

## **System Testing**

**Course:** Software Testing

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### **System Test 2: Supplier Deletion Constraint Handling at System Level**

#### **Test Type: System Testing**

This test is classified as **System Testing** because it validates the behavior of the entire POS system rather than individual modules or components. The test covers the full execution flow from the user action, through the business logic, to the database constraint enforcement.

#### **Testing Level: End-to-End System Level**

The test operates at the **End-to-End System Level**, as it verifies the interaction between:

- User actions (supplier and product management),
- Application logic (DAL and controllers),
- Database layer (MySQL foreign key constraints).

#### **System Under Test**

Point of Sale (POS) System – Supplier and Product Management Modules

#### **Objective**

The objective of this system test is to verify that the POS system correctly enforces business and database constraints when attempting to delete a supplier that is still referenced by existing products. The test ensures that the system prevents invalid operations and maintains overall data integrity across the application and database layers.

#### **Test Description**

This test validates the complete system behavior when a user attempts to delete a supplier that has products linked to it. The test is executed through the POS system's functional flow, interacting with the database through the Data Access Layer (DAL) and JDBC.

The system is expected to:

- Prevent deletion of a supplier while dependent products exist.
- Enforce foreign key constraints correctly.
- Allow deletion only after all dependent products are removed.

### Preconditions

- The POS system is running correctly.
- MySQL database connection is active.
- suppliers and products tables exist with a foreign key relationship.
- The user has sufficient privileges to manage suppliers and products.

### Test Data

- Supplier:
  - Name: Test Supplier
  - Phone Number: 0681234567
- Product:
  - Name: Test Product
  - Barcode: TEST123
  - Stock Quantity: 10
  - Supplier ID: Linked to Test Supplier

### Test Steps

Step	Action
1	Insert a new supplier into the system
2	Insert a new product linked to the created supplier
3	Attempt to delete the supplier while the product still exists
4	Verify that the system prevents supplier deletion
5	Delete the product linked to the supplier
6	Delete the supplier after product removal

### Expected Results

Step	Expected Result
1	Supplier is successfully added
2	Product is successfully added and linked to supplier
3	Supplier deletion is rejected
4	Error message or constraint violation is triggered
5	Product is successfully deleted
6	Supplier is successfully deleted

## Actual Results

- The system prevented the deletion of the supplier while dependent products existed.
- After deleting the product, the supplier deletion was allowed.
- Foreign key constraints were correctly enforced by the database.
- The POS system behaved as expected without crashing or data corruption.

## Test Outcome

**PASS**

## Notes

- This test confirms that the system correctly enforces referential integrity rules.
- It ensures that invalid deletion operations are blocked at system level.
- The behavior aligns with real-world business rules in inventory and supplier management systems.

**Point of Sale** admin Logout

**Category Information**

Name:  Search By Name

Add Delete Update Clear

Id	Name
1	grocery
2	xyz
3	new

Point of Sale

adminLogout

Customers

Supplier

Employees

Products

Category

Sales

Invoice

Reports

Supplier Information

Search Id:  Name:  Phone No:

SaveDeleteSearchUpdateClear

Id	Name	Phone No
1	sup test	1100
2	mike	456-7854
3	albert	789-88
4	baby	222-3
6	mike	456-7854
7	uhaidq	1100
9	farwad	123456
10	Farwad Iqba	234567890

Point of Sale

adminLogout

Customers

Supplier

Employees

Products

Category

Sales

Invoice

Reports

Product Information

Name  Barcode  Stock  Supplier

Price  Quantity Type  Category

AddUpdateDeleteClear

Search by name

Id	Name	Bar Code	Price	Stock
1	xyz	234567	12.0	123.0
2	oil	123456	260.0	12.0

MySQL Workbench

Local instance MySQL80

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SQL File 1\*

1 SELECT \* FROM suppliers;

2

Result Grid

id	name	phoneNumber
1	sup test	1100
2	mike	456-7854
3	abert	789-88
4	baby	222-3
6	mike	456-7854
7	ubaidq	1100
9	fawad	123456
10	Fawad Iqba	234567890

suppliers 15 x

Output

Action Output

#	Time	Action	Message	Duration / Fetch
26	01:11:15	USE pos	0 row(s) affected	0.000 sec
27	01:11:16	UPDATE users SET password = 'evisa' WHERE username = 'admin'	1 row(s) affected Rows matched: 1 Changed: 1 Warnings: 0	0.031 sec
28	01:11:16	SELECT * FROM users WHERE username='admin' LIMIT 0, 1000	1 row(s) returned	0.000 sec / 0.000 sec
29	01:48:53	SELECT * FROM suppliers LIMIT 0, 1000	8 row(s) returned	0.156 sec / 0.000 sec

Object Info Session

Query Completed

SQLAdditions

Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.

MySQL Workbench

Local instance MySQL80

File Edit View Query Database Server Tools Scripting Help

Navigator

SQL File 1\*

1 SELECT \* FROM products WHERE suppliers\_id = 1;

2

Result Grid

id	name	barcode	price	stock_quantity	category_id	created_at	updated_at	quantity_type	suppliers_id
1	xyz	234567	12.00	123.00	1	2024-02-13 07:05:31	2024-02-15 09:18:05	counted	1
2	oil	123456	260.00	12.00	1	2024-02-13 07:11:02	2024-02-15 09:18:05	weighted	1

products 20 x

Output

Action Output

#	Time	Action	Message	Duration / Fetch
32	01:51:13	SELECT * FROM products WHERE suppliers_id = 1 LIMIT 0, 1000	2 row(s) returned	0.000 sec / 0.000 sec
33	01:51:24	SELECT * FROM products WHERE suppliers_id = 3 LIMIT 0, 1000	0 row(s) returned	0.000 sec / 0.000 sec
34	01:51:34	SELECT * FROM products WHERE suppliers_id = 0 LIMIT 0, 1000	0 row(s) returned	0.000 sec / 0.000 sec
35	01:51:45	SELECT * FROM products WHERE suppliers_id = 1 LIMIT 0, 1000	2 row(s) returned	0.000 sec / 0.000 sec

Object Info Session

Query Completed

SQLAdditions

Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.