**Exercise for Module: Macro Tutorial: Automating Weekly Loan Report Preparation**

Step 1: Enabling the Developer Tab

Open Excel and go to the File menu.

Click on Options at the bottom of the sidebar.

In the Excel Options dialog box, select Customize Ribbon on the left pane.

On the right-hand side, check the Developer checkbox under the "Main Tabs" list to add it to your ribbon.

Click OK to close the dialog box and see the Developer tab in the ribbon.

Step 2: Recording the Macro

Go to the Developer tab.

Click on Record Macro.

In the Record Macro dialog box:

Type ‘weekly loan report’ in the Name field.

Optionally, add a description such as "Macro used to format the weekly loan report."

Click OK to start recording.

Step 3: Formatting the Dataset

Change the font of the entire dataset to Arial or Calibri by selecting all data and choosing the desired font from the Home tab.

Step 4: Format the table New Column

Press Ctrl + A to select all connected data.

Choose the desired table format by choosing a style from the Format as Table options.

Step 5: Format currency columns:

Select columns such as loan amount, installment, annual income, total payment, and the last payment amount.

Apply currency format by selecting the ‘$’ symbol from the Number group on the Home tab.

Step 6: Modifying Columns

Delete the homeownership column as it is not used:

Right-click on the column header and select Delete.

Step 7: Insert New Column

Insert a new column ‘Debt to Income’ ratio in Column C deriving it from

Formula: =F2/(I2/12)

Change the format to percentage using the Percent Style button in the Number group on the Home tab.

Sort data by the Debt to Income ratio:

Go to Data -> Sort.

Choose Debt to Income and set order to Largest to Smallest.

Step 8: Further Customizations

Use Find and Replace to update terminology in the loan loss column:

Press CTRL + F, select the Replace tab, type Delinquent in ‘Find what’ and Charged Off in ‘Replace with’, then click Replace All.

Apply conditional formatting:

Go to the Home tab, select Conditional Formatting -> Highlight Cell Rules -> Equal to ‘Charged Off’.

Step 9 Auto-fit columns to ensure all data is visible:

Select all columns and double-click the boundary between two column headers. Or auto fit the columns and rows, by selecting ALT-H-O-A and ALT-H-I

Step 10: Finalizing the Macro

Stop recording by clicking ‘Stop Recording’ under the Developer tab.

To view or edit the macro, click Macros, select ‘weekly loan report’, and click Edit.

In the VBA editor, add comments to your code by typing an apostrophe (') followed by your comment text.

Save your workbook as an Excel Macro-Enabled Workbook (\*.xlsm).

Step 11: Running the Macro on New Data

Open a new worksheet or tab with the new week’s data.

Go to the Developer tab, click Macros.

Select weekly loan report from the list and click Run.

**Exercise for Module: Data cleaning in Power Query and data analysis with visualization**

Let’s effectively prepare our dataset for deeper analysis and how to extract meaningful insights from it.

Part 1: Data Preparation

Step 1: Load Data

Navigate to the ‘Data’ tab on the Excel ribbon.

Click on ‘Get Data’ to expand the menu options.

Step 2: Launching Power Query Editor

From the ‘Get Data’ options, select ‘Launch the Power Query Editor’.

If this option is not directly visible, you may need to select ‘From Other Sources’ and then ‘Blank Query’, which will open the Power Query Editor.

Step 3: Choosing the Data Source

Within the Power Query Editor, navigate to the ‘Home’ tab.

Click on ‘New Source’ to open a list of available data sources.

Step 4: Selecting File Type

From the list of data sources, choose ‘File’.

Select the specific type of file you wish to import (e.g., Excel, CSV, XML, JSON, etc.).

Step 5: Navigating to the Dataset

Once you've selected the file type, a file dialog will appear.

Navigate through your system’s directories to locate the dataset you want to import.

Select the file and click ‘Open’ to import it into the Power Query Editor.

Step 6: Editing and Loading the Data

After the dataset is loaded into the Power Query Editor, you can perform any necessary data transformations or cleaning tasks.

Once your data is ready, click ‘Close & Load’ to load your transformed data into an Excel worksheet.

Step 7: Removing Duplicates:

Navigate to your dataset.

Identify the column 'orderID'.

Right-click on the column header.

Select 'Remove Duplicates'.

This step ensures we have unique records for analysis.

Step 8: Correcting Date Formats

Identify columns formatted as numbers that should be dates.

Select the column, then go to the ‘Data Type’ dropdown.

Choose ‘Date’ from the options.

This automatically converts number formats to date formats.

Step 9: Merging Columns

Select the columns for 'First Name' and 'Last Name'.

Hold the CTRL key to select both columns simultaneously.

Right-click and choose ‘Merge Columns’.

Set a separator if needed, and rename the new column to ‘Name’.

Confirm by clicking ‘OK’ to see the combined names in a new column.

Step 10: Converting Decimal to Whole Numbers

Locate the 'Units' column which is recorded in decimal format.

Select the column, navigate to ‘Transform’ tab.

Choose ‘Rounding’ -> “Rounding Up” to convert values to whole numbers.

Step 11: Formatting the Salesperson Column

Go to the ‘Transform’ tab.

Select ‘Format’, then ‘Capitalize Each Word’ to capitalize the first letters.

To remove extra spaces, return to ‘Format’ and select ‘Trim’.

Step 12: Applying Changes

Return to the Excel main interface by selecting ‘Home’.

Click ‘Close and Load’.

Your changes are applied and visible in a new tab.

Part 2: Data Analysis

Step 13: Editing Queries and Connections

Right-click on ‘Queries and Connections’ if adjustments are needed.

Select ‘Edit’ to modify any steps.

Step 14: Analyzing Revenue

Use ‘Data Analysis’ tool from the Data ribbon.

Select ‘Summary Statistics’.

Set output range and confirm to view descriptive statistics of revenue.

Step 15: Revenue by Salesperson

Insert a Pivot Table.

Drag ‘Salesperson’ to rows and ‘Revenue’ to values.

This displays revenue aggregated by each salesperson.

Step 16: Demographic Analysis

In a new Pivot Table, drag ‘Gender’ to rows and both ‘Revenue’ and ‘Units’ to values.

Adjust units to display as ‘% of Grand Total’ for better comparison.

Step 17: Using Excel’s AI Feature

Select ‘Analyze Data’ under ‘Data’.

Type ‘Revenue by Salesperson’.

Excel provides a breakdown similar to the Pivot Table.

Part 3: Visualization Techniques

Step 18: Conditional Formatting in Pivot Table

Use conditional formatting to highlight data points.

Add error bars to the Pivot Table.

Step 19: Analyzing Age and Revenue

Select columns for age and revenue.

Insert a scatter plot.

Add a trendline and display the equation to analyze correlation.

Step 20: Identifying Outliers with Boxplot

Select the revenue column.

Insert a box and whisker plot from the ‘Charts’ section.

Analyze the plot to identify outliers and extreme values.