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Course 3 Assessment Brief

ASSESSMENT OVERVIEW		
Assessment task	**Description**	**Due Date**
1	Weekly online quizzes	Friday of each week by 4pm
2	Data analysis	Friday 20th October, 2023 by 4pm

ASSESSMENT 1

Weekly online quiz
Time required: 1 hour (x 3)
Delivery mode: Online in Canvas

Your understanding of each week's content will be assessed by an online quiz of 30 multiple-choice questions.

This is an **individual assessment**.

INSTRUCTIONS
The weekly quiz will be completed online via Canvas. You will have 1 hour to complete all the questions once you begin the quiz, so make sure you don't start unless you have a full hour available. Each weekly quiz must be completed by 4pm Friday of Weeks 1-3. To pass the course, you must achieve a minimum score of 70% in each quiz.

ASSESSMENT 2

Data analysis
Delivery mode: Upload PowerPoint deck to Canvas

This is an **individual assessment**.

In this assessment task you will leverage two datasets to apply and demonstrate the fundamental concepts and applications of Data Analytics as covered in the course.

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INSTRUCTIONS

Purpose: To demonstrate your understanding and application of data analysis concepts in two real world scenarios. Note that this task is not dependent on financial knowledge. Rather, the application of analytical processes and concepts is the focus.

Audience: Business managers (non-technical audience, not familiar with data analytics).

You will need to download 2 data sets to complete this assessment task.

- File 1: Istanbul Stock Exchange
- File 2: South German Credit

Part A: Istanbul Stock Exchange

Background The Istanbul Stock Exchange dataset captures daily returns from various global stock indices, including Istanbul's own stock index. As an analyst at a global investment firm, you have been tasked with understanding the dynamics of the Istanbul Stock Exchange in the context of global market movements to make informed investment decisions.

Objective: Using the Istanbul Stock Exchange dataset, analyse the data to derive insights into the factors that influence the Istanbul Stock Exchange's performance and its relationship with other global indices.

Tasks:

1. **Exploratory Data Analysis:**
   a. Provide a descriptive statistics summary of the Istanbul dataset.
   b. Visualise the distribution of daily returns for the Istanbul Stock Exchange and compare it with other indices. Comment on any notable differences or patterns.
   c. Examine the volatility patterns of the Istanbul Stock Exchange compared to other indices. Are there periods of heightened volatility?
2. **Correlation & Global Influences:**
   a. Analyse the correlation between the Istanbul Stock Exchange and other global stock indices.
   b. Discuss how external global events might impact the Istanbul Stock Exchange compared to other markets.
3. **Predictive Modelling**
   a. Develop a predictive model e.g.,. linear regression) to forecast the returns of the Istanbul Stock Exchange based on the performance of other indices.
   b. What does your model tell you in words?
4. **A/B Tests and Randomised Control Trials**:
   a. How might you propose an A/B test where two different trading algorithms are tested on the Istanbul Stock Exchange data?
5. **Recommendations & Insights:**
   a. Based on your analysis, suggest potential investment strategies for the firm regarding the Istanbul Stock Exchange.
   b. Discuss any trends or patterns that could inform future investment decisions.

Part A Deliverables (7 slides max):

1. A PowerPoint presentation outlining your analysis, findings, and recommendations.
2. Any code or scripts developed for the analysis should be in appendix.
3. A brief reflection on the challenges encountered during the analysis and the strategies employed to address them.

Part A Format:

- Slide 1: Title Slide
- Slide 2: Part A Exploratory Data Analysis Responses (descriptive statistics summary)
- Slide 3: Part A Exploratory Data Analysis Response (visualise distributions)
- Slide 4: Part A Exploratory Data Analysis Response (volatility patterns)
- Slide 5: Part A Correlation Response
- Slide 6: Part A Predictive Modelling (show linear regression and explain what it means)
- Slide 7: Part A Recommendations & Reflections for Part A

Part B: South German Credit Analysis

As an analyst at a global financial institution, you're presented with a second distinct challenge revolving around credit decision-making using the South German Credit dataset.

Objective: Analyze the South German Credit dataset to derive insights that can inform investment decisions and credit risk management.

Tasks continued:

6. **Understanding the Data:**
   a. How might you describe the distribution of credit risk in the dataset. Comment on the proportion of "Good Risk" vs. "Bad Risk".
   b. Investigate the relationship between credit history, age, and credit risk. Are there specific profiles more likely to default?

7. **Choosing the Right Regression:**
   a. Discuss the appropriateness of using linear regression for this dataset. What would be the target variable? What challenges might arise?
   b. Explore the suitability of logistic regression. How does it address the challenges or limitations of linear regression in this context?

8. **Recommendations:**
   a. Based on your analysis, provide suggestions for the bank's credit department to refine their loan approval process.
   b. Discuss any potential ethical concerns with using certain features (like age or personal status) in the credit decision-making process.

Part B Deliverable: Add 3 additional slides to your presentation.

- Slide 8: Part B Response to Understanding the Data
- Slide 9: Part B Response to Choosing the Right Regression
- Slide 10: Part B Recommendation
  You can add up to 5 additional slides in appendix if required for your insights

Marking: You must receive a PASS mark or above in all criteria for your project to pass this course. You will be marked using the criteria below.

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Marking rubric

Evaluation Criteria	Fail (0 points)	Pass (1 point)	Credit (2 points)	Distinction (3 points)
Dataset Familiarisation & EDA	No understanding of datasets. No exploration attempted.	Basic understanding of datasets. Minimal exploration.	Good understanding and exploration of datasets.	Comprehensive understanding of datasets. Detailed and thorough exploration.
Descriptive Analysis	No analysis conducted.	Basic measures like mean, median reported without any interpretation.	Detailed measures reported with some interpretation.	Comprehensive descriptive analysis with excellent interpretation.
Data Quality & Preparation	No effort to check or clean data.	Basic data cleaning done. Many issues left unresolved.	Good effort in data cleaning and preparation. A few issues might be unresolved.	Excellent data cleaning and preparation. All issues resolved.
Correlation & Statistical Study	No statistical study attempted.	Basic correlations computed without interpretation.	Multiple statistical tests conducted with interpretations.	Comprehensive statistics with actionable insights and interpretations.
Linear Regression Modeling	No model developed.	Basic model developed without validation or interpretation.	Model developed and validated. Some interpretation provided.	Comprehensive modeling with validation, interpretation, and suggestions for improvement.
Data Visualisation	No visualisations provided.	Basic visualisations without insights.	Quality visualisations that provide insights.	High-quality visualisations with deep insights, aesthetic appeal, and excellent data storytelling.
Insight Generation & Reflection	No insights or reflection provided.	Minimal insights. No reflection on results.	Good insights generated with some reflection on results.	Deep and meaningful insights generated with comprehensive reflection on results and methodology.