

Launch mySQL server

- **Login with user/passwd**
- **Cp /etc/my.cnf ~/.**
- **Change my.cnf**
- [mysqld_safe]
- datadir=<your_home_directory>/<mysql_data_directory>
- socket=<your_home_directory>/mysql.sock
- log-error=<your_home_directory>/mysqld.log
- pid-file=<your_home_directory>/mysqld.pid
- port=<some_unique_number>
- **Create necessary database files (user=sc1008)**
- mysql_install_db --datadir=<your_home_directory>/<mysql_data_directory>
--defaults-file=<your_home_directory>/my.cnf
- **Launch mysql server**
- mysqld_safe --defaults-file=<your_home_directory>/my.cnf &
- **Check it is running**
- less mysqld.log

Create database prob

Connect to MySQL with CLI

```
mysql --socket=<your_home_directory>/mysql.sock -u root
```

Create database prob

```
create database prob \g  
show databases \g  
use prob \g
```

Create table prob

```
create table prob (a1 double, a2 int) \g  
show tables \g  
Insert into prob values (0.12,1) \g  
Insert into prob values ('a',2) \g
```

Load test data from Vizier

- vizier.u-strasbg.fr
- 2MASS, USNO-A2
- 1 deg region
- Note the format of the data

CREATE TABLES

- Create 2 tables: for USNO-A2 and 2MASS data
- Note format of the data

Ingest data

- Write a simplest script to ingest data

Ingest with SQL statement

- LOAD DATA INFILE <filename> INTO TABLE <tablename> FIELDS TERMINATED BY <delimiter>
- LOAD DATA INFILE '2mass.csv' INTO TABLE TWOMASS FIELDS TERMINATED BY “|”
- Compare performance with row-by-row ingest

Cross-identify data sets

- Use python for row-by-row cross-identification
- Ingest data back into database
- $\text{COS}(\text{Ra1})\text{COS}(\text{Ra2})\text{COS}(\text{Dec1})\text{COS}(\text{Dec2}) + \text{SIN}(\text{Ra1})\text{SIN}(\text{Ra2})\text{COS}(\text{Dec1})\text{COS}(\text{Dec2}) + \text{SIN}(\text{Dec1})\text{SIN}(\text{Dec2}) > \text{COS}(\text{angle})$

CREATE FUNCTION

- Create function dist (ra1 double, dec1 double, ra2 double, dec2 double) returns double
return
$$\text{ACOS}(\text{COS}(\text{ra1}/180.0 * 3.141593) * \text{COS}(\text{ra2}/180.0 * 3.141593) * \text{COS}(\text{dec1}/180.0 * 3.141593) * \text{COS}(\text{dec2}/180.0 * 3.141593) + \text{SIN}(\text{ra1}/180.0 * 3.141593) * \text{SIN}(\text{ra2}/180.0 * 3.141593) * \text{COS}(\text{dec1}/180.0 * 3.141593) * \text{COS}(\text{dec2}/180.0 * 3.141593) + \text{SIN}(\text{dec1}/180.0 * 3.141593) * \text{SIN}(\text{dec2}/180.0 * 3.141593)) * 180.0 / 3.141593$$

CREATE FUNCTION

```
create function dist(ra1 double, ra2 double, dec1 double, dec2 double)
returns double
return DEGREES(COS(RADIANS(ra1-ra2))*COS(RADIANS(dec1))*COS(RADIANS(dec2))+
                SIN(RADIANS(dec1))*SIN(RADIANS(dec2)))
```

Cross-identification on-the-fly

- Create `cross_id_table` with coordinates, Ids and magnitudes with errors from 2MASS and USNO-A2
- ```
INSERT INTO CROSS_ID_TABLE SELECT
dist(RA1,RA2,DEC1,DEC2) from (SELECT
t1.RA2000 RA1, t2.RA2000 RA2,t1.DEC2000
DEC1, t2.DEC2000 DEC2 from TWOMASS
t1, USNOA2 t2 where abs(t1.DEC2000-
t2.DEC2000) < 0.05) tn; -modify this
statement to include all attributes you need for
cross_id_table
```

# Home

- Ingest 2 cones of 2 deg radius (one in galactic plane, 1 in NP or SP)
- Cross-identify
- Plot CMD
- Find completeness limit for each magnitude
- Find completeness limit for each color range