

NOTE - TEST version2

test.py as the test code, for 33 test cases; test csv files are located in folder vitess_test

```
1 from imageDB import ImageDB
2
3 def test():
4     db = ImageDB()
5     db.init_tables()
6
7     ''' TEST CAMERA FILE '''
8
9     ''' test correct case '''
10    #db.batch_insert_camera("./vitess_test/camera_test_standard.csv")
11
12    ''' test wrong header name '''
13    #db.batch_insert_camera("./vitess_test/camera_test_checkHeader.csv")
14
15    ''' test exceed column '''
16    #db.batch_insert_camera("./vitess_test/camera_test_checkExceedColumn.csv")
17
18    ''' test missing column '''
19    #db.batch_insert_camera("./vitess_test/camera_test_checkMissingColumn.csv")
20
21    ''' test missing values '''
22    #db.batch_insert_camera("./vitess_test/camera_test_checkMissingValues.csv")
23
24    ''' test empty cell -- FAIL !!!!!!!!! '''
25    #db.batch_insert_camera("./vitess_test/camera_test_checkEmptyCell.csv")
26
27    ''' test add same things twice '''
28    #db.batch_insert_camera("./vitess_test/camera_test_checkInsertExistValue.csv")
29
30
31    ''' TEST ImageVideo FILE without feature csv'''
32
33    ''' test correct case'''
34    db.insert_image("./vitess_test/imageVideo_test_standard.csv")
35
36    ''' test wrong header name '''
37    #db.insert_image("./vitess_test/imageVideo_test_checkHeader.csv")
38
39    ''' test exceed column '''
40    #db.insert_image("./vitess_test/imageVideo_test_checkExceedColumn.csv")
41
42    ''' test missing column '''
43    #db.insert_image("./vitess_test/imageVideo_test_checkMissingColumn.csv")
44
45    ''' test missing values '''
46    #db.insert_image("./vitess_test/imageVideo_test_checkMissingValues.csv")
47
48    ''' test empty cell -- FAIL '''
49    #db.insert_image("./vitess_test/imageVideo_test_checkEmptyCell.csv")
50
51    ''' test add same things twice '''
52    #db.insert_image("./vitess_test/imageVideo_test_checkInsertExistValue.csv")
53
54
55    ''' TEST ImageVideo FILE with feature csv, with feature csv correct all the time'''
56
57    ''' test correct case'''
58    #db.insert_image("./vitess_test/imageVideo_test_standard.csv", "./vitess_test/imageFeature_test_standard.csv")
59
60    ''' test wrong header name '''
61    #db.insert_image("./vitess_test/imageVideo_test_checkHeader.csv", "./vitess_test/imageFeature_test_standard.csv")
62
63    ''' test exceed column '''
64    #db.insert_image("./vitess_test/imageVideo_test_checkExceedColumn.csv", "./vitess_test/imageFeature_test_standard.csv")
65
66    ''' test missing column '''
67    #db.insert_image("./vitess_test/imageVideo_test_checkMissingColumn.csv", "./vitess_test/imageFeature_test_standard.csv")
68
69    ''' test missing values '''
70    #db.insert_image("./vitess_test/imageVideo_test_checkMissingValues.csv", "./vitess_test/imageFeature_test_standard.csv")
71
72    ''' test empty cell -- FAIL '''
73    #db.insert_image("./vitess_test/imageVideo_test_checkEmptyCell.csv", "./vitess_test/imageFeature_test_standard.csv")
74
75    ''' test add same things twice '''
76    #db.insert_image("./vitess_test/imageVideo_test_checkInsertExistValue.csv", "./vitess_test/imageFeature_test_standard.csv")
77
78
79    ''' TEST ImageVideo FILE with feature csv, with ImageVideo csv correct all the time'''
80
81    ''' test wrong header name '''
82    #db.insert_image("./vitess_test/imageVideo_test_standard.csv", "./vitess_test/imageFeature_test_checkHeader.csv")
83
84    ''' test exceed column -- FAIL!!! if the name appears twice, two columns?? will this happen?? '''
85    #db.insert_image("./vitess_test/imageVideo_test_standard.csv", "./vitess_test/imageFeature_test_checkExceedColumn.csv")
86
87    ''' test missing column '''
88    #db.insert_image("./vitess_test/imageVideo_test_standard.csv", "./vitess_test/imageFeature_test_checkMissingColumn.csv")
89
90    ''' test missing values '''
91    #db.insert_image("./vitess_test/imageVideo_test_standard.csv", "./vitess_test/imageFeature_test_checkMissingValues.csv")
92
93    ''' test empty cell -- FAIL '''
94    #db.insert_image("./vitess_test/imageVideo_test_standard.csv", "./vitess_test/imageFeature_test_checkEmptyCell.csv")
95
96    ''' test add same things twice '''
97    #db.insert_image("./vitess_test/imageVideo_test_standard.csv", "./vitess_test/imageFeature_test_checkInsertExistValue.csv")
98
99
100
101
```

1. TEST Camera FILE

1. Correct case, with expected output

camera_test_standard

Camera_ID	Country	State	City	Latitude	Longitude	Resolution_w	Resolution_h
1	USA	MA	Boston	42.3692	-71.0658	2048	1536
2	USA	NY	New York	40.7047	-74.0211	1024	768

imageVideo_test_standard

IV_Name	Camera_ID	IV_date	IV_time	File_type	File_size	Minio_link	Dataset	Is_processed
AA	1	2019.01.02	13:38:22	PNG	1.4 MB	None	None	0
BB	1	2019.01.03	14:57:19	JPEG	390 KB	None	None	0

imageFeature_test_standard

IV_Name	Car	Bike	Taxi	Tree
AA	1	1	1	0
BB	0	1	0	1

```
mysql> show tables;
+-----+
| Tables_in_vt_test_keyspace |
+-----+
| CAMERA                      |
| FEATURE                     |
| IMAGE_VIDEO                 |
| RELATION                    |
| messages                    |
+-----+
5 rows in set (0.01 sec)

mysql> select * from CAMERA;
+-----+-----+-----+-----+-----+-----+-----+-----+
| Camera_ID | Country | State | City   | Latitude | Longitude | Resolution_w | Resolution_h |
+-----+-----+-----+-----+-----+-----+-----+-----+
| 1         | USA     | MA    | Boston | 42.3692  | -71.0658  | 2048         | 1536         |
| 2         | USA     | NY    | New York | 40.7047  | -74.0211  | 1024         | 768          |
+-----+-----+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> select * from IMAGE_VIDEO;
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| IV_ID      | IV_Name | Camera_ID | IV_date | IV_time | File_type | File_size | Minio_link | Dataset | Is_processed |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| c89250d1-4ed9-11e9-a704-60f81da8abde | AA      | 1         | 2019-01-02 | 13:38:22 | PNG      | 1.4 MB   | None      | None    | 0            |
| c8946854-4ed9-11e9-adcc-60f81da8abde | BB      | 1         | 2019-01-03 | 14:57:19 | JPEG     | 390 KB   | None      | None    | 0            |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
2 rows in set (0.01 sec)

mysql> select * from FEATURE;
+-----+-----+
| Feature_ID | Feature_Name |
+-----+-----+
| c886a0a1-4ed9-11e9-855b-60f81da8abde | Car          |
| c88da6fd-4ed9-11e9-93a1-60f81da8abde | Bus          |
| c88ff7eb-4ed9-11e9-a564-60f81da8abde | Bike         |
| c8912ae1-4ed9-11e9-a810-60f81da8abde | Taxi         |
+-----+-----+
4 rows in set (0.00 sec)

mysql> select * from RELATION;
+-----+-----+
| Feature_ID | IV_ID |
+-----+-----+
| c886a0a1-4ed9-11e9-855b-60f81da8abde | c8946854-4ed9-11e9-adcc-60f81da8abde |
| c88da6fd-4ed9-11e9-93a1-60f81da8abde | c89250d1-4ed9-11e9-a704-60f81da8abde |
| c88ff7eb-4ed9-11e9-a564-60f81da8abde | c89250d1-4ed9-11e9-a704-60f81da8abde |
| c88ff7eb-4ed9-11e9-a564-60f81da8abde | c8946854-4ed9-11e9-adcc-60f81da8abde |
| c8912ae1-4ed9-11e9-a810-60f81da8abde | c89250d1-4ed9-11e9-a704-60f81da8abde |
+-----+-----+
5 rows in set (0.00 sec)
```

2. TEST - Camera file with wrong header name

camera_test_checkHeader

Camera_ID	Country_ID	State	City	Latitude	Longitude	Resolution_w	Resolution_h
1	USA	MA	Boston	42.3692	-71.0658	2048	1536
2	USA	NY	New York	40.7047	-74.0211	1024	768

```
Connected to mysql database test_keyspace
CAMERA table exist
IMAGE_VIDEO table exist
FEATURE table exist
RELATION table exist.
Error processing file ./vitess_test/camera_test_checkHeader.cs ValueError('CAMERA File does not having correct header.',)
```

3. TEST - Camera file with exceed column

camera_test_checkExceedColumn

Camera_ID	Country	State	City	Latitude	Longitude	Resolution_w	Resolution_h	exceed column
1	USA	MA	Boston	42.3692	-71.0658	2048	1536	None
2	USA	NY	New York	40.7047	-74.0211	1024	768	None

```
Connected to mysql database test_keyspace
CAMERA table exist
IMAGE_VIDEO table exist
FEATURE table exist
RELATION table exist.
Error processing file ./vitess_test/camera_test_checkExceedColumn.cs ValueError('File exceeds the expected number of columns.',)
```

4. TEST - Camera file with missing column

camera_test_checkMissingColumn

Camera_ID	Country	State	City	Latitude	Longitude	Resolution_w	
1	USA	MA	Boston	42.3692	-71.0658	2048	
2	USA	NY	New York	40.7047	-74.0211	1024	

```
Connected to mysql database test_keyspace
CAMERA table exist
IMAGE_VIDEO table exist
FEATURE table exist
RELATION table exist.
Error processing file ./vitess_test/camera_test_checkMissingColumn.cs ValueError('File is missing required column.',)
```

5. TEST - Camera file with missing values

```
Camera_ID,Country,State,City,Latitude,Longitude,Resolution_w,Resolution_h
1,USA,MA,Boston,42.3692,-71.0658
2,USA,NY,New York,40.7047,-74.0211|
```

```
Connected to mysql database test_keyspace
CAMERA table exist
IMAGE_VIDEO table exist
FEATURE table exist
RELATION table exist.
Error processing file ./vitess_test/camera_test_checkMissingValues.cs ValueError('File content column does not match header.',)
```

6. TEST - Camera file with empty cell ???

camera_test_checkEmptyCell

Camera_ID	Country	State	City	Latitude	Longitude	Resolution_w	Resolution_h
1	USA	MA	Boston	42.3692	-71.0658		
2	USA	NY	New York	40.7047	-74.0211		

```
Camera_ID,Country,State,City,Latitude,Longitude,Resolution_w,Resolution_h
1,USA,MA,Boston,42.3692,-71.0658,,
2,USA,NY,New York,40.7047,-74.0211,,
```

7. TEST - Camera file Insert already exist value

camera_test_checkInsertExistValue

Camera_ID	Country	State	City	Latitude	Longitude	Resolution_w	Resolution_h
1	USA	MA	Boston	42.3692	-71.0658	2048	1536
2	USA	NY	New York	40.7047	-74.0211	1024	768
2	USA	NY	New York	40.7047	-74.0211	1024	768

```
[mysql> select * from CAMERA;
+-----+-----+-----+-----+-----+-----+-----+-----+
| Camera_ID | Country | State | City    | Latitude | Longitude | Resolution_w | Resolution_h |
+-----+-----+-----+-----+-----+-----+-----+-----+
| 1         | USA     | MA    | Boston  | 42.3692  | -71.0658  | 2048         | 1536         |
| 2         | USA     | NY    | New York| 40.7047  | -74.0211  | 1024         | 768          |
+-----+-----+-----+-----+-----+-----+-----+-----+
2 rows in set (0.01 sec)
```

2. TEST ImageVideo FILE without feature csv

8. TEST - Image_Video file wrong header name

imageVideo_test_checkHeader

IV_Nameee	Camera_ID	IV_date	IV_time	File_type	File_size	Mino_link	Dataset	Is_processed
AA	1	2019.01.02	13:38:22	PNG	1.4 MB	None	None	0
BB	1	2019.01.03	14:57:19	JPEG	390 KB	None	None	0

```
Connected to mysql database test_keyspace
CAMERA table exist
IMAGE_VIDEO table exist
FEATURE table exist
RELATION table exist.
Error processing file ./vitess_test/imageVideo_test_checkHeader.csv: ValueError('IMAGE_VIDEO File does not having correct header.',)
```

9. TEST - Image_Video file with exceed column

imageVideo_test_checkExceedColumn

IV_Name	Camera_ID	IV_date	IV_time	File_type	File_size	Minio_link	Dataset	Is_processed	exceed_column
AA	1	2019.01.02	13:38:22	PNG	1.4 MB	None	None	0	None
BB	1	2019.01.03	14:57:19	JPEG	390 KB	None	None	0	None

```
CAMERA table created.
IMAGE_VIDEO table created.
FEATURE table created.
RELATION table created.
Error processing file ./vitess_test/imageVideo_test_checkExceedColumn.csv: ValueError('File exceeds the expected number of columns.',)
```

10. TEST - Image_Video file with missing column

imageVideo_test_checkMissingColumn

IV_Name	Camera_ID	IV_date	IV_time	File_type	File_size	Minio_link	Dataset	
AA	1	2019.01.02	13:38:22	PNG	1.4 MB	None	None	
BB	1	2019.01.03	14:57:19	JPEG	390 KB	None	None	

```
Connected to mysql database test_keyspace
CAMERA table exist
IMAGE_VIDEO table exist
FEATURE table exist
RELATION table exist.
Error processing file ./vitess_test/imageVideo_test_checkMissingColumn.csv: ValueError('IMAGE_VIDEO File does not having correct header.',)
```

11. TEST - Image_Video file with missing value

```
IV_Name, Camera_ID, IV_date, IV_time, File_type, File_size, Minio_link, Dataset, Is_processed
AA, 1, 2019.01.02, 13:38:22, PNG, 1.4 MB, 0
BB, 1, 2019.01.03, 14:57:19, JPEG, 390 KB, 0
```

```
Connected to mysql database test_keyspace
CAMERA table exist
IMAGE_VIDEO table exist
FEATURE table exist
RELATION table exist.
Error processing file ./vitess_test/imageVideo_test_checkMissingValues.csv: ValueError('IMAGE_VIDEO File content column does not match header.',)
```

12. TEST - Image_Video file with empty cell ???

imageVideo_test_checkEmptyCell

IV_Name	Camera_ID	IV_date	IV_time	File_type	File_size	Minio_link	Dataset	Is_processed
AA	1	2019.01.02	13:38:22	PNG	1.4 MB			0
BB	1	2019.01.03	14:57:19	JPEG	390 KB			0

```
mysql> select * from IMAGE_VIDEO;
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| IV_ID | IV_Name | Camera_ID | IV_date | IV_time | File_type | File_size | Minio_link | Dataset | Is_processed |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 1223fb97-532c-11e9-ab23-60f81da8abde | AA | 1 | 2019-01-02 | 13:38:22 | PNG | 1.4 MB | | | 0 |
| 12298e30-532c-11e9-914f-60f81da8abde | BB | 1 | 2019-01-03 | 14:57:19 | JPEG | 390 KB | | | 0 |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
2 rows in set (0.01 sec)
```

- The entry for VARCHAR type can accept "", INT type cannot accept "", will return error.
 - If the IV_name is empty, will update to " image file.
 - Possible solution:
 - Check if "", manually set to None or 0 for the VARCHAR type, if the column is optional.
- Return error if the column is not optional

13. TEST - Image_Video file insert exist value

imageVideo_test_checkInsertExistValue

IV_Name	Camera_ID	IV_date	IV_time	File_type	File_size	Minio_link	Dataset	Is_processed
AA	1	2019.01.02	13:38:22	PNG	1.4 MB	None	None	0
BB	1	2019.01.03	14:57:19	JPEG	390 KB	None	None	0
BB	1	2019.01.03	14:57:19	JPEG	390 KB	None	None	1

```
mysql> select * from IMAGE_VIDEO;
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| IV_ID | IV_Name | Camera_ID | IV_date | IV_time | File_type | File_size | Minio_link | Dataset | Is_processed |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 856edc8f-532e-11e9-a331-60f81da8abde | AA | 1 | 2019-01-02 | 13:38:22 | PNG | 1.4 MB | None | None | 0 |
| 85751dcf-532e-11e9-8503-60f81da8abde | BB | 1 | 2019-01-03 | 14:57:19 | JPEG | 390 KB | None | None | 1 |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
2 rows in set (0.01 sec)
```

3. TEST ImageVideo FILE with feature csv, with feature csv correct all the time

Same result as test the ImageVideo file itself. (Always read ImageVideo file first)

4. TEST ImageVideo FILE with feature csv, with feature csv correct all the time

14. TEST - ImageFeature file wrong header name

```
CAMERA table created.  
IMAGE_VIDEO table created.  
FEATURE table created.  
RELATION table created.  
Error processing file ./vitess_test/imageFeature_test_checkHeader.csvValueError('File does not having correct header.',)  
Image_Video metadata updated
```

The IMAGE_VIDEO table will be updated, the FEATURE table and RELATOIN table will not

15. TEST - ImageFeature file has duplicate iv_name column

imageFeature_test_checkExceedColum

IV_Name	IV_Name	Car	Bike	Taxi	Tree
AA	AA	1	1	1	0
BB	BB	0	1	0	1

if the name appears twice, two column, that column will be ignored.

16. TEST - ImageFeature file missing iv_name column

imageFeature_test_c

Car	Bike	Taxi	Tree
1	1	1	0
0	1	0	1

```
CAMERA table created.  
IMAGE_VIDEO table created.  
FEATURE table created.  
RELATION table created.  
Error processing file ./vitess_test/imageFeature_test_checkMissingColumn.csvValueError('File does not having correct header.',)
```

17. TEST - ImageFeature file missing values

imageFeature_test_checkMiss

IV_Name	Car	Bike	Taxi	Tree
AA	1	1	1	
BB	0	1	0	

```
IV_Name,Car,Bike,Taxi,Tree
AA,1,1,1
BB,0,1,0
```

```
CAMERA table created.
IMAGE_VIDEO table created.
FEATURE table created.
RELATION table created.
Error processing file ./vitess_test/imageFeature_test_checkMissingValues.csv: csvValueError('Feature file content column does not match header.',)
```

18. TEST - ImageFeature file has empty cell

```
IV_Name,Car,Bike,Taxi,Tree
AA,1,1,,0
BB,0,1,0,1
```

That entry will be ignored as 0.

19. TEST - ImageFeature file has duplicate rows

imageFeature_test_checkInser

IV_Name	Car	Bike	Taxi	Tree
AA	1	1	1	0
BB	0	1	0	1
BB	0	1	0	1

Works fine, will not produce duplicate rows.

5. TEST ImageVideo FILE with feature csv, both invalid

Almost same result as test the ImageVideo file itself, adding the errors that ImageFeature file produced.

And when the error should be handled, it will be handled as they have error independently.