SOEN 6611 (SOFTWARE MEASUREMENT)

Concordia University

Department of Computer Science and Software Engineering

METRICSTICS

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Deliverable 1 (D1)

1.1 Problem 1

Purpose
To simplify complex statistical calculations with precise outcomes and enable users to gain valuable insights or analysis from the data

Perspective
Examine the use and results from the user's (data analysts, testers, developers) viewpoint

Environment
In the development and maintenance phase of the life cycle

1. **Question 1: How accurate are the results of METRICSTICS?**
   (a) Metric 1: Compare the results with proven, benchmark calculations and calculate the percentage of the accuracy
2. **Question 2: Is the performance of METRICSTICS satisfactory from the users' viewpoint?**
   (a) Metric 1: Measure computation time
   (b) Metric 2: User surveys and feedback
3. **Question 3: Does METRICSTICS display results to a sufficient number of decimal places?**
   (a) Metric 1: Measure the level of precision of the output
   (b) Metric 2: User surveys and feedback
4. **Question 4: If an error occurs, are the messages intuitive and helpful enough to assist users to correct input mistakes?**
   (a) Metric 1: User surveys and feedback
5. **Question 5: Can METRICSTICS handle large datasets as inputs?**
   (a) Metric 1: Measure and analyze the capability to handle large datasets
6. **Question 6: Can the users of METRICSTICS use it autonomously?**
   (a) Metric 1: User surveys and feedback
   (b) Metric 2: Evaluate the quality and accessibility of user documentation, tutorials, training and help resources
7. **Question 7: Does METRICSTICS provide sufficient functionalities?**
   (a) Metric 1: Compare functionality available between METRICSTICS and those commonly used functionalities in research and data analysis

8. **Question 8: Can METRICSTICS be used across different platforms (e.g. Windows, macOS, iOS, Android)?**
   (a) Metric 1: Evaluate compatibility across various platforms
9. **Question 9: How long does it take a user to complete a task using METRICSTICS?**
   (a) Metric 1: Measure the time required and calculate the average time taken
10. **Question 10: Is the user interface and the overall experience of METRICSTICS easy to use?**
   (a) Metric 1: User surveys and feedback
   (b) Metric 2: Compare time-based efficiency between a new user and a returning user

1.2 Problem 2

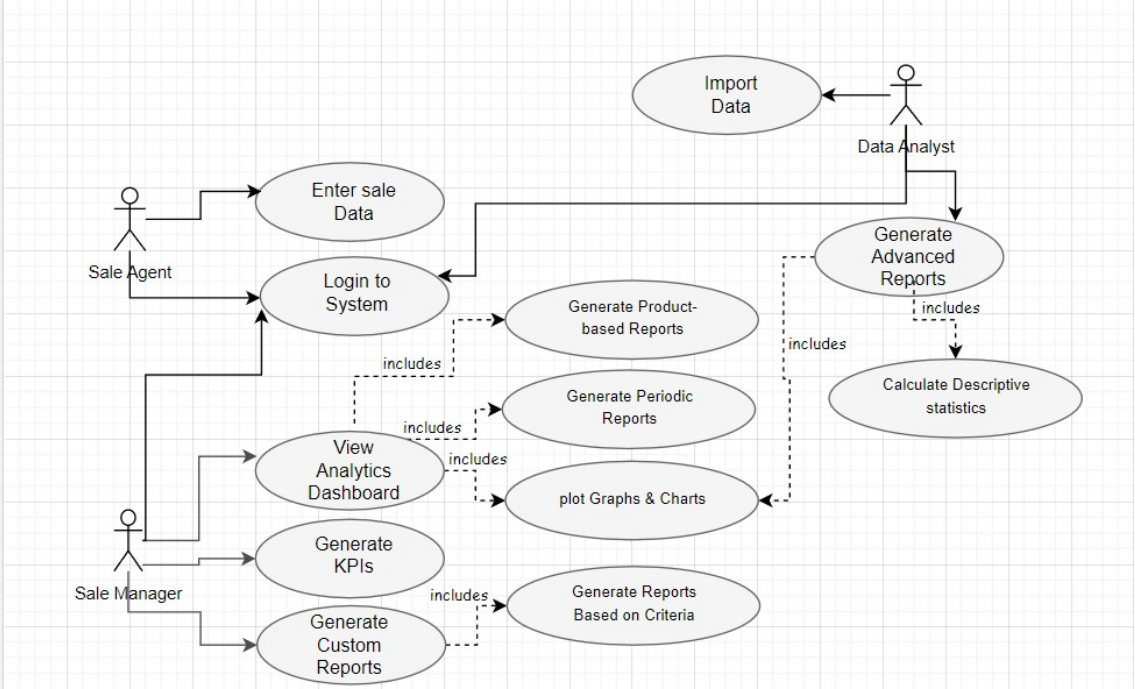

Figure 1.1: Use Case Model

Use Case ID	UC-1
Use Case Name	Login to System
Primary Actors	• Sales Agent • Sales Manager • Data Analyst
Priority	High
Description	User can login into the System.
Pre-conditions	• User has a valid account on the system.
Post-conditions	• User logged in successfully.
Scenario	• User open the login page of the system • System displays the login page. • User enters their username and their password. • User clicks on "Login" button. • System checks the User's credentials • System displays the homepage. • User sees the homepage.
Exceptional Flow	• User does not have an account in the system - System notifies user that he/she does not have an account in the system. • User enters wrong credentials - System notifies user that credentials provided are incorrect. • User is unable to login due to system issues - System logs the problem and provides and error message to the user, suggesting a retry or contact with technical support.

Use Case ID	UC-2
Use Case Name	Enter sales Data
Primary Actors	• Sales Agent
Priority	High
Description	User can enter sales data.
Pre-conditions	• User has a valid account on the system. • There are products in the system.
Post-conditions	• User enters sales data successfully.
Scenario	• User finds product in the system. • User enters the purchase date, customer information and quantity sold. • User clicks on "Submit" button. • System saves the sales data into the database. • User is redirected to list of sales data page.
Exceptional Flow	• User is unable to find product in the system - System notifies user that the product does not exist in the system. • User is unable to enter sales data due to system issues - System logs the problem and provides and error message to the user, suggesting a retry or contact with technical support.

Use Case ID	UC-3
Use Case Name	View Analytics Dashboard
Primary Actors	• Sales Manager
Priority	High
Description	User can view analytics dashboard which displays product analysis.
Pre-conditions	• User logs into the system
Post-conditions	• User views analytics dashboard successfully.
Scenario	• User clicks on the "View Analytics Dashboard" button. • The system displays an analytics dashboard with various performance metrics. • User reviews sales data and KPIs.
Exceptional Flow	• User is unable to view analytics dashboard due to system issues or data retrieval problems - System logs the problem and provides and error message to the user, suggesting a retry or contact with technical support.

Use Case ID	UC-4
Use Case Name	Generate Product-based Reports
Primary Actors	• Sales Manager
Priority	Medium
Description	User generate product-based reports based on sales data.
Pre-conditions	• User logs into the system
Post-conditions	• User generates product-based reports successfully.
Scenario	• User clicks on the "Generate Product-Based Reports" button. • The system prompts the user to choose specific products. • The system generates detailed reports on the selected products.
Exceptional Flow	• No data is available for the selected products - System informs the user and suggests alternative products.

Use Case ID	UC-5
Use Case Name	Generate Periodic Reports
Primary Actors	• Sales Manager
Priority	Medium
Description	User can generate periodic reports for sales data.
Pre-conditions	• User logs into the system
Post-conditions	• User generates periodic reports for sales data successfully.
Scenario	• User clicks on the "Generate Periodic Reports" button. • The system prompts the user to specify the reporting period. • The system generates reports summarizing sales data for the chosen trime frame.
Exceptional Flow	• Delay in data processing or issues generating the report - System logs the problem and provides and error message to the user, suggesting a retry or contact with technical support.

Use Case ID	UC-6
Use Case Name	Plot Graphs & Charts
Primary Actors	• Sales Manager
Priority	Medium
Description	User can create visual representations of sales data.
Pre-conditions	• User logs into the system
Post-conditions	• User plots graphs and charts for sales data successfully.
Scenario	• User clicks on the "Plot Graphs & Charts" button. • The system provides tools to create visual representations of sales data. • User customizes and generate graphs and charts as needed.
Exceptional Flow	• Selected data for visualization contains outliers or incompatible data types - System warns the user and suggests data pre-processing steps.

Use Case ID	UC-7
Use Case Name	Generate KPIs
Primary Actors	• Sales Manager
Priority	Medium
Description	User can calculate and present KPIs based on sales data.
Pre-conditions	• User logs into the system
Post-conditions	• User can generate KPIs successfully.
Scenario	• User clicks on the "Generate KPIs" button. • The system calculates and presents key performance indicators (KPIs) based on sales data.
Exceptional Flow	• User is unable to generate KPIs due to errors encountered during KPI calculation because of data inconsistencies or missing values - System logs the problem and provides and error message to the user, suggesting a retry or contact with technical support.

Use Case ID	UC-8
Use Case Name	Generate Custom Reports
Primary Actors	• Sales Manager
Priority	Medium
Description	User can customize reports to be generated based on sales data.
Pre-conditions	• User logs into the system
Post-conditions	• User can generate custom reports successfully.
Scenario	• User clicks on the "Generate Custom Report" button. • The system provides an intuitive interface for custom report creation. • User defines the report criteria, including date ranges, product categories, and specific metrics of interest. • The system processes the criteria and generates a custom report tailored to the user's specifications. • User reviews and downloads the custom report for further analysis or distribution.
Exceptional Flow	• Criterias are too broad or produces an excessively large report - System notifies the user and suggests refining the criteria for better performance and usability. • Data processing issues or system errors during report generation - System logs the problem and provides and error message to the user, suggesting a retry or contact with technical support.

Use Case ID	UC-9
Use Case Name	Generate Reports based on Criteria
Primary Actors	• Sales Manager
Priority	Medium
Description	User can customize reports to be generated based on sales data.
Pre-conditions	• User logs into the system
Post-conditions	• User can generate custom reports successfully.
Scenario	• User clicks on the "Generate Reports Based on Criteria" button. • The system provides an intuitive interface for custom report creation. • User defines the report criteria, including date ranges, product categories, and specific metrics of interest. • The system processes the criteria, conducting a targeted analysis based on the user's specifications. • Once the analysis is complete, the system generates a comprehensive report tailored precisely to the provided criteria.
Exceptional Flow	• Criterias are too broad or lead to the generation of an an excessively large report - System notifies the user and suggests refining the criteria for better performance and usability. • Data processing issues or system errors during report generation - System logs the problem and provides and error message to the user, suggesting a retry or contact with technical support.

Use Case ID	UC-10
Use Case Name	Import Data
Primary Actors	• Data Analyst
Priority	High
Description	User can import sales data into the system in various formats.
Pre-conditions	• User logs into the system
Post-conditions	• User imports data successfully.
Scenario	• User clicks on the "Import Data" button. • The system provides options for uploading various file formats, including CSV, Excel and JSON. • User selected the appropriate file format, file and initiates the import process. • The system parses the data, validates its format and stores it securely within the system database. • Once the import is successful, the user can proceed with using the imported data for further analysis and reporting.
Exceptional Flow	• The uploaded file is incompatible or corrupted - The system notifies the user and suggests using a valid file format or checking the integrity of the uploaded file. • Network issues or system downtimes during data import process - System logs the problem and provides and error message to the user, suggesting a retry or contact with technical support.

Use Case ID	UC-11
Use Case Name	Generate Advanced Reports
Primary Actors	• Data Analyst
Priority	High
Description	User can create in-depth analytical reports.
Pre-conditions	• User logs into the system
Post-conditions	• User generates advanced reports successfully.
Scenario	• User clicks on the "Generate Advanced Reports" button. • The system provides a user-friendly interface allowing the user to choose from specific data sources, define intricate filters, and choose from a variety of visualization options. • The user configures the report parameters, such as time intervals, comparative metrics and data granularity. • The system processes these parameters, conducts complex data analysis, and generates advanced reports presenting detailed insights and trends derived from the selected data sources.
Exceptional Flow	• The chosen data sources do not contain sufficient data to generate meaningful advanced reports - The system notifies the user and suggests selecting different or additional data sources for analysis. • Issues with visualization tools or rendering engine, resulting in distorted or incomplete reports - System logs the problem and provides and error message to the user, advising the user to adjust the visualization settings or try generating the report again.

Use Case ID	UC-12
Use Case Name	Calculate Descriptive Statistics
Primary Actors	• Data Analyst
Priority	High
Description	User can calculate descriptive statistics.
Pre-conditions	• User logs into the system
Post-conditions	• User calculates descriptive statistics successfully.
Scenario	• User clicks on the "Calculate Descriptive Statistics" button. • The user specifies a dataset of interest, such as definintg the product sales period, choosing variables and parameters for which descriptive statistics are required. • The system processes this request, performing calculations such as mean, median and standard deviation. • The system generates a detailed report outlining the descriptive statistics of the selected dataset, providing the user with essential insights into the data's central tendencies and variations
Exceptional Flow	• The chosen data sources do not contain sufficient data to generate meaningful advanced reports - The system notifies the user and suggests selecting different or additional data sources for analysis. • Issues with visualization tools or rendering engine, resulting in distorted or incomplete reports - System logs the problem and provides and error message to the user, advising the user to adjust the visualization settings or try generating the report again.

Deliverable 1 - Team Contribution

Github Link: https://github.com/eroz07/soen-6611

Student ID	Student Name	Contribution
40245246	Naman Kumar	Problem 1 - Question 1, 2 and Problem 2
40216098	Yvonne Chooi Mei Lee	Problem 1 - Question 3, 4 and Problem 2
40240678	Yang Liu	Problem 1 - Question 5, 6 and Problem 2
40230416	Jothi Basu Lkv	Problem 1 - Question 7, 8 and Problem 2
40221665	Nasrin Maarefi	Problem 1 - Question 9, 10 and Problem 2