

# openpyxl Mastery Practice Set (Data Analytics Perspective)

This practice set is designed for Data Analysts to achieve real-world mastery of the openpyxl library through practical, job-relevant Excel automation tasks. No theory — only hands-on analyst workflows.

## Section 1: Excel File & Workbook Control

- Create a new Excel workbook with Raw\_Data, Clean\_Data, Summary, and Dashboard\_Data sheets.
- Load an existing Excel file and dynamically list all sheet names.
- Copy an entire worksheet into a new workbook preserving values and formats.
- Safely delete a sheet only if it exists.
- Rename sheets based on a dictionary mapping.

## Section 2: Reading Data Like an Analyst

- Read only specific columns (Date, Region, Revenue).
- Read rows until the first empty row is encountered.
- Convert Excel date cells into Python datetime objects.
- Identify rows with missing or negative revenue.
- Extract values from merged cells.

## Section 3: Data Cleaning & Transformation

- Remove rows with missing mandatory fields.
- Trim whitespace from all text columns.
- Convert region names to Title Case.
- Replace NA/null/N/A values with empty cells.
- Create Revenue\_Category column based on revenue slabs.

## Section 4: Writing Clean & Structured Data

- Write cleaned data with bold headers and frozen header row.
- Apply date and currency number formats.
- Add data validation rules.
- Protect worksheet while allowing data entry.
- Insert Excel tables instead of plain ranges.

## Section 5: Aggregations & Summary Reports

- Generate region-wise revenue summary.
- Create monthly revenue aggregation.
- Calculate total, average, max, and min revenue.
- Highlight top-performing region.

- Apply conditional formatting based on revenue category.

## Section 6: Advanced Excel Automation

- Insert Excel formulas dynamically.
- Create named ranges.
- Hide raw data sheet.
- Add cell comments.
- Insert company logo image.

## Section 7: Chart Automation

- Create bar chart for region-wise revenue.
- Create line chart for monthly revenue trend.
- Dynamically update chart ranges.
- Place charts in Dashboard\_Data sheet.
- Style charts with titles and labels.

## Section 8: Performance, Safety & Real-World Scenarios

- Handle Excel files with 100,000+ rows efficiently.
- Implement error handling for file and data issues.
- Log every major automation step.
- Save versioned files with timestamps.
- Build one-click report generator function.

## Section 9: Analyst Automation Use-Cases

- Automate daily sales MIS Excel reports.
- Convert raw Excel dumps into formatted reports.
- Consolidate multiple Excel files.
- Validate incoming Excel files against schema rules.
- Prepare email-ready Excel reports.

## Final Capstone Project

- Build a full Excel automation pipeline: read raw files, clean data, generate summary, add charts, and export timestamped reports.