# Reflex + CopilotKit + Tally ODBC Integration

## 1. Introduction

This document explains how to integrate Tally ERP/Prime with a Reflex web application using CopilotKit and the ODBC interface provided by Tally. Instead of using the JSON API, this integration leverages Tally’s ODBC driver, which exposes company, ledger, and transaction data in a relational structure accessible via SQL queries.

## 2. Architecture Overview

The integration consists of the following components:  
- Reflex Web App: Frontend framework for building dashboards and data visualizations.  
- CopilotKit: Provides AI-driven natural language interaction within the Reflex app.  
- Tally ODBC Interface: Exposes Tally data to external applications via ODBC.  
- Python Backend: Connects to Tally using pyodbc or similar ODBC libraries.

## 3. Configuring Tally ODBC

1. Ensure Tally.ERP 9 or TallyPrime is running and ODBC is enabled.  
 - In Tally, go to F12 -> Advanced Configuration -> Enable ODBC Server.  
 - Default port: 9000 (can be changed).  
2. Verify the ODBC service by connecting via Microsoft Excel or an ODBC query tool.  
3. Install an ODBC driver on the host machine (Windows/macOS/Linux).

## 4. Python Backend Connection

Use pyodbc to connect to the Tally ODBC service:

import pyodbc  
  
# Define ODBC connection string  
conn\_str = (  
 "DRIVER={Tally ODBC Driver};"  
 "SERVER=localhost;"  
 "PORT=9000;"  
)  
  
# Connect to Tally ODBC  
conn = pyodbc.connect(conn\_str)  
cursor = conn.cursor()  
  
# Example query: Fetch Ledgers  
cursor.execute("SELECT $Name, $Parent FROM Ledger")  
for row in cursor.fetchall():  
 print(row)

## 5. Reflex + CopilotKit Integration

Within the Reflex app, use the backend service to fetch data from Tally via ODBC.  
Expose API endpoints that CopilotKit can consume to provide natural language insights.

Example workflow:  
- User asks CopilotKit: 'Show me all sales ledgers with balances above 10,000.'  
- CopilotKit generates a query -> Python backend executes SQL via ODBC -> Returns results -> Displayed in Reflex.

## 6. Example SQL Queries via ODBC

Examples of queries you can run against Tally ODBC:  
- SELECT $Name, $ClosingBalance FROM Ledger  
- SELECT $Date, $VoucherNumber, $Amount FROM Voucher WHERE $VoucherType='Sales'  
- SELECT $Name, $OpeningBalance, $ClosingBalance FROM Ledger WHERE $ClosingBalance > 10000

## 7. Security Considerations

- Restrict ODBC access to trusted IP addresses.  
- Use Tally user-level permissions to limit data exposure.  
- Avoid exposing raw ODBC queries directly to the frontend.  
- Sanitize all inputs before executing queries.

## 8. Limitations

- Tally ODBC supports read-only queries, not inserts/updates.  
- Performance may degrade with large datasets; consider pre-aggregating data.  
- ODBC schema is specific to Tally versions and may require adjustments when upgrading.