GSC240 Catalog

Catalog Specifications

- Keep consistent units.
- Confirm proper motion in "/yr.
- RA and DEC in both sexagesimal, radians, and degrees (6 sig figures)
    - this is to avoid the need for translation later.
- watch for nulls, often defined as a number but referenced elsewhere.
    - Set null floats for values like magnitude and proper motion.
    - Remove any null coordinates.
- Look at how to read the file and ingest into DB.
    - How is the file indexed, data split between files, etc.
- Determine the Schema for the columns from the readme file.
- Four tables: gsc240 and gsc240_errors_flags & gsc240_not_visible and gsc240_errors_flags_not_visible
    - _not_visible: Not visible from Keck Observatory Declination < -70°
- Check database vs existing file query structure.

Tables

gsc240			
ColumnName	**Datatype**	**Units**	**NullValues**
GSCid	INT	id	-
GSC1id	VARCHAR(11)	id	-
HSTid	VARCHAR(11)	id	-
RA	VARCHAR(13)	sexag	-
DECL	VARCHAR(13)	sexag	-
RA_rad	DOUBLE	rad	-
Decl_rad	DOUBLE	rad	-
RA_deg	DOUBLE	deg	-
Decl_deg	DOUBLE	deg	-
Original_Epoch	REAL	yr	-
RA_eps	REAL	arcsec	-
Decl_eps	REAL	arcsec	-
PmRA	REAL	mas/yr	99.9
PmDec	REAL	mas/yr	99.9
Delta_Epoch	REAL	yr	-
FpgMag	REAL	mag	99.9
JpgMag	REAL	mag	99.9
VMag	REAL	mag	99.9
NpgMag	REAL	mag	99.9
UMag	REAL	mag	99.9
BMag	REAL	mag	99.9
RMag	REAL	mag	99.9
IMag	REAL	mag	99.9
JMag	REAL	mag	99.9
HMag	REAL	mag	99.9
KMag	REAL	mag	99.9
Classification	INT	-	-
SemiMajorAxis	REAL	-	-
Eccentricity	REAL	-	-
PositionAngle	REAL	deg	-
SourceStatus	INT	-	-

gsc240_errors_flags			
ColumnName	Datatype	Units	NullValues
GSCid	INT	id	-
GSC1id	VARCHAR(11)	id	-
HSTid	VARCHAR(11)	id	-
PmRA_mu	REAL	mas/yr	99.9
PmDec_mu	REAL	mas/yr	99.9
FpgMag_err	REAL	mag	99.9
FpgMag_code	INT	-	99
JpgMag_err	REAL	mag	99.9
JpgMag_code	INT	-	99
VMag_err	REAL	mag	99.9
VMag_code	INT	-	99
NpgMag_err	REAL	mag	99.9
NpgMag_code	INT	-	99
UMag_err	REAL	mag	99.9
UMag_code	INT	-	99
BMag_err	REAL	mag	99.9
BMag_code	INT	-	99
RMag_err	REAL	mag	99.9
RMag_code	INT	-	99
IMag_err	REAL	mag	99.9
IMag_code	INT	-	99
JMag_err	REAL	mag	99.9
JMag_code	INT	-	99
HMag_err	REAL	mag	99.9
HMag_code	INT	-	99
KMag_err	REAL	mag	99.9
KMag_code	INT	-	99
VariableFlag	INT	-	-
MultipleFlag	INT	-	-

Figures 3.1 & 3.2: Name, SQL Datatype, Units and Values to be replaced with NULL for the gsc240 and gsc240_errors_flags tables.

Database Implementation

- The GSC240 database was constructed from ~648,000 zone files, each corresponding to a 0.1 by 1-degree zone in the sky.
- Some files have zero stars and are not included in the catalog's csv file.
- Files are stored in nested folders with the following folder structure:
    - *Degree of Dec*/*Decimal Degree of Dec*/*Degree of RA*
    - Ex: 000/0000/001 is the file corresponding to the -90 to -89.9° Dec by 0° to 1° RA.

Data Cleaning

- RA (sexagesimal) was constructed from the RA_deg column.
- RA_deg (degrees) was constructed from the original RA column.
- Decl (sexagesimal) was constructed from the Decl_deg column.
- Decl_deg (degrees) was constructed from the original Decl column.
- CepRA and CepDec, the epoch years for RA and Dec, were divided by one thousand and added to 1900 to get the epoch in years. Epoch was originally stored as a fraction of years before or after 1900.
- APASS and 2MASS values were changed to NULL if the star did not have a reference in either one of those catalogs.
- All magnitudes were divided by one thousand to get units of magnitude and not milimag and updated with NULL values.
    - MagModel
    - MagAperture
    - 2MASS_J
    - 2MASS_H
    - 2MASS_K
    - APASS_B
    - APASS_V
    - APASS_g
    - APASS_r
    - APASS_i