2MASS Catalog

Catalog Specifications

- Keep consistent units.
- Confirm proper motion in "/yr.
- Shorten catalog column names for common columns such as RA, Decl, JMag, etc.
- RA and DEC in both sexagesimal, radians, and degrees (6 sig figures)
    - this is to avoid the need for translation later.
- Two Tables: 2mass and 2mass_not_visible
    - _not_visible: Not visible from Keck Observatory (Declination < -70°)

Tables

2mass			
ColumnName	**Datatype**	**Units**	**NullValues**
2mass_ID	VARCHAR(16)	id	-
RA	VARCHAR(13)	sexag	-
Decl	VARCHAR(13)	sexag	-
RA_deg	DOUBLE	deg	-
Decl_deg	DOUBLE	deg	-
RA_rad	DOUBLE	rad	-
Decl_rad	DOUBLE	rad	-
JMag	DOUBLE	mag	Blank
HMag	DOUBLE	mag	Blank
KMag	DOUBLE	mag	Blank
ph_qual	VARCHAR(3)	-	Blank
rd_flg	INT	-	Blank

Figure 5.1: Name, SQL Datatype, Units and Values to be replaced with NULL for the 2mass table.

Database Implementation

- The 2MASS 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_rad (radians) was constructed from the RA_deg column.
- Decl (sexagesimal) was constructed from the Decl_deg column.
- Decl_rad (radians) was constructed from the Decl_deg column.
- All magnitudes were updated to NULL when applicable:
    - JMag
    - HMag
    - KMag