Competencies

**4158.1.1** : **Documents Programming Task Component Parts**

The learner documents the required component parts of a complex programming task.

Introduction

In this task you will demonstrate algorithmic thinking by creating a flowchart and pseudocode for a program that performs data analysis.

Scenario

You have been hired by a small investment company that manages an equity fund comprised of 150 U.S. companies across multiple industries. The fund managers are looking to rebalance the fund’s holdings and would like you to provide an analysis of the companies’ performance based on data from the most recent quarter. The data can be found in the supporting documents section as “D598 Data Set”.

To aid in your analysis you must write programs in Python or R to perform the following tasks:

•   Import the data file into a data frame.

•   Identify any duplicate rows in the data set.

•   Group all IDs by state, then run descriptive statistics (mean, median, min, & max) for all numeric variables by state and store this result as a new data frame. (Code should be modified from “D598 Task 2 Original Code” in the supporting documents section)

•   Filter the data frame to identify all businesses with debt-to-equity ratios that are negative.

•   Create a new data frame that provides the debt-to-income ratio for every business in the data set.  Debt-to-income ratio is defined as long-term debt divided by revenue.

•   Concatenate the debt-to-income ratio data frame you created with the original data frame.

Requirements

Your submission must represent your original work and understanding of the course material. Most performance assessment submissions are automatically scanned through the WGU similarity checker. Students are strongly encouraged to wait for the similarity report to generate after uploading their work and then review it to ensure Academic Authenticity guidelines are met before submitting the file for evaluation. See [Understanding Similarity Reports](https://cm.wgu.edu/t5/Frequently-Asked-Questions/Understanding-Similarity-Reports/ta-p/252) for more information.    
  
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*You must use the rubric to direct the creation of your submission because it provides detailed criteria that will be used to evaluate your work. Each requirement below may be evaluated by more than one rubric aspect. The rubric aspect titles may contain hyperlinks to relevant portions of the course.*

In this task you will prepare for your program writing by doing the following:

A.  Create a flowchart for a program to perform the required task.

B.  Write pseudocode for a program to perform the required task.

C.  Provide an explanation of the relationship between the flowchart and pseudocode that does the following:

1.  Describe the logic behind the flowchart and pseudocode.

2.  Explain the alignment between flowchart and pseudocode.

D.  Acknowledge sources, using in-text citations and references, for content that is quoted, paraphrased, or summarized.

E.  Demonstrate professional communication in the content and presentation of your submission.