

Jaguar/JaguarPF Optimized Library Interface (JOLI)

Yashema Mack

Florida Agricultural and Mechanical University

Research Alliance in Math and Science

National Center for Computational Sciences, Oak Ridge National Laboratory

Mentor: Dr. Rebecca Hartman-Baker

http://wiki.ornl.gov/sites/rams09/y_mack/Pages/default.aspx

Abstract

- Entails the creation of a web interface to efficiently access databases that document the libraries National Center for Computational Sciences (NCCS) users link against
- Includes information sought from the database such as:
 - Popularity of libraries and usage rate of specific libraries
 - Number of users still engaging in use of deprecated packages, and their identities
 - Versions of software users are accessing and utilizing
 - Comparisons of usage rate of NCCS-installed software versus the same packages provided by the vendor

Methodology

- Located table containing linklines
- Queried database and produced output from linklines
- Created query producing results based on output required
- Learned fundamentals of vi and PHP
- Produced code generating most and least frequently used libraries by users
- Created table to view results formatted based on requirements
- Created pages for web interface

Owner	Package	Version	Library	Number of Users	Build
sw	petsc	3.0.0	libpetscuser.a	0	nat5
sw	hpcxtoolkit	4.9.2	libhpcx	0	nat5
opt	ppg	8.0.3	libppgbase.a	0	*
opt	ppg	8.0.3	libppgbase.a	0	*
sw	lapack	3.1.1	liblapack.a	0	nat5
sw	parmetis	3.1	libparmetis.a	0	nat5
sw	parmetis	3.1	libparmetis.a	0	nat5
opt	st-ibmci	10.3.2	libst_ibmci_quadcore.a	0	*
sw	lapack	3.1.1	liblapack.a	0	nat5
opt	st-tools	ppg	libppg.a	0	*
sw	hpcxtoolkit	4.9.2	libhpcx	0	nat5
sw	superlu_dist	2.2	libsuperlu_dist_2.2.a	0	nat5
opt	ppg	8.0.3	libppg.a	0	*
sw	ndss	0.9.9	libndss.a	0	nat5
opt	ppg	7.2.5	libppg02.a	0	*
opt	ppg	7.2.5	libppg02.a	0	*
opt	ppg	8.0.3	libppgmod_prof_g.a	0	*
sw	fftw	3.1.2	libfftw.a	0	nat5
sw	g-netcdf	1.0.2	libnetcdf.a	0	nat5
sw	petsc	3.0.0	libpetscuser.a	0	nat5
opt	ppg	7.2.5	libppg02.a	0	*
opt	st-tools	craypat	lib_pat_inf.a	0	*
sw	petsc	3.0.0	libpetscuser.a	0	nat5
opt	st-tools	craypat	lib_pat_inf.a	0	*
opt	st-tools	craypat	lib_pat_inf.a	0	*
opt	fftw	2.1.5	libfftw_mpi.a	0	*
opt	cray	hdf5	libhdf5.a	0	*
opt	st-tools	craypat	lib_pat_inf.a	0	*
opt	st-tools	ppg	libppg.a	0	*
sw	trilinos	9.0.2	libtrilinos.a	0	nat5
sw	trilinos	9.0.2	libtrilinos.a	0	nat5
opt	ppg	default	libppg02.a	0	*

Figure 1. Output of a query (Least Frequently Used Libraries).

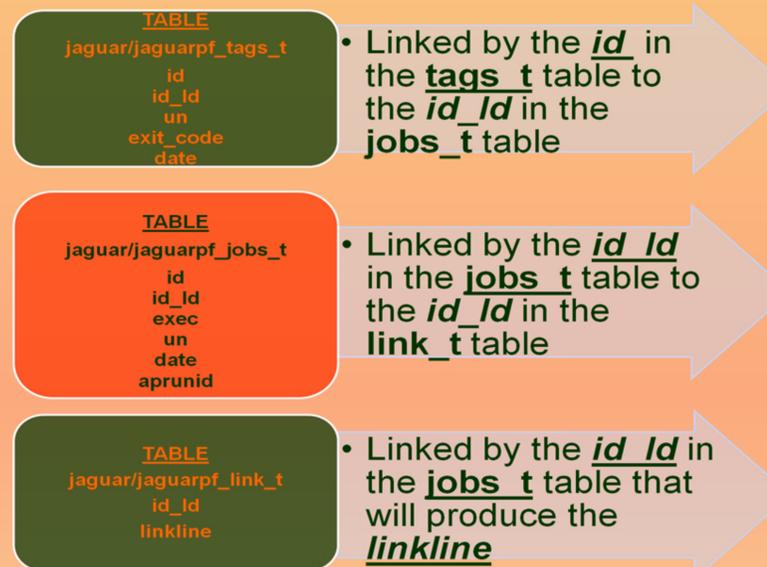


Figure 2. Diagram of the relationship between tables in the database.



Figure 3. Main page of the Jaguar/JaguarPF Optimized Library Interface.

Background

- Records what libraries users link against and make decisions related to software library management on NCCS supercomputers
- Contains no simple interface to obtain library usage data
- Administers shortcomings due to difficulty in obtaining useful information from the databases without an interface

Expected Results

- Produce output of statistical analysis reports on library usage, so that NCCS can easily obtain data necessary for making decisions
- Retrieve information from database including popularity of libraries and usage rate of specific libraries
- Discover number of users still using deprecated packages, their identities, and which versions of software users are accessing and utilizing
- Initiate comparisons of usage rate of NCCS-installed software versus same packages provided by the vendor (e.g., BLAS)

Future Research

- Create automatic update exceptionlist.txt file every time a linkline is established that doesn't fit required criteria
- Hardcode package lists to generate packages users access, versions they access, and identity of users accessing them
- Create a web interface to access library databases for other machines such as Smoky, Eugene, Lens, Rizzo, and Chester