Higher Education Assignment Front Sheet

Curriculum Area	Awarding Body
Digital & Creative Innovation - BSoC	Lancaster University

Assessment Details			
No	1 of 2	Type	Coursework - Letter Grade
Word count	2000	Weighting	60%

Module and Programme Details			
Title	Business Intelligence		
Credits	20	Stage	Stage 2 Level 5
Code	IN5MD031	Occurrence	24/25
	IN1WD009 23/26 BSc (Hons) Digital and Technology Solutions - Software Engineer		
	IN1WD009 23/26-FEB BSc (Hons) Digital and Technology Solutions - Software Engineer		
	IN1WD010 23/26 BSc (Hons) Digital and Technology Solutions - Network Engineer		
	IN1WD010 23/26-FEB BSc (Hons) Digital and Technology Solutions - Network Engineer		
	IN1WD011 23/26 BSc (Hons) Digital and Technology Solutions - Cyber Security Analyst		
	IN1WD011 23/26-FEB BSc (Hons) Digital and Technology Solutions - Cyber Security Analyst		
	IN1WD012 23/26 BSc (Hons) Digital and Technology Solutions (Data Analyst)		
	IN1WD012 23/26-FEB BSc (Hons) Digital and Technology Solutions (Data Analyst)		
	IN1WD014 23/26 BSc (Hons) Digital and Technology Solutions (IT Consultant)		
	IN1WD014 23/26-FEB BSc (Hons) Digital and Technology Solutions (IT Consultant)		

Tutor Details			
Name	James Dunkerley	Email	James.dunkerley@blackpool.ac.uk
Room	SB052A	Tel	01253 504124

Internal Verification			
IV Name	Jason Walker	Peer	Jacqueline Wilson
Date	01st October 2024	Date	20th September 2024

Distribution	
Date	[**w/c**] 07th October 2024

Submission and Feedback			
Location	Canvas upload	Feedback W/C	16th December 2024
Date	26th November 2024	Time	12:00pm (Noon)

Please note that late submissions may incur a penalty as defined within the assessment regulations of the awarding body

If you would like support from a HELM please complete the referral form here

Student/Apprentice Declaration

It is your responsibility to ensure that your work is in the correct format, that you have submitted the correct file, and that you have submitted all the work you want assessed. Once you have completed your submission online you can download the file that you have submitted to confirm that your work has been received as intended. If the College is unable to open your file, it may not be marked.

The College must ensure as far as possible that the work submitted by students and apprentices is their own and that credit is not given for unreferenced material from other sources, including AI generated material.

By submitting work for this assignment, you acknowledge that the content is entirely your own work and that it has not been submitted whole or in part for the award of a degree or other qualification by you or any other person. You confirm that all sources have been properly cited and referenced. You are expected to have familiarised yourself with the College regulations relating to assessment and academic malpractice and you should be aware that your work will be subjected to automated checks for plagiarism and material generated by artificial intelligence software.

Learning Outcomes Assessed in the Assignment

1	Evidence appropriate data extraction and transformation techniques to prepare data for analysis. [S8, S11]
2	Apply data analysis and visualisation techniques to solve a business problem. [K15, S1, S3]

Grade Descriptors (Aligned to the learning outcomes and the primary descriptors of the awarding body)

The descriptions below provide an indication of the requirements for each grade boundary for this assignment

Excellent	Demonstrates an in-depth understanding of data extraction, transformation, analysis, and visualisation. Applies advanced techniques accurately, showing a high level of critical thinking and problem solving in addressing the business scenario. Creates clear, effective, and advanced visualisations that not only present data effectively but also provide unique insights and actionable recommendations. Uses appropriate tools efficiently and includes well-explained captions.
Good	Demonstrates a strong understanding of data extraction and transformation, applying appropriate techniques with minor errors. Provides a detailed analysis of the data, addressing most aspects of the business scenario. Produces a clear and well-designed visualisation that accurately reflect the analysis. Insights are relevant and mostly actionable, with captions that describe the visuals' purpose and findings adequately.
Satisfactory	Shows and understanding of basic data extraction and transformation techniques. The analysis covers the main points of the business scenario but lacks depth or contains minor errors in the application of techniques.

	Creates visualisations that are clear but simple, focusing on basic insights. The visuals adequately support the analysis but may lack depth or advanced interpretation. Captions are present but may lack detail.
Weak	Attempts data extraction and transformation but with significant errors or omissions. The analysis is superficial, failing to address key aspects of the business scenario or to apply the techniques correctly. Visualisations are present but lack clarity, are poorly designed, or fail to provide meaningful insights. Captions are missing or do not explain the visuals' relevance to the analysis.
Fail	Fails to demonstrate an understanding or basic data extraction and transformation. The analysis is either missing or fundamentally flawed, with little to no relevance to the business scenario. Visualisations are either absent, irrelevant, or incorrectly represent the data. No attempt is made to explain the visualisation or provide insights derived from them.

Additional Requirements (where applicable)

This section describes any additional assessment requirements which may be identified by public statutory and regulatory bodies

K15 Principles of estimating cost, and time resource constraints within digital and technology solutions activities.

S1 Analyse a business problem to identify the role of digital and technology solutions.

S3 Analyse a business problem in order to specify an appropriate digital and technology solution.

S8 Apply relevant organisational theories. For example, change management principles, marketing approaches, strategic practice, and IT service management to a digital and technology solutions project.

S11 Determine and use appropriate data analysis techniques. For example, Text, Statistical, Diagnostic or Predictive Analysis to assess a digital and technology solutions.

Assignment Brief

Business Intelligence (BI) is crucial for transforming raw data into actionable insights that drive business strategies. This assignment is designed to provide hands-on experience with data extraction, transformation, and visualisation techniques, key skills for any data driven role in the technology industry. You are required to conduct a detailed examination of data extraction and transformation methods before using analysis and visualisation techniques to address a specific business problem. You work will be assessed based on how well you demonstrate these techniques, apply tools, and interpret the findings.

DATA EXTRACTION AND TRANSFORMATION

- Define data extraction and discuss its importance in Business Intelligence (BI).
- Explore common data extraction methods (e.g., SQL queries, API extraction).
- Explain data transformation processes, such as data cleaning and normalisation.
- Use examples and tools (like but not limited to Python & SQL) to demonstrate these techniques.

DATA ANALYSIS AND VISUALISATION

- Discuss data analysis's role in deriving insights and solving business problems.
- Introduce common analysis methods, including statistical and predictive techniques.
- Explore visualisation tools (e.g., Power BI) and methods to present findings effectively.

APPLYING TECHNIQUES TO A BUSINESS SCENARIO

In this section, you are to use the data extraction, transformation, analysis, and visualisation techniques discussed earlier to address a specific business problem. The scenario provided below outlines a common business situation where data-driven decisions are crucial. Your task is to analyse the data (this has been provided) using appropriate techniques, visualise the findings, and provide actionable insight that the company could implement to improve its operations.

Instructions:

1. Read the business scenario provided below.
2. Extract and prepare data required to address the problem outlined.
3. Apply data analysis and visualisation techniques.
4. Highlight key findings and suggest potential actions the business could take based on your analysis.

Business Scenario:

You are a data analyst at a mid-sized e-commerce company that sells a variety of products, ranging from electronics to clothing. The company has seen fluctuating sales and wants to understand the factors contributing to these changes. Your goal is to analyse sales data from the past year to uncover patterns, identify peak sales periods, and determine which products and regions are driving the most revenue.

Data Available:

- Sales data for each month of the past year, including product categories, quantities sold and revenue.
- Customer data, including geographical regions.
- Marketing campaign data, indicating when promotions were active.

Data Extraction:

Start by extracting the sales, customer, and marketing data. This may involve filtering the dataset to focus on key attributes such as product categories, regions, and sales data.

Data Transformation:

Clean the data by handling missing values, converting sales dates into more usable format (e.g., month and year), and standardising product categories. Segment the data into regions and product categories for analysis.

Data Analysis:

- Identify the top-performing products and regions based on total sales and revenue.
- Determine peak sales periods and correlate them with marketing campaigns or seasonal factors.
- Calculate customer retention rates by examining repeat purchases over the past year.

Visualisation:

- Create visual representation (e.g., bar charts for top products, line graphs for monthly sales trends, pie charts for regional distribution) to illustrate the insights derived from the data.

Insights and Recommendations:

- Based on your analysis, identify key trends (e.g., which products are the most popular, peak sales times) and recommend strategies the company could implement to enhance its performance.

SUBMISSION DELIVERABLES

Upon submission of this assessment, you must look to submit the following work to **Canvas**:

- A single work document in a report format containing all documentation.

This assessment has a maximum word count of 2000 words +/-10% (excluding your reference and appendix list). The referencing should all be undertaken in the Harvard Referencing format, and any images used should be used in line with the text throughout the document (with each image being given a figure number and caption).