I. Introduction

Databases can be used to hold the results from experiments, keep a record of the properties of materials in a system, and hold theoretical values in a convenient way. The database that required additional functionality was the Jefferson Lab Calibration Constants Database (CCDB) which is a framework to store and manage calibration constants for experiments in high energy and nuclear physics.

II. Objectives

There were two main functions added to CCDB one was a notification service, alerting members of the calibration team that a table in one of their responsible directories had been updated or created in the last twenty-four hours. The second is an Integrity Maintenance project that will allow users to select a table by name and compare values in the table to them in previous versions of the table. These additional functionalities are needed to improve CCDB for the scientists at Jefferson Lab.

III. Approach

Creating the programs required a firm understanding of Java and MySQL. These projects also demanded a grasp on the tables in CCDB and how the tables are connected with constant sets, and how these constant sets are connected with one another. These were minimum requirements to start creating these programs.

IV. Expected Results

The functionality added is needed to maintain the integrity of the database. CCDB currently has approximately 2800 different records, and these records need to be kept up to date, and the results need to be studied. Studying the results of experiments and seeing how these experiments’ data changes is the reason CCDB exists. Adding crucial functionality is vital to the scientists using the database.

V. Conclusion

The notification service has been successfully implemented into the database. Currently it runs every twenty-four hours to check if anything has been changed in CCDB. The integrity maintenance program properly compares tables in the database with previous versions. A few quality of life additions are being added before it will be used across Jefferson Lab.

Citations