

# Database Unit Tests

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# 1 Null-Insert Testing

## 1.1 Objective

Null testing is the simple procedure of attempting an insert into a table with all fields of the row being null. This will be done to every table that has a mandatory field, which will be all of them, and every single test should result in a failed insert. This test is also weak constraint checking, since null fields will never be within a constraint. When this test is ran, it will attempt to insert entries into each table with all null values.

## 1.2 Example Test Input

```
INSERT INTO Companies (ID, cName, StockID) VALUES (null, null, null)
```

## 1.3 Expected Output

We expect the database to reject insertions where every field is a null value.

We also expect the database to reject null inputs on fields with not-null constraints placed on them (primary/foreign keys, other fields based on business rules).

# 2 Stock Entry Change Testing

## 2.1 Summary

Stocks sometimes change names, like FB to META. That's handled by a python method. These tests ensure the python method runs smoothly, from

checking various different mangled data sets and erroneous data.

### **2.1.1 Expected Exceptions**

SQLAlchemy

DataError

## **3 Connection Testing**

### **3.1 Objective**

To test for database connection in SQLAlchemy.

### **3.2 Test Code**

```
import logging

from sqlalchemy import create_engine, text
from sqlalchemy.exc import OperationalError

try:
    db_url = "mysql+pymysql://root:incorrect@localhost:13306/null_database"
    engine = create_engine(db_url, pool_size=5, pool_recycle=3600)
    conn = engine.connect()
except OperationalError as err:
    logging.error("Cannot connect to DB %s", err)
    raise err
```

### 3.3 Expected Output

It should connect as expected and output "Test Successful."

### 3.4 Expected Exceptions

```
pymysql.err.OperationalError
```

```
OperationalError: (pymysql.err.OperationalError) (1045, "Access  
denied for user 'root'@'172.17.0.1' (using password: YES)")
```

#### 3.4.1 What To Do

Should the test fail, it will output "Test Unsuccessful." and an error code if any. For this test, the general recourse is just rechecking credentials and ensuring the server and yourself are both online.

## 4 Other Test When We Decide