MySQL Interface for Parity

R. Suleiman

Hall A Data Analysis Workshop

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Introduction

- The database is implemented in MySQL

  http://www.mysql.org

- C++ class (TaMysql) written in ROOT to interface with the database

  http://root.cern.ch

- Script to generate ascii files from the database, and one to do the reverse, generate a database from the file:

```
> ascii2db.pl

> db2ascii.pl run=100
```

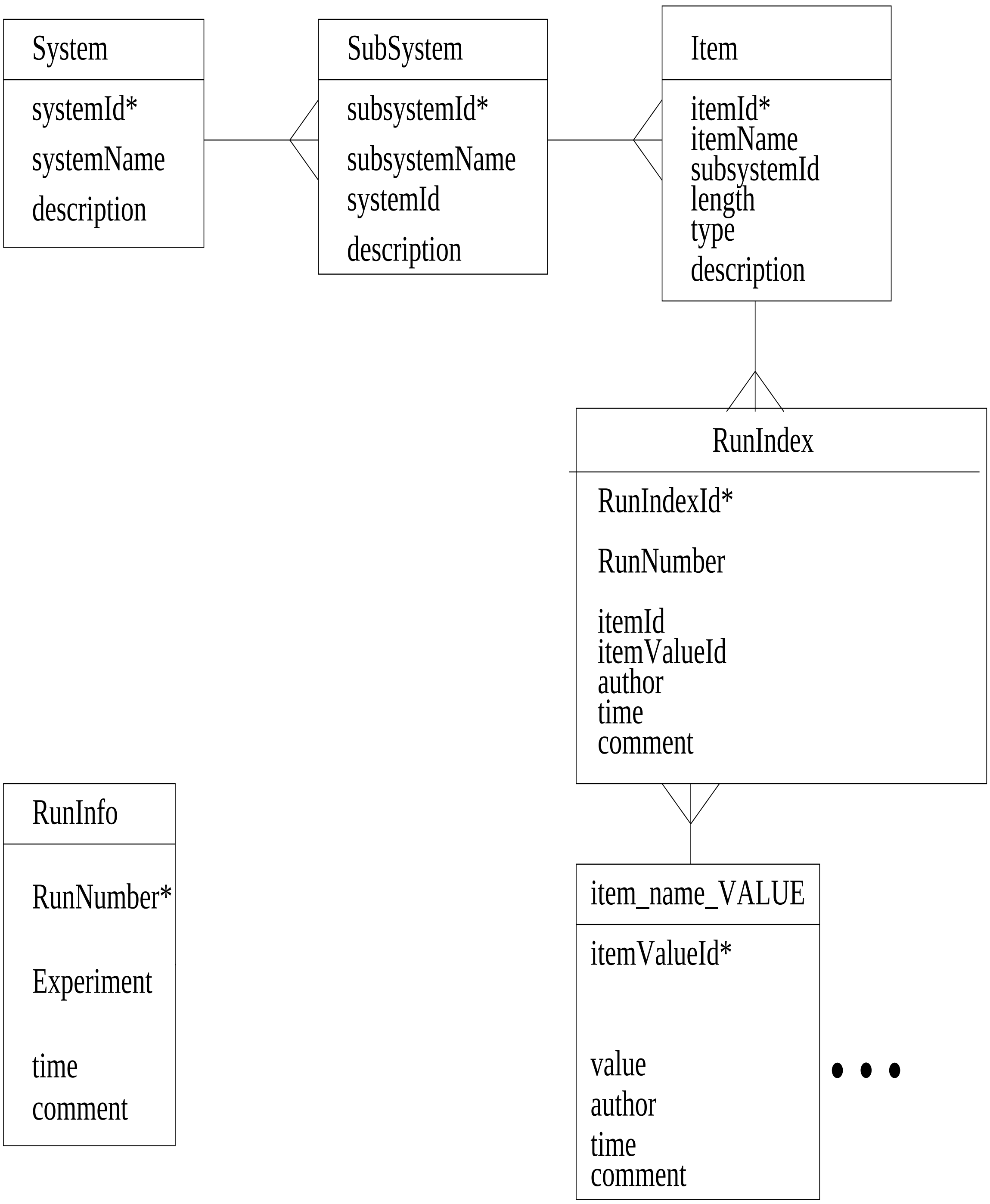
Features

- For the ”Pan” code, the database contains:
  1. Logical Parameters that affect program flow
  2. DataMap (correspondence of ’keys’ to event buffer)
  3. Calibration Parameters used by program
  4. Cuts and the event intervals associated
- Run indexed lookup of constants
- Keep a change log: user, date, time, comment

Ascii Database

```
# Default control file.  If the file for your run is not
# around, this file will be used to control the code.
    runtype BEAM
    lobeam  12000   # cut to define beam too low
    burpcut 5000
    oversamp  10    # oversampling factor
    windelay  8     # helicity delay in windows
    pairtype  quad
    dacnoise adc 0 chan 0 slope 0.901 int 42.1
    dacnoise adc 0 chan 1 slope 0.902 int 42.2
    dacnoise adc 1 chan 0 slope 0.911 int 44.1
    dacnoise adc 1 chan 1 slope 0.912 int 44.2
    dacnoise adc 2 chan 0 slope 0.921 int 44.1
    dacnoise adc 2 chan 1 slope 0.922 int 44.2
    ped adc 0 chan 0 value 101.3
    ped adc 0 chan 1 value 103.3
    ped adc 1 chan 0 value 111.3
    ped adc 1 chan 1 value 113.3
    ped adc 2 chan 0 value 121.3
    ped adc 2 chan 1 value 123.3
    header adc       ffadc000 fffff000
    header timeboard fffbd000 fffff000
    header tir       ffdaf000 fffff000
    header scaler    fffca000 fffff000
#   table  device-type device-name adc startchan evbuff-offset channel-names(keys)
    datamap   bcm        bcm1       0    0          22              bcm1
    datamap   bcm        bcm2       0    3          24              bcm2
    datamap   bpm        bpm8       1    0          30    bpm8xp bpm8xm bpm8yp bpm8ym
    datamap   tir        tir        0    0          34        helicity realtime
    datamap   timeboard  timeboard  0    0           0                dac
    ncuts 14
    evlo 10 10 10 10 10 10 0 0 0 0 20 20 40 30
    evhi 40 40 40 40 40 20 0 0 0 0 60 60 70 60
    evint 21232  23442 4  1
    evint 32232  34554 6  1
    evint 35665  37440 4  1
    evint 42112  43443 7  1
    evint 56712  58142 8  1
```

Database Schematic



Database Tables

RunInfo

column name	type	example	comment
RunNumber	int	2000	Primary key
Experiment	varchar	“HAPPEXII”	
time	datetime	2003-12-09 11:30:45	
comment	text		

System

column name	type	example	comment
systemId	int	1	Primary key auto increment
systemName	varchar	“dacnoise”	
description	text		

SubSystem

column name	type	example	comment
subsystemId	int	1	Primary key auto increment
subsystemName	varchar	“adc0”	
systemId	int	1	Foreign key reference System
description	text		

Item

column name	type	example	comment
itemId	int	1	Primary key auto increment
itemName	varchar	“chan0”	
subsystemId	int	1	Foreign key reference SubSystem
length	int	2	Number of elements
type	varchar	“float”	
description	text		

RunIndex			
column name	type	example	comment
RunIndexId	int	1	Primary key auto increment
RunNumber	int	2000	
itemId	int	1	Foreign key reference Item
itemValueId	int	1	Foreign key reference item_name_VALUE
author	varchar	"dbmanager"	
time	timestamp	20000502165717	
comment	text		

dacnoise_adc0_chan0_VALUE			
column name	type	example	comment
itemValueId	int	1	Primary key auto increment
value_1	"float"	1.82	
author	varchar	"smith"	
time	timestamp	20000502165717	
comment	text		

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Access Privilege

There are two different levels of access to the database:

- database manager
- users

user table			
Host	User	Password	Privileges
localhost	dbmanager	non-NULL	none
%	dbuser	NULL	none

Table 1: MySQL user table. Any user from any host can connect to the database.

db table			
Host	Db	User	Privileges
%	pandb	dbmanager	all
%	pandb	%	select

Table 2: MySQL db table. The dbmanager has all privileges in the pandb database. Any user that can connect can read any of the tables in the pandb database.

Web Interface

- dbuser:

  http://alquds.jlab.org/panDB

- dbmanager:

  http://alquds.jlab.org/pandb