

Mock Data Migration: Loan-Booking from Access → Oracle DW

1. Project Overview

- **Objective:** Migrate loan master and transaction data nightly from a legacy MS Access database to an Oracle Data Warehouse (DW) while ensuring accuracy, completeness, and auditability.
 - **Scope:**
 - Source: LoanMaster, LoanTxn tables in Access.
 - Target: dw.loan_master, dw.loan_txn schemas in Oracle DW.
 - Transform dates, numeric formats, status codes; log and reconcile any exceptions.
-

2. Source → Target Mapping

Source Table	Source Column	Data Type	Target Table	Target Column	Data Type	Transformation / Notes
LoanMaster	LoanID	Text(20)	dw.loan_master	loan_id	VARCHAR2(20)	None
LoanMaster	CustomerID	Text(20)	dw.loan_master	cust_id	VARCHAR2(20)	None
LoanMaster	OriginationDate	Text(10)	dw.loan_master	orig_date	DATE	TO_DATE(OriginationDate, 'DD-MM-YYYY')
LoanMaster	PrincipalAmount	Text(15)	dw.loan_master	principal_amt	NUMBER(12,2)	Remove commas, cast to NUMBER
LoanMaster	StatusCode	Text(1)	dw.loan_master	loan_status	VARCHAR2(10)	Map 'A'→'Active', 'C'→'Closed', ELSE 'Unknown'
LoanTxn	TransactionID	Text(20)	dw.loan_txn	txn_id	VARCHAR2(20)	None
LoanTxn	LoanID	Text(20)	dw.loan_txn	loan_id	VARCHAR2(20)	None
LoanTxn	TransactionDateTime	Text(19)	dw.loan_txn	txn_datetime	DATE	TO_DATE(TransactionDateTime, 'DD-MM-YYYY HH24:MI:SS')
LoanTxn	Amount	Text(15)	dw.loan_txn	txn_amount	NUMBER(12,2)	Remove commas, cast to NUMBER
LoanTxn	TxnTypeCode	Text(1)	dw.loan_txn	txn_type	VARCHAR2(12)	Map 'D'→'Drawdown', 'R'→'Repayment', ELSE 'Other'

3. Transformation Rules & Error Handling

1. **Date Parsing**
 - Use `TO_DATE(..., 'DD-MM-YYYY')` or `'DD-MM-YYYY HH24:MI:SS'`.
 - **Error:** If parsing fails, write to `dw.err_log` with `error_code = 'TR-01'`.
 2. **Numeric Cleanup**
 - Strip commas from `PrincipalAmount / Amount`.
 - Cast to `NUMBER(12,2)`.
 - **Error:** If cast fails (non-numeric), log with `error_code = 'TR-02'`.
 3. **Status & Type Mapping**
 - `StatusCode`:
 - 'A' → "Active"
 - 'C' → "Closed"
 - Else → "Unknown"
 - `TxnTypeCode`:
 - 'D' → "Drawdown"
 - 'R' → "Repayment"
 - Else → "Other"
 - **Error:** None (defaulting maps handle unmapped codes).
 4. **Duplicate Handling**
 - If the same `LoanID+TransactionID` appears twice, keep the record with the latest `txn_datetime`.
 - Log duplicates to `dw.err_log` with `error_code = 'TR-03'`.
-

4. Reconciliation Plan

Check	Method	Expected Result
Row-Count Match	Compare <code>COUNT(*)</code> in source vs target staging tables	Source count = Target staging count
Column-Sum Match	Sum of <code>PrincipalAmount / txn_amount</code> in source vs target	Totals should match within 0.01%
Error-Log Review	Count entries in <code>dw.err_log</code>	0 for Must-pass scenarios; logged for negatives
Sample Record Diff	<code>MINUS</code> query between source (after converting to Oracle schema) and DW	No rows returned for valid data sample

Example SQL for Row-Count Check:

```
sql
CopyEdit
-- Source (via a linked Access view or pre-export table)
SELECT COUNT(*) AS src_loan_count FROM access.loan_master;

-- Target staging
SELECT COUNT(*) AS tgt_loan_count FROM dw.stg_loan_master;
```

Sample Reconciliation Dashboard Steps:

1. **Automate** a nightly reconciliation job.
2. **Email** summary counts & exceptions to stakeholders.

3. **Log** reconciliation results (pass/fail) in a dashboard table `dw.rec_summary`.
-

5. Validation & Sign-Off

1. **Execution of Reconciliation Scripts** – Ensure all checks pass.
2. **Stakeholder Review** – Share reconciliation reports & logs.
3. **Business Approval** – Obtain sign-off from the Head of Retail Loans.