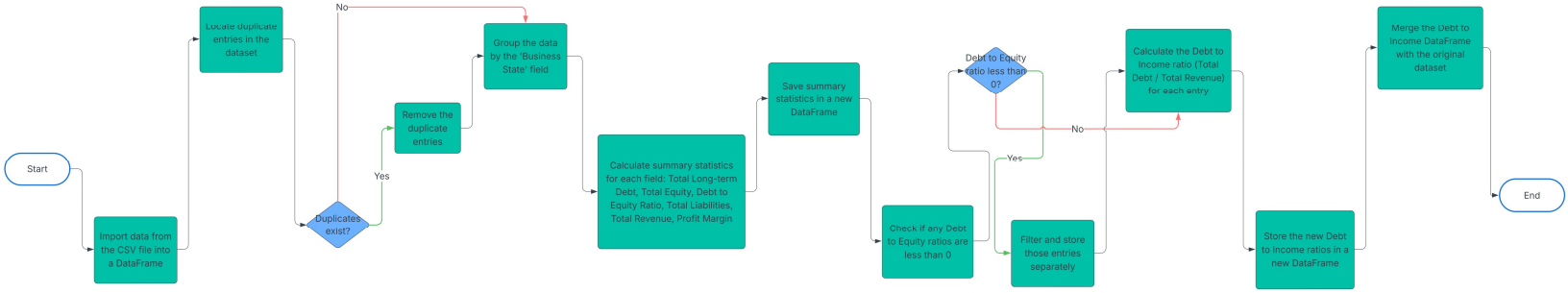
D598 Analytic Programming -- Task 1 (Program Planning)
By Shanikwa Haynes

A: FLOWCHART



B: PSEUDOCODE

1. Begin

2. Import data from the CSV file into a DataFrame

3. Locate duplicate entries in the dataset

4. If duplicates exist:
    a. Remove the duplicate entries

5. Group the data by the 'Business State' field

6. For each of the following fields:
    - Total Long-term Debt
    - Total Equity
    - Debt to Equity Ratio
    - Total Liabilities
    - Total Revenue
    - Profit Margin

  Do:
    a. Calculate the mean
    b. Calculate the median
    c. Calculate the minimum
    d. Calculate the maximum

7. Save these summary statistics in a new DataFrame

8. Check if any Debt to Equity ratios are less than 0:
    a. If true, filter and store those entries separately

9. Calculate the Debt to Income ratio (Total Debt / Total Revenue) for each entry

10. Store the new Debt to Income ratios in a new DataFrame

11. Merge the Debt to Income DataFrame with the original dataset

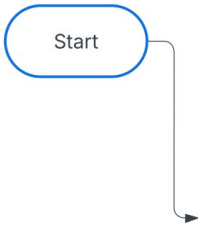
12. End

C1: FLOWCHART EXPLANATION and **C2: PSEUDOCODE EXPLANATION**

The flowchart and pseudocode presented are tightly aligned, using consistent terminology to clearly depict the sequence of operations involved in the data processing workflow. Each pseudocode instruction corresponds directly to a visual element in the flowchart, from the start of the process to its conclusion. The flowchart begins with importing data and locating duplicate entries, followed by a decision node—"Duplicates exist?"—which dictates whether the process should proceed with data cleaning or continue directly to grouping the dataset by the 'Business State' field. The next steps involve calculating summary statistics for six financial indicators, as reflected in a single block summarizing statistical computations. These are then saved to a new DataFrame. Another decision node—"Debt to Equity ratio less than 0?"—accurately represents

the conditional logic for filtering entries with negative ratios, aligning with the corresponding conditional block in the pseudocode. Subsequent steps, including calculating the Debt to Income ratio, storing the results in a new DataFrame, and merging it back with the original dataset, are all clearly captured in sequential blocks. The final "End" node matches the termination step in the pseudocode. Overall, the flowchart simplifies and condenses the logic for quick visualization, while the pseudocode provides detailed and actionable instructions for implementation. This consistency ensures that both technical and non-technical audiences can easily follow the logic, fully satisfying the rubric's expectations for accuracy, clarity, and alignment.

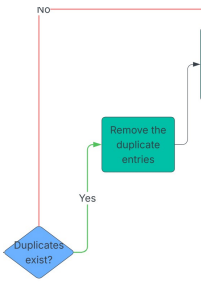
Pseudocode Step 1: "Begin (Start)"
Corresponding flowchart entry:



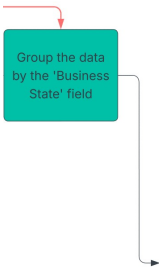
Pseudocode Step 2: "Import data from the CSV file into a DataFrame."
Corresponding flowchart entry:

Pseudocode Step 3: “Locate duplicate entries in the dataset.”
Corresponding flowchart entry:

Pseudocode Step 4: “If duplicates exist:
a. Remove the duplicate entries.”
Corresponding flowchart entry:



Pseudocode Step 5: “Group the data by the 'Business State' field.”
Corresponding flowchart entry:



Pseudocode Step 6: “For each of the following fields:

- Total Long-term Debt
- Total Equity
- Debt to Equity Ratio
- Total Liabilities
- Total Revenue
- Profit Margin

Do:

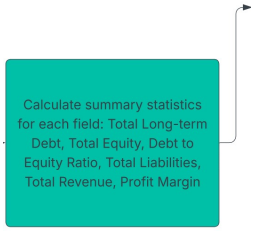
a. Calculate the mean

b. Calculate the median

c. Calculate the minimum

d. Calculate the maximum.”

Corresponding flowchart entry:

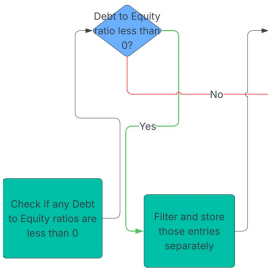


Pseudocode Step 7: “Save these summary statistics in a new DataFrame.”
Corresponding flowchart entry:

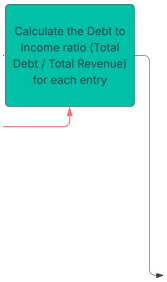
Pseudocode Step 8: “Check if any Debt to Equity ratios are less than 0:

a. If true, filter and store those entries separately.”

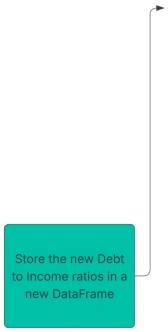
Corresponding flowchart entry:



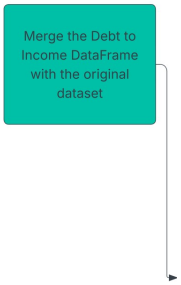
Pseudocode Step 9: “Calculate the Debt to Income ratio (Total Debt / Total Revenue) for each entry.”
Corresponding flowchart entry:



Pseudocode Step 10: “Store the new Debt to Income ratios in a new DataFrame.”
Corresponding flowchart entry:



Pseudocode Step 11: “Merge the Debt to Income DataFrame with the original dataset.”
Corresponding flowchart entry:



Pseudocode Step 12: “Terminate the process (End).”
Corresponding flowchart entry:

Sources

The only sources used were the official course materials from WGU.