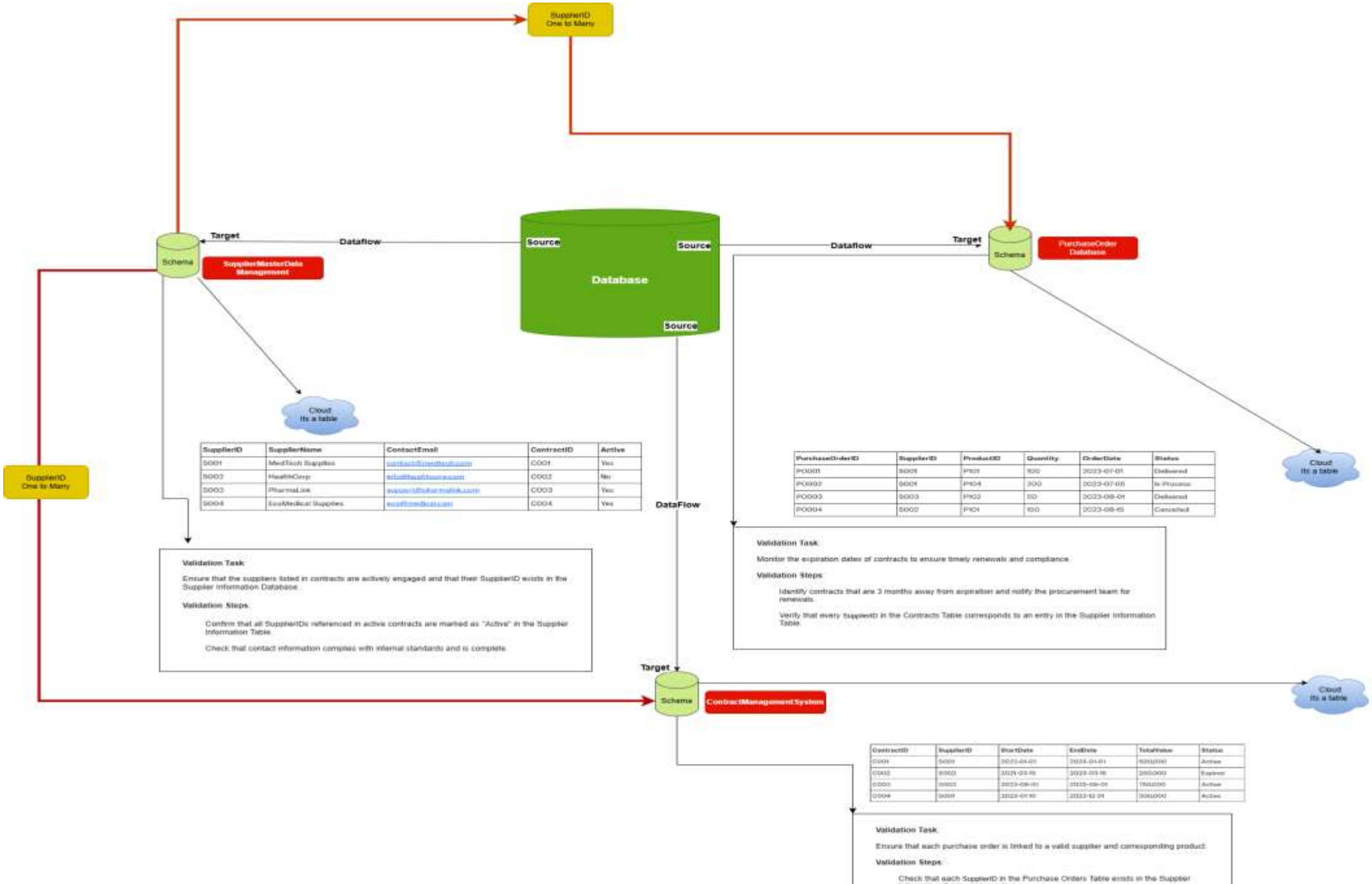
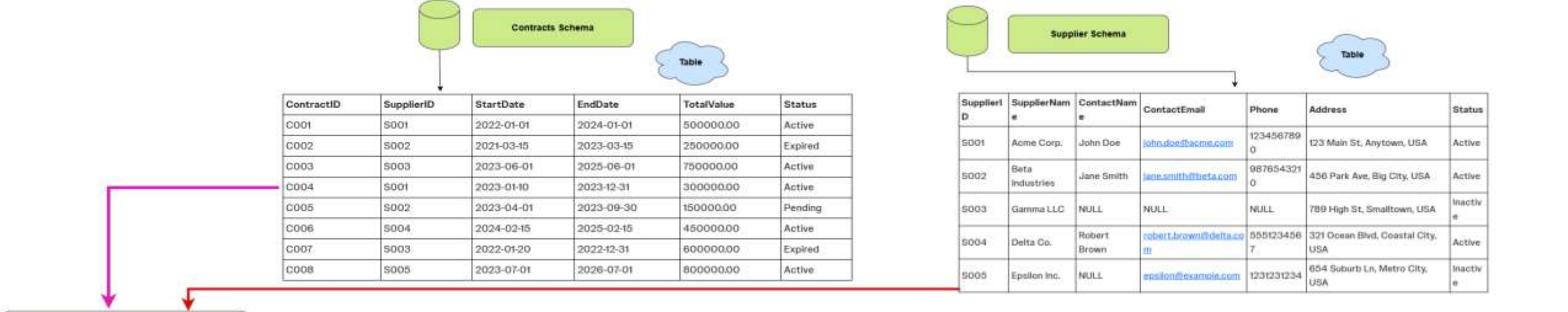

SupplierID
One to Many
Target
Schema
SupplierMasterData
Management
Dataflow
Source
Source
Database
Source
Dataflow
Target
Schema
PurchaseOrder
Database
Cloud
Its a table
SupplierID
One to Many
SupplierID
SupplierName
ContactEmail
ContractID
Active
S001
MedTech Supplies
C001
Yes
S002
HealthCorp
C002
No
S003
PharmaLink
C003
Yes
S004
EcoMedical Supplies
C004
Yes
DataFlow
Validation Task:
Ensure that the suppliers listed in contracts are actively engaged and that their SupplierID exists in the Supplier Information Database.
Validation Steps:
Confirm that all SupplierIDs referenced in active contracts are marked as "Active" in the Supplier Information Table.
Check that contact information complies with internal standards and is complete.
PurchaseOrderID
SupplierID
ProductID
Quantity
OrderDate
Status
PO001
S001
P101
500
2023-07-01
Delivered
PO002
S001
P104
200
2023-07-05
In Process
PO003
S003
P102
50
2023-08-01
Delivered
PO004
S002
P101
100
2023-08-15
Cancelled
Validation Task:
Monitor the expiration dates of contracts to ensure timely renewals and compliance.
Validation Steps:
Identify contracts that are 3 months away from expiration and notify the procurement team for renewals.
Verify that every SupplierID in the Contracts Table corresponds to an entry in the Supplier Information Table.
Target
Schema
ContractManagementSystem
Cloud
Its a table
ContractID
SupplierID
StartDate
EndDate
TotalValue
Status
C001
S001
2023-01-01
2024-01-01
500000
Active
C002
S002
2023-03-15
2023-03-15
250000
Expired
C003
S003
2023-08-01
2025-08-01
750000
Active
C004
S001
2022-01-10
2022-12-31
300000
Active
Validation Task:
Ensure that each purchase order is linked to a valid supplier and corresponding product.
Validation Steps:
Check that each SupplierID in the Purchase Orders Table exists in the Supplier



ContractID	SupplierID	StartDate	EndDate	TotalValue	Status
C001	S001	2022-01-01	2024-01-01	500000.00	Active
C002	S002	2021-03-15	2023-03-15	250000.00	Expired
C003	S003	2023-06-01	2025-06-01	750000.00	Active
C004	S001	2023-01-10	2023-12-31	300000.00	Active
C005	S002	2023-04-01	2023-09-30	150000.00	Pending
C006	S004	2024-02-15	2025-02-15	450000.00	Active
C007	S003	2022-01-20	2022-12-31	600000.00	Expired
C008	S005	2023-07-01	2026-07-01	800000.00	Active

SupplierID	SupplierName	ContactName	ContactEmail	Phone	Address	Status
S001	Acme Corp.	John Doe	john.doe@acme.com	1234567890	123 Main St, Anytown, USA	Active
S002	Beta Industries	Jane Smith	jane.smith@beta.com	9876543210	456 Park Ave, Big City, USA	Active
S003	Gamma LLC	NULL	NULL	NULL	789 High St, Smalltown, USA	Inactive
S004	Delta Co.	Robert Brown	robert.brown@delta.com	5551234567	321 Ocean Blvd, Coastal City, USA	Active
S005	Epsilon Inc.	NULL	epsilon@example.com	1231231234	654 Suburb Ln, Metro City, USA	Inactive

Explaination of Validation Points

Column Name	Data Type	Constraints	Sample Data	Description	Validation Criteria	Example Issues
ContractID	VARCHAR(10)	PRIMARY KEY, NOT NULL, UNIQUE	C001	Unique identifier for each contract.	- Must be unique.	All entries follow this rule.
SupplierID	VARCHAR(10)	NOT NULL, FOREIGN KEY (references Suppliers.SupplierID)	S001	Identifier for the supplier associated with the contract.	- Must exist in the Supplier table (foreign key constraint).	Assume valid suppliers: `S001`, `S002`, etc.
StartDate	DATE	NOT NULL, CHECK (StartDate <= EndDate)	2022-01-01	Date when the contract starts.	- Cannot be NULL. - Must be before or equal to EndDate.	C002, C007, C004, C003 are valid.
EndDate	DATE	NOT NULL, CHECK (EndDate > CURRENT_DATE)	2024-01-01	Date when the contract ends.	- Cannot be NULL. - Must be greater than StartDate. - Must be in the future.	C001 valid; C002 expired; C004 future.
TotalValue	DECIMAL(15, 2)	NOT NULL, CHECK (TotalValue >= 0)	500000.00	Total monetary value of the contract.	- Must be non-negative. - Valid currency format required.	All entries follow this rule.
Status	VARCHAR(20)	NOT NULL, CHECK (Status IN ('Active', 'Expired', 'Pending'))	Active	Current status of the contract: 'Active', 'Expired', 'Pending'.	- Must be one of: 'Active', 'Expired', 'Pending'.	All entries follow this rule.

Explaination of Validation Points

Column Name	Data Type	Constraints	Sample Data	Description	Validation Criteria	Example Issues
SupplierID	VARCHAR(10)	PRIMARY KEY, NOT NULL, UNIQUE	S001	Unique identifier for each supplier.	- Must be unique.	All entries follow this rule.
SupplierName	VARCHAR(100)	NOT NULL	Acme Corp.	Name of the supplier organization.	- Must not be NULL.	All entries follow this rule.
ContactName	VARCHAR(50)	NULLABLE	John Doe	Name of the contact person for the supplier.	- Can be NULL.	There can be suppliers without a contact name.
ContactEmail	VARCHAR(100)	NULLABLE, CHECK (ContactEmail LIKE '%@%_%')	john.doe@acme.com	Email address of the contact person.	- Can be NULL. - Must follow email format.	Invalid email formats (e.g., not containing '@').
Phone	VARCHAR(15)	NULLABLE, CHECK (Phone REGEXP '^[0-9]{10,15}$')	1234567890	Phone number of the supplier.	- Can be NULL. - Must be numerical and between 10 to 15 digits.	Non-numeric values or incorrect length.
Address	VARCHAR(255)	NULLABLE	123 Main St, Anytown, USA	Physical address for the supplier.	- Can be NULL.	There can be suppliers without an address.
Status	VARCHAR(20)	NOT NULL, CHECK (Status IN ('Active', 'Inactive'))	Active	Current status of the supplier, whether 'Active' or 'Inactive'.	- Must be one of: 'Active', 'Inactive'.	Must ensure valid status entries.

Supplier Quotes - Table

Transaction ID	Supplier Name	Quoted Amount	Estimated Lead Time	Quality Rating (1-5)
T001	Alpha Corp	$10,000	4 weeks	4
T002	Beta Industries	$2,500	2 weeks	5
T003	Gamma LLC	$5,000	3 weeks	3
T004	Delta Co.	$3,000	1 week	4

Purchase Order - Table

Transaction ID	Supplier Name	Purchase Amount	Actual Lead Time	Quality Received (1-5)
T001	Alpha Corp	$9,500	5 weeks	4
T002	Beta Industries	$2,800	3 weeks	5
T003	Gamma LLC	$5,000	3 weeks	2
T004	Delta Co.	$2,750	1 week	4

Explanation of the Facts-

Data Validation on Quoted Amounts vs. Purchase Amounts:

Verify that the **Quoted Amount** from Table 1 matches or explains the **Purchase Amount** in Table 2 for each transaction. Discrepancies should be analyzed to determine whether they are justifiable and how they affect sourcing decisions.

Lead Time Validation:

Check if the **Estimated Lead Time** (in Table 1) is in line with the **Actual Lead Time** (in Table 2). Large deviations may indicate issues in supplier reliability or demand forecasting that can impact sourcing decisions.

Quality Ratings:

Compare the **Quality Rating** given in the supplier quotes with the **Quality Received** after the purchase. If the quality received is lower than the quoted quality rating, it may not only indicate issues with the supplier but also necessitate discussions regarding future sourcing decisions.

Benefits of Data Validation

Accuracy: Ensures that the sourcing data used is correct, which aids in effective decision-making.

Consistency: Maintains consistent categorization of attributes (like lead time and quality) across the tables, facilitating better analysis.

Improves Supplier Relationships: Consistent evaluation of supplier performance can help identify areas for improvement, leading to stronger collaborations.

Data table

Device ID	Device Name	Supplier Name	Model Number	Serial Number	Expiration Date	Regulatory Compliance	Purchase Price	Quantity in Stock	Date of Purchase
1001	Surgical Scalpel	MedSupply Co.	SSC-2023	SS123456789	2025-12-31	Approved	150.00	50	2023-07-15
1002	MRI Machine	Imaging Solutions	MRI-2023	MRI987654321	2026-05-30	Approved	25000.00	10	2023-08-01
1003	Cardiac Monitor	HealthTech Inc.	CM-2023	CM234567890	2025-05-01	Approved	1200.00	30	2023-09-10
1004	Blood Pressure Monitor	VitalTrack Co.	BPM-2023	BPM1122334455	2024-03-15	Approved	75.00	100	2023-06-20
1005	Infusion Pump	MediTech LLC	IP-2023	IP678901234	2025-11-01	Not Approved	800.00	20	2023-07-25
1006	X-Ray Machine	RadTech Solutions	XR-2023	XR135792468	2025-12-31	Approved	30000.00	5	2023-08-15
1007	Ultrasound Device	EchoHealth Corp.	ULT-2023	ULT246813579	2026-01-01	Approved	5000.00	15	2023-08-30
1008	Ventilator	LifeSupport Systems	VENT-2023	VENT975310864	2025-10-10	Approved	15000.00	8	2023-09-05
1009	Hemodialysis Machine	Dialysis Experts	HDM-2023	HDM123321456	2026-03-31	Approved	18000.00	12	2023-09-15
1010	Surgical Robot	Advanced Robotics	SR-2023	SR654321987	2026-07-25	Not Approved	500000.00	2	2023-08-10

Data Validation -Checks

Field Name	Data Type	Validation Criteria	Example Input	Explanation/Issue
Device ID	Integer	Must be unique and greater than 0	1001	Valid input.
Device Name	String	Cannot be empty; must be descriptive	Surgical Scalpel	Valid input.
Supplier Name	String	Cannot be empty; must exist in supplier database	MedSupply Co.	Valid input.
Model Number	String	Cannot be empty; must be unique	SSC-2023	Valid input.
Serial Number	String	Must be unique; check for format requirements	SS123456789	Valid input.
Expiration Date	Date	Must be a valid date and not in the past	2025-12-31	Valid input.
Regulatory Compliance	String	Must be one of predefined values (e.g., Approved/Not Approved)	Approved	Valid input.
Purchase Price	Decimal	Must be a positive number	150.00	Valid input.
Quantity in Stock	Integer	Must be a non-negative integer	100	Valid input.
Date of Purchase	Date	Must be a valid date and not in the future	2023-07-15	Valid input.

When it comes to validating data related to medical devices in the sourcing department, several types of data validation techniques can be employed to ensure the accuracy and integrity of the data. Here is a list of different data validation methods that can be applied to each field in your dataset:

1. **Uniqueness Validation**
•**Device ID**: Check that each Device ID is unique across the dataset.
•**Serial Number**: Ensure that each Serial Number is unique to prevent duplication.

2. **Format Validation**
•**Model Number**: Validate against a specific regex to ensure it follows a designated alphanumeric format.
•**Serial Number**: Verify that it meets expected character limits and format (e.g., alphanumeric, specific length).

3. **Value Constraints**
•**Expiration Date**: Check that this date is not in the past (for newly entered records) and follows the correct date format.
•**Purchase Price**: Ensure that the value is a positive decimal number (i.e., greater than 0).
•**Quantity in Stock**: Validate that this is a non-negative integer (i.e., 0 or more).

4. **Required Field Validation**
•Ensure that mandatory fields like Device Name, Supplier Name, Model Number, and Regulatory Compliance are not empty.

5. **Referential Integrity**
•**Supplier Name**: Verify that the supplier exists in a separate, established suppliers database to maintain consistency.

6. **Enumerated Value Validation**
•**Regulatory Compliance**: Verify that the value is one of the predefined options, such as “Approved” or “Not Approved”.

7. **Logical Consistency**
•**Expiration Date vs. Date of Purchase**: Ensure that the Expiration Date is later than the Date of Purchase.
•**Quantity in Stock**: Ensure that stock levels do not exceed realistic values based on purchase records.

8. **Range Validation**
•For fields like Purchase Price, you could implement a maximum allowable value based on company policies or relevant market standards.

9. **Data Type Validation**
•Ensure that data entered matches the specified data type (e.g., integer for Device ID and Quantity in Stock, string for Device Name, float for Purchase Price).

10. **Cross-Field Validation**
•Check that combinations of fields make sense together; for example, if the Regulatory Compliance status is “Not Approved," various downstream processes should not allow further action, such as processing orders.

11. **Duplication Check**
•Implement checks to prevent the re-entry of the same device with the same characteristics if it exists within the current dataset.

12. **Trim and Clean Validation**
•Remove leading/trailing spaces in string fields to prevent issues with comparisons.