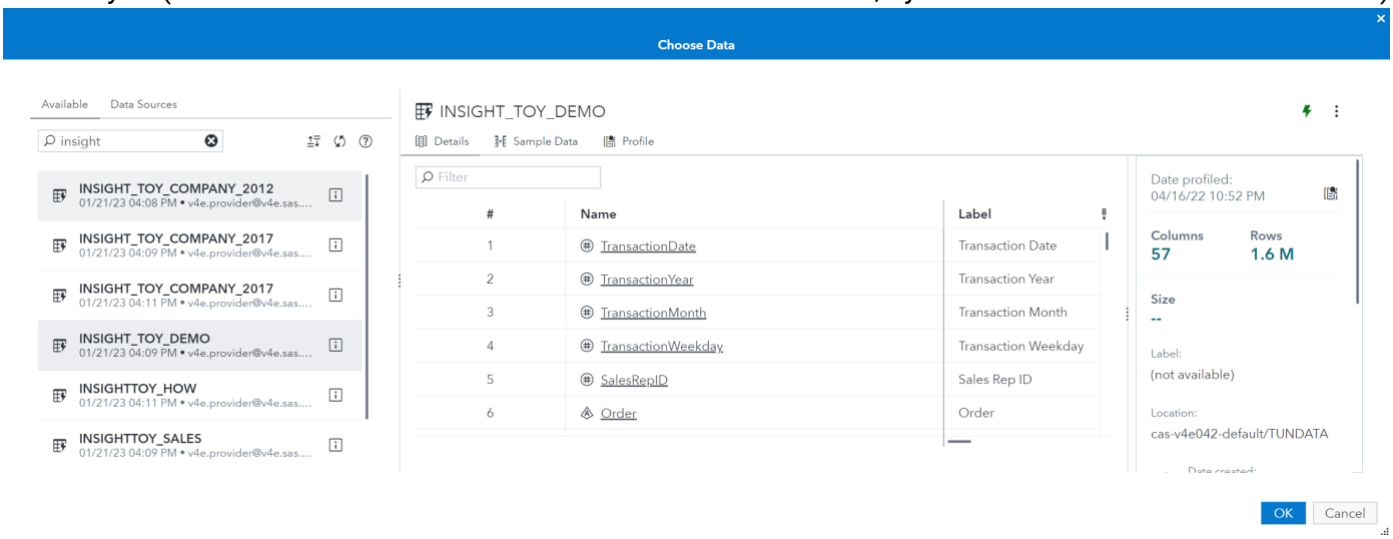
Subject	**BUS5VA Visual Analytics, Semester 2 2025**
Assessment 3	Data Visualisation using SAS Viya
Due date	11:59 pm (AEST/AEDT), Sunday 2 November 2025 (Week 13)
Weighting	40%
SILOs	SILO 2: Describe the visualisation framework in a variety of business problems. SILO 3: Select appropriate visualisation techniques for diverse business problems and critically evaluate various visualisation choices throughout the entire solution process. SILO 4: Apply suitable tools to visualise the data and analytical findings based on specific user requirements.
GC	Inquiry and Analysis; Discipline Knowledge and Skills
Feedback	Feedback will be available on LMS when the final grade is released.

Instruction

In this assessment, you will use **SAS Viya Visual Analytics** to generate an interactive report with visualisations to address tasks related to a real-world business scenario. The dataset is available on SAS Viya and can be directly imported for visualisations.

Dataset

The dataset used in this assessment is *INSIGHT TOY DEMO*, which can be found in the available datasets of SAS Viya (if there are two dataset with the same name, you can choose either of them).



Task 1: Create data items. [**3 marks**]

1.1 Calculate the *Gross Margin* of products, which is "*Product Sales*" – "*Product Cost of Sales*", and then create a new data item for the *Average Gross Margin*.

1.2 Create the *Product Hierarchy* including *Brand*, *Line*, *Make*, *Style* (in that sequence).

1.3 Create the *Facility Geo-hierarchy* including *Continent*, *Country*, *Region*, City (in that sequence).

For each hierarchical data item generated in the sub-tasks 1.2 and 1.3, create a *drillable bar chart* (e.g. choose/click continent for show data related to countries in the selected continent) to show average gross margin at each level and highlight the category with the highest average gross margin.

Task 2: Create visualisations to summarise the gross margin. [**5 marks**]

2.1 Create a *crosstab* to summarise the *Product Sales* and *Gross Margin* based on *Countries* and *Continents.*

2.2 Create a visualisation to show which *Country* generates the highest and lowest average *Gross Margin.*

2.3 Compare the *Product Sales* over time across all *Continents* [Hint: use transaction time].

2.4 Create a visualisation that help users understand trends related to total *Gross Margin* across product brands and continents.

Task 3: Create an interactive report page to explore product sales and customer satisfaction. All visualisations in this task must be in the same page. [**12 marks**]

3.1 Create a *drillable geo-map* to compare the Product Sales from facilities across *Continents*, *Countries*, *Regions*, and *Cities*.

3.2 Create and incorporate the *Average Customer Satisfaction* towards products from each facility into the above *geo-map*.

3.3 Create a visualisation (on the same page) for the *Product Sales* over time and their 4-month forecasts which can be adapted / filtered as we drill down the above geo-map.

Task 4: Build an interactive report page to help the global production manager to identify the correlations between facility attributes and customer satisfaction. All visualisations in this task must be in the same page. [**12 marks**]

4.1 Create a *button bar* to filter transactions by facilities from each *Continent* and create a *bar chart* to compare the *Average Customer Satisfaction* towards products from each *Country*.

4.2 Create visualisations to show the correlations between *Customer Satisfaction* and *Customer Distance*; the distribution of *Customer Distance*; and the *Average Customer Distance* over time.

4.3 Interactively adapt / filter the three visualisations in the sub-task 4.2 by selecting each *Country* in the *bar chart* created in the sub-task 4.1.

4.4 Use analytics features in SAS Viya to help you identify key factors that impact customer satisfaction. Then, visualise the effects of these key factors in this report page (one or two key factors are sufficient).

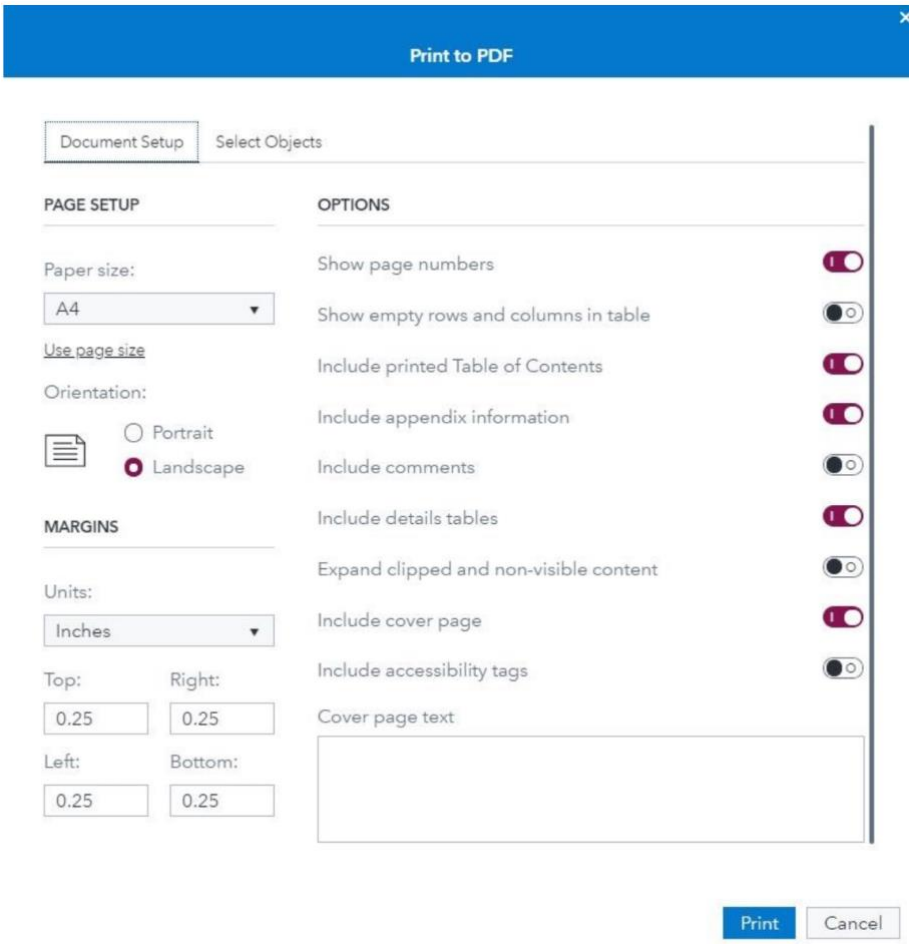
Task 5: [**8 marks**]

5.1 Design an 'overview' page for your SAS Report to provide a description for the visualisations presented for each of the tasks above (from Task 2 to Task 4). The description should include 'what' you are trying to show. (*Assuming that this overview page is part of the visualisation report that you would be presenting to the stakeholders.*)

5.2 Prepare a Word or PDF document (max 2000 words) containing the explanations and demonstrations (e.g., taking snapshots from your SAS Viya) for all tasks including all calculations, visualisations, and interactive features. The explanations should include 'how' and 'why' you have chosen a visualisation (or design a report page in a certain way) to address a specific task. You should support your justification based on various visualisation principles and guidelines for effective visualisation.

Submission Instructions

- You must submit the explanation document (as described in 5.2) to explain your visualisation solutions and illustrate all the interactive features. You can treat this report as the technical training document to help your users understand features of your SAS Viya report (e.g., how to use certain visualisations and interactive features). Snapshots must be provided for each subtask to demonstrate/explain the outcomes.
- Each report page in the SAS report needs to be appropriately named based on the given tasks. Please include the snapshot of each page in your explanation document.
- The first page of the SAS report should be the *overview* with a brief description for each task.
- Use the print option to generate the PDF file for the report (with all the pages included) and submit the PDF report via the submission link on LMS.
- When printing the report, please make sure that the PDF report captures all the interactivities (and/or actions) created for the related pages, specifically for task 3 and task 4.
- You should ensure that the appendix information is included in your PDF report.



- Submit two files (explanation document and SAS pdf report) via the submission link on LMS.

Important Information

- Standard plagiarism and collusion policy, and extension and special consideration policy of this university apply to this assignment.
- A cover sheet is NOT required. By submitting your work online, the declaration on the university's assignment cover sheet is implied and agreed to by you.

Marking Rubric

CRITERIA	A: Excellent (> 80 %)	B: Very good (70 – 79%)	C: Good (60 – 69%)	D: Acceptable (50 – 59%)	N: Unacceptable (<50%)
Proficiency in Calculated Items, Aggregated Measures, and Hierarchies Creation in SAS Viya Visual Analytics	Demonstrates exceptional proficiency in creating calculated items, aggregated measures, and hierarchies in the report. Achieves precision, clarity, and sophistication, greatly enhancing the report's analytical depth and insights.	Shows a strong ability to construct calculated items, aggregated measures, and hierarchies effectively. Consistently incorporates well-structured elements in the report, significantly improving overall quality and understanding.	Capably constructs calculated items, aggregated measures, and hierarchies, enhancing the report. Meets the basic requirements, contributing to the report's clarity and comprehension.	Demonstrates a fundamental ability to create calculated items, aggregated measures, and hierarchies. Includes these components but has room for growth in terms of depth and sophistication.	Struggles to create calculated items, aggregated measures, and hierarchies effectively. Often lacks these crucial elements, or includes them with noticeable errors and shortcomings.
Proficiency in Data Visualization and Report Creation in SAS Viya Visual Analytics	Demonstrates an outstanding proficiency of SAS Viya Visual Analytics for data visualization and report creation. Effectively utilizes advanced visualization techniques to convey data insights. Creates reports that are exceptionally informative, engaging, and impactful.	Shows a strong proficiency in SAS Viya Visual Analytics for data visualization and report creation. Demonstrates a solid understanding of various visualization techniques to convey data. Creates reports that are informative, visually appealing, and insightful.	Demonstrates a competent grasp of SAS Viya Visual Analytics for data visualization and report creation. Utilizes fundamental visualization techniques effectively to present data. Develops reports that are generally informative and visually acceptable.	Shows a basic ability to use SAS Viya Visual Analytics for data visualization and report creation. Uses fundamental visualization techniques, but there may be some deficiencies. Reports generally meet minimum standards but may lack in-depth insights or visual impact.	Struggles to effectively use SAS Viya Visual Analytics for data visualization and report creation. Demonstrates limited proficiency in using visualization techniques. Fails to meet the minimum requirements for creating informative and visually appealing reports.
Application of Effective Data Visualization Principles for Data Storytelling	Demonstrates an outstanding application of data visualization principles for data storytelling. Effectively conveys complex information through clear, engaging, and highly impactful visual narratives.	Shows a strong proficiency in applying data visualization principles for data storytelling. Demonstrates a solid understanding of various visualization techniques for data storytelling.	Demonstrates a competent application of data visualization principles for data storytelling. Utilizes fundamental visualization techniques effectively to tell a clear data story.	Shows a basic ability to apply data visualization principles for data storytelling. Uses fundamental visualization techniques, with some deficiencies in storytelling clarity.	Struggles to effectively apply data visualization principles for data storytelling. Fails to meet the minimum requirements for creating a compelling data narrative.