Learning Report – Applied System Development Life Cycle and Software Testing

L&T Technology Services

Global Engineering Academy

Genesis

Document History

Ver. Rel. No.	Release Date	Prepared. By	Reviewed By	To be approved By	Remarks/Revision Details
1	25/2/21	99003605	Name/PS No	Module Owner Name	Requirements and planning
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DATA MERGE AND ANALYSIS

REQUIREMENTS AND PLANNING:

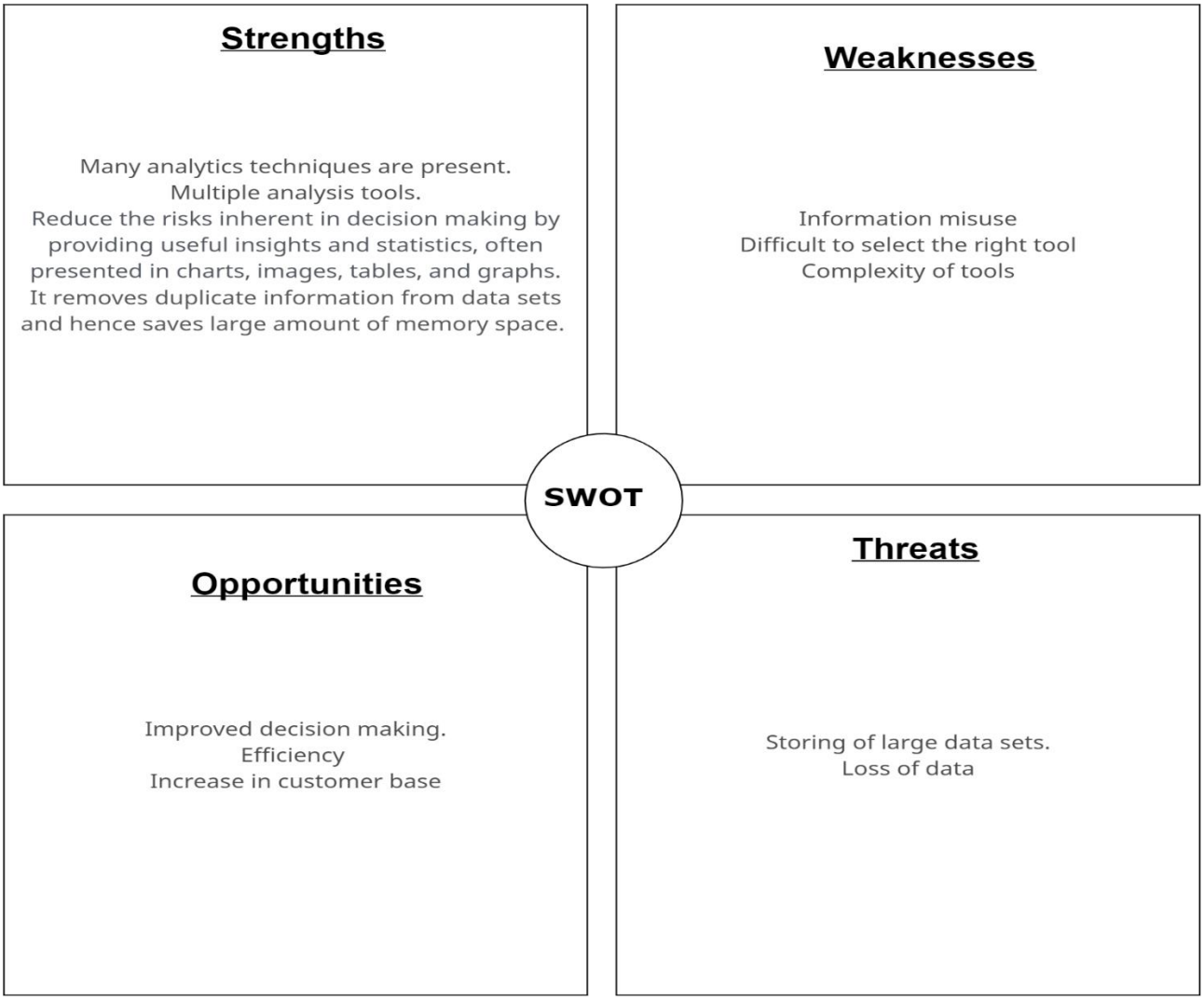
1. NEED:
    - INTRODUCTION:
        - Data Merging and analysis is used to manipulate data and display visual representation of the statistical analysis performed.
        - Marks or score analysis is not only carried out in educational institutions as a metric for evaluation but also in other places where keeping a score is relevant.
        - E-mailers are used to update concerned people by triggering e-mails after successful completion of the required manipulation.
    - HISTORY:
        - The history of data analytics goes as far as the 19th century
        - The measurement of assembly lines by Henry Ford was also
    - TRENDS:

2. FEASIBILITY ANALYSIS:
    - MARKET FEASIBILITY ANALYSIS
        - Score Analysis can be performed to visualize methods of how a range of scores can be projected.
        - Score Analysis Software are used in educational institutions, Banking institutions and even in Sports.
        - The price for statistical analysis tools can go all the way up to 2 Crores in depending on the users and number of features.
        - Well known statistical analysis tools such as IBM SPSS Statistics starts from 3 Lakhs and can go all way up to 17 Lakhs.
        - Stat soft's product Statistica also prices from 1.25 Lakhs to 2 Lakhs.
        - The cheapest of the best tools comes around to 6,000 dollars a year.
        - Reference - https://www.jigsawacademy.com/pricing-for-analytical-tools-in-india/

- TECHNICAL FEASIBILITY ANALYSIS
  - All statistical analytical tools are developed within an organization and released for commercial use.
  - The statistical Analysis tool developed by IBM is considered the best.
  - Pandas is used for the analysis and manipulation of data since Python's in-built library statistics cannot be relied for huge datasets.
  - Matplotlib is used for the visualization of manipulated data.
  - Plotly is used for data representation after manipulation.

3. MY-PRODUCT REQUIREMENTS

4. SWOT ANALYSIS:



5. 4W1H:

   - *What*- The data analysis process, or alternately, data analysis steps, involves gathering all the information, processing it, exploring the data, and using it for visualization.
   - *Why*- Data analysis helps businesses improve their products and services. Can detect the strengths and weaknesses.
   - *When*- When a problem with a lot of complex operations and large number of data in unordered format is present.

- *Where*- Data Scientists and Analysts use data analytics techniques in their research, and businesses also use it to inform their decisions.
- *How*- It is a way of thinking and resolving the problems. Includes setting goals, collecting, cleaning, and analyzing data, then visualizing it.

6. REQUIREMENTS:
   - **HIGH-LEVEL REQUIREMENTS:**

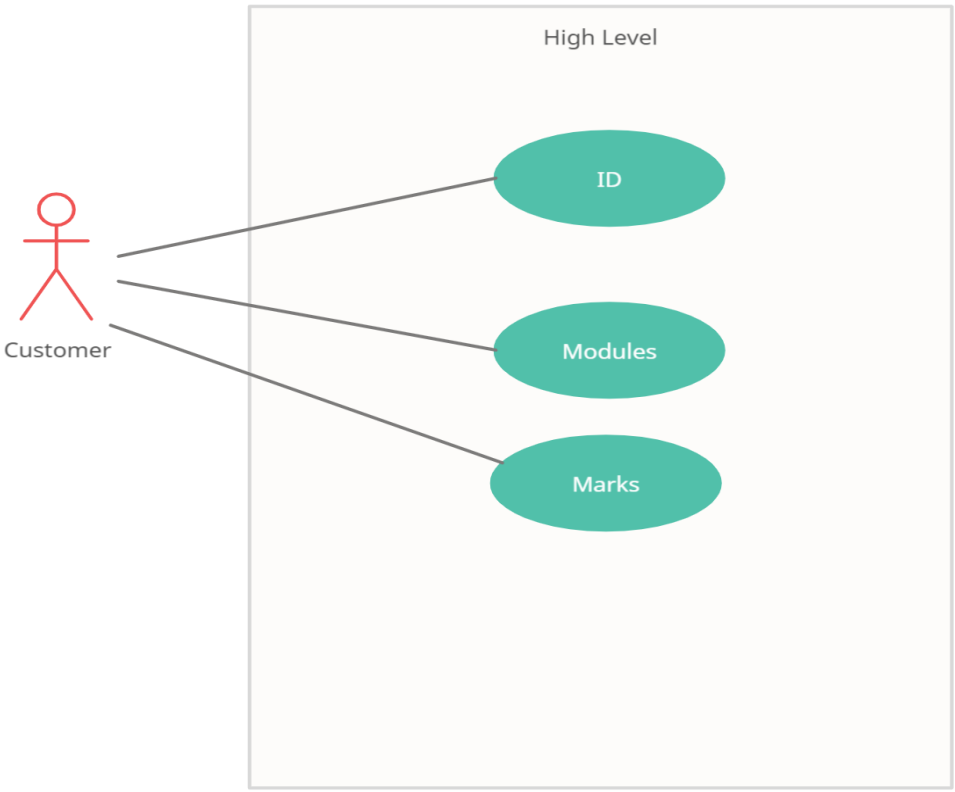
Requirement ID	Requirements
H1	General Statistics
H2	Student based data
H3	Auto Emails about the marks

   - **LOW-LEVEL REQUIREMENTS:**

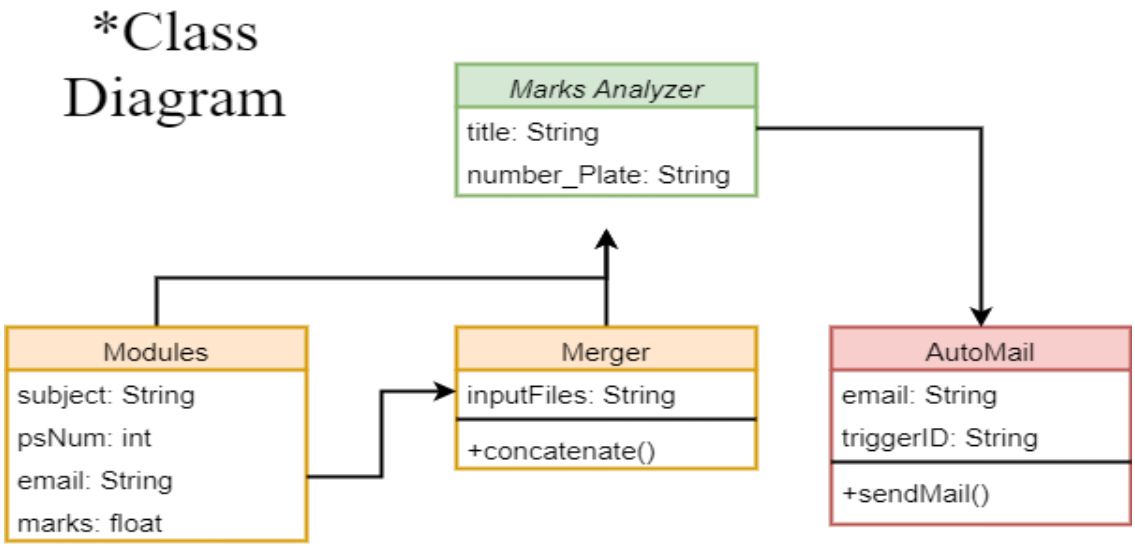
Requirement ID	Requirements
L1	Marks for each student in every subject
L2	Spider chart for student
L3	Spider chart for overall passed students in respective subjects
L4	Merged document containing stats and visualization of data
L5	Email alerts on low marks to student and teacher
L6	Email alerts on demand

7. DESIGN:
   - **HIGH-LEVEL REQUIREMENT:**
   - **Behavioral Diagrams:**

- **USE CASE DIAGRAM**



Class Diagram:



TESTING:

LOW LEVEL:

TEST ID	TEST DECRIPTION	EXPECTED INPUT	EXPECTED OUTPUT	ACTUAL OUTPUT
1	To check if empty values return a prompt (Requirement-based)	Leave values empty in input modules	Prompt displayed mentioning missing value	Considering missing value as 0
2	To check if multiple IDs with same mark are displayed in the right order depending on the alphabetical order (Scenario-based)	Scores resulting to same total values for multiple IDs	IDs displayed in alphabetically ascending order for same total values	IDs displayed with corresponding marks in alphabetical order successfully
3	To prompt if the e-mail IDs are in incorrect format (Boundary-based)	Enter email IDs incorrectly	Prompt displaying asking to correct the incorrect e-mail ID	Accepts incorrect e-mail ID and fails to send the mail

HIGH LEVEL TESTING:

TEST ID	TEST DECRIPTION	EXPECTED INPUT	EXPECTED OUTPUT	ACTUAL OUTPUT
1	To check if the statistical analysis has produced all the required outputs such as max, medium, histogram, etc. (Requirement-based)	Input modules with all values within boundaries	Statistical analysis for all inputs	Produced statistical analytical results for all inputs successfully
2	To check if e-mail is triggered to every stakeholder. (Scenario-based)	Module with e-mail IDs of stakeholders other than students	e-mail triggered to every stakeholder.	Mails not triggered to stakeholders other than students

3	To check if the results are not more than input rows (Boundary-based)	Mark values of all students	Output rows same as input rows	Repetition of student IDs after input module integration

Gantt Chart: