TAT data Manual

July 16, 2018

Contents

1 Database *TAT*

- We create a database *TAT* and it contains three table:
  targets,data_file,observatory
- Database *TAT* records all data about Taiwan Automatic Telescope.

1.1 Table *targets*

- Table *targets* describles the data of targets that we want to observe.
- Table *targets* contains the following keys:
  ID, NAME, RA, DEC, MAGNITUDE, PERIOD, TYPE, BFE0, N0, BFE1, N1, BFE2, N2, BFE3, N3, BFE4, N4, BFE5, N5, BFE6, N6
- The meaning of keys:
  - **ID** is the number for every data and it is auto_increment.
  - **NAME** is the name of target and it is unique.
  - **RA** is the Right Ascension of the taget.
  - **DEC** is the Declination of target.
  - **MAGNITUDE** is the Absolute Magnitude of target.
  - **PERIOD** is the Period of Magitude changing.
  - **TYPE** is the Type of target.Example: star, galaxy...
  - **BFE0,1,2,3,...** is the best exposure time for filter 0,1,2,3,...
  - **N0,1,2,3,...** is the filter0,1,2,3,...

Then, the following table is the example of table targets:

Table 1: Example for table *targets*

ID	NAME	RA	DEC	MAGNITUDE	PERIOD	TYPE
1	IC5146	21:53:24	47:16:00	0	0	star

1.2 Table *file_data*

- Table *data_file* describles the data of picture we have pictured.
- Table *data_file* contains the following key:
  ID, FILENAME, FILEPATH, FILTER, RA, DEC, SITENAME, CCDTEMP, EXPTIME, DATE-OBS, TIME-OBS, MJD-OBS, AIRMASS, JD, subbed, divfitted
- The meaning of keys:
  - **ID** is the number for every data and it is auto_increment.

– **FILENAME** is the filename of data file and it is unique.
– **FILEPATH** is the path of data file and it is unique.
– **FILTER** is the filter.
– **RA** is the Right Ascension of the center of target.
– **DEC** is the Declination of the center of image .
– **SITENAME** is the location of observer.
– **CCDTEMP** is the CCD temperature.
– **EXPTIME** is the exposure time.
– **DATE-OBS** is the data and its type is YYYY/MM/DD*.
– **TIME-OBS** is the time of total imaging.
– **MJD-OBS** the Modified Julian Date.
– **AIRMASS** is the path from a celestial source to pass through the atmosphere.
– **JD** is the Julian Date.
– **subbed** if the file has been subbed, it results True. Otherwise, it results False.
– **divfitted** if the file has been divfitted, it results True. Otherwise, it results False.

Then, the following table is the example of table file_data:

Table 2: Example for table *data_file*

ID	FILENAME	FILEPATH	FILTER	RA	DEC	SITENAME	CCDTEMP	EXPTIME	DATE-OBS	TIME-OBS	MJD-OBS	AIRMASS	JD	subbed	divfitted
1	AStarTF20180705_215223.fit	/home2/TAT/data/raw/TF/image/20180705	A	19:20:30	11:02:01	TF	-16.2883	600	2018-07-05	21:52:23.26	58304.918345	NULL	2458305.41834	0	0
2	AStarTF20180705_221349.fit	/home2/TAT/data/raw/TF/image/20180705	A	19:20:30	11:02:01	TF	-30.0856	600	2018-07-05	22:13:49.26	58304.933229	NULL	2458305.43323	0	0
3	AStarTF20180705_223518.fit	/home2/TAT/data/raw/TF/image/20180705	A	19:20:30	11:02:01	TF	-30.0385	600	2018-07-05	22:35:18.26	58304.94816	NULL	2458305.44816	0	0
4	AStarTF20180705_225646.fit	/home2/TAT/data/raw/TF/image/20180705	A	19:20:30	11:02:01	TF	-30.0605	600	2018-07-05	22:56:46.26	58304.963056	NULL	2458305.46306	0	0

1.3 Table *observatory*

- Table *observatory* contains the following key: ID, SITENAME, SITELAT, SITELONG, SITEALT

- The meaning of keys:

  – **ID** is the number for every data and it is auto_increment.
  – **SITENAME** is the location of observer and it is unique.
  – **SITELAT** is the Latitude of the observer.
  – **SITELONG** is the Longitude of the observer.
  – **SITEALT** is the Altitude of the observer.

Then, the following table is the example of table observatory:

Table 3: Table *observatory*

ID	SITENAME	SITELAT	SITELONG	SITEALT
1	TF	28.30	-16.51	2300
2	LI-JIANG	26.69	100.03	3330

2 Program *TAT_database*

- This program *TAT_database* is to insert all data in the `/home2/TAT/data` to database *TAT*

2.1 File

- This program is in path `/home2/TAT/program/TAT_database`
  It contains the following file:
  INSTALL, README.md, back_up_path, update_to_TAT_db.py, Makefile, TAT_create_db.sql, requirement.txt,log.txt

- Brief to file:
  – **INSTALL** is that the simple manual describles how to set environment and excute.
  – **README.md** is to illustrate what this program can do.
  – **back_up_path** contains the path you want to deal with all data in.
  – **update_to_TAT_db.py** is to insert the all data in the path written into file *back_up_path* to database *TAT*.
  – **Makefile** is the convenient file to provid to use the command `make`
  – **TAT_create_db.sql** is the file to create the database *TAT*.
  – **requirement.txt** is the file to provid module needed to install.
  – **log.txt** is the file to record the path dealed with.

2.2 Set Environment

1. To struct the database *TAT*, the command: `mysql < TAT_crete_db.sql`
2. To get the module for the file *update_to_TAT_db.py*, the command:
   `pip install --user -r requirements.txt`
3. Let the file *update_to_TAT_db.py* be used in anywhere, the command:
   `make install`

2.3 Execute

- To insert the data in the path writtened in the file *back_up_path* to database *TAT*, the command:

```
update_to_TAT_db.py
```

2.4 Authority

- *TAT@localhost* has all privileges to use database *TAT* ,and its password is 1234
- *read@localhost* just has the privilege of select to use database *TAT* ,and its password is 1234

2.5 Clean

- To remove the file *update_to_TAT_db.py* and *log.txt*, the command:
  ```
  make clean
  ```