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**Project Portfolio**

**Border Gavaskar Trophy Analysis**

**Project Title:**

Analysing Border Gavaskar Trophy Data

**Problem Statement:**

The goal is to select and normalize a dataset related to the Border Gavaskar Trophy Test matches to 3NF, design logical and physical data models, create physical tables in a SQL Server database, and create a Tableau dashboard for visual analysis.

**Project Description:**

**Objective:**

* Select a dataset suitable for normalization.
* Normalize the dataset to the Third Normal Form (3NF).
* Design logical and physical data models.
* Implement the database schema in SQL Server.
* Perform data transformation and loading using Tableau Prep.
* Create a Tableau dashboard for data visualization.

**Scope:**

* Analyse and identify the dataset suitable for normalization.
* Perform normalization and create relations.
* Develop conceptual, logical, and physical data models.
* Generate and execute DDL statements to create physical tables in SQL Server.
* Extract, Transform, and Load (ETL) data into SQL Server using Tableau Prep.
* Design and implement a Tableau dashboard.

**Deliverables:**

* Approved dataset suitable for normalization.
* Normalized dataset in 3NF.
* Logical and physical data models.
* DDL statements for creating physical tables.
* Physical tables in SQL Server.
* Transformed and loaded data in SQL Server using Tableau Prep.
* Tableau dashboard with interactive charts.

**Methodology:**

**Tools and Technologies Used:**

* SQL Server (for database implementation)
* Tableau Prep (for data transformation and loading)
* Tableau Desktop (for dashboard creation)
* Python/Pandas (for data preprocessing and normalization)
* ER Diagramming tools (for data modeling)

**Process:**

* **Data Selection and Normalization**
  + Select dataset from data repositories.
  + Normalize dataset to Third Normal Form (3NF).
* **ETL with Tableau Prep**
  + Use Tableau Prep for data extraction, transformation, and loading.
  + Clean data, create calculated fields, and load into SQL Server.
* **Dashboard Creation in Tableau**
  + Connect Tableau Desktop to SQL Server.
  + Develop interactive visualizations (pie charts, bar graphs, tables).
  + Apply formatting, filters, and interactivity.

**Roles and Responsibilities:**

* **Project Coordinator**: I oversaw project management, task assignment, quality assurance, documentation, and presentations.
* **Team Members:** Responsible for data selection, normalization to 3NF, ETL using Tableau Prep, SQL database management, Tableau dashboard development, data analysis, visualization, quality control, and collaboration through regular meetings and feedback integration.

**Results and Impact:**

**Outcome:**

* Successfully normalized the dataset and implemented the database schema in SQL Server.
* Used Tableau Prep for effective data transformation and loading.
* Created an interactive Tableau dashboard with visualizations including pie charts, bar graphs, and tables.
* Provided stakeholders with a tool to analyze and gain insights from Border Gavaskar Trophy Test match data.

**Impact:**

* Improved data management and analysis capabilities through database normalization.
* Enhanced decision-making with interactive visualizations in Tableau.
* Facilitated better understanding of historical Test match data trends and performances.
* Demonstrated effective use of ETL processes and data visualization tools.

**Challenges and Solutions:**

**Challenges Faced:**

* Identifying and handling complex functional dependencies in the dataset.
* Ensuring data integrity and accuracy through normalization.
* Designing and implementing an efficient database schema.
* Creating meaningful and informative visualizations in Tableau.

**Solutions Implemented:**

* Conducted thorough analysis to identify and resolve functional dependencies.
* Followed a systematic approach to normalize data to Third Normal Form (3NF).
* Used ER diagramming tools for designing precise data models.
* Utilized Tableau Prep for data cleaning, transformation, and loading into SQL Server.
* Implemented best practices for dashboard design and visualization in Tableau.

**Conclusion and Learnings:**

**Summary:**

The project successfully achieved its objectives of normalizing, transforming, and visualizing Border Gavaskar Trophy Test match data. By leveraging Tableau Prep and Tableau Desktop, we created a robust database schema, loaded cleaned data, and developed an interactive dashboard. The project provided valuable insights into historical Test match performances and trends.

**Learning Experience:**

* Enhanced skills in data normalization, ETL processes, and database design.
* Improved proficiency in using Tableau Prep and Tableau Desktop for data transformation and visualization.
* Developed project management skills through coordinating team efforts and delivering comprehensive project documentation.
* Gained practical experience in creating interactive dashboards for data analysis and decision support.

**Link for the File:**

<https://drive.google.com/drive/folders/1g5P-3B66yNWntkmJn6cBpn8oIo-QqwKI?usp=sharing>