewhere in the future if this proves useful.

In order to ensure that entries are kept up-to-date a last modified date will be kept for each entry. In order for an entry to remain "active" it will need to be updated, or at least checked for accuracy, at least once a year. When an entry is about to become marked as inactive an automatic e-mail will be sent to the maintainer(s), at least one of whom will have to respond by confirming they have reviewed the entry in order for the entry to retain its active status. Entries marked as inactive will not show up in directory listings unless the viewer explicitly asks to see inactive as well as active entries.

In addition automated weekly checks of all web links registered in the database will be performed and if a particular link is found to be non-functional on several successive weeks a message will be sent to the maintainer(s) and the link will be removed from the database.

3. Interest Areas

In addition to the basic database FreeHEP 2000 will also feature areas dedicated to specific areas on interest, to encourage dissemination of information and collaboration. The first such area will

be the Java interest area, and will include a home page, mailing list and a CVS repository for people to use as a sandbox for developing code and ideas. The initial interest area is located at http://java.freehep.org. Anyone interested in setting up additional interest areas should contact the authors of this paper.

4. Implementation

The web interface to the database has been implemented using Java Servlets[2] and JDBC[3]. The initial implementation uses a Microsoft Access database, Microsoft Internet Information Server under Windows NT, and the JRun servlet engine[4]. The advantage of using Java Servlets and JDBC is that the application specific code can be ported without change to use other databases or web servers.

We have used the freely available XML parsing engine implemented in Java[5] from IBM for parsing of XML files. The XML interface uses the Document Object Model (DOM) [6] interface defined by the World Wide Web consortium thus ensuring it will be easy to switch to some other XML implementation in future if the need arises.

5. Availability

The initial implementation will be accessible at www.freehep.org early in 2000. We encourage everyone to try using the database and to give us feedback on what additional features would be useful.

References

[1] Fermilab Software Tools Program - http://www.fnal.gov/fermitools/fermitools_home.html
[2] See the Java Servlet specification - http://www.javasoft.com/products/servlet/2.2/
[3] See the Java Database Connectivity (JDBC) specification -
http://www.javasoft.com/products/jdk/1.3/docs/guide/jdbc/spec2/jdbc2.1.frame.html
[4] Allaire JRun Servlet Engine - http://www3.allaire.com/Products/JRun/
[5] XML4J - http://www.alphaworks.ibm.com/tech/xml4j
[6] W3C DOM specification - http://www.w3.org/DOM/