**Project Name : Smart Fashion IoT Analytics (2020- 2025)**

This guide provides a recommended step-by-step procedure to create an analytics report using the provided data and problem statements. While I cannot directly create a Word document, you can copy the following steps into one.

The project is titled "Smart Fashion IoT Analytics (2020-2025)". The report should address five key problem statements based on the

fashion\_iot\_data.csv dataset.

**1. Data Acquisition and Import**

This step involves loading the raw data into your chosen visualization tool.

1. **Open Power BI / Tableau Desktop:** Launch the application.
2. **Connect to Data:**
   * **In Power BI:** Go to "Get Data," select "Text/CSV," and navigate to the fashion\_iot\_data.csv file. The tool will automatically detect the column headers and data types. Review the data, especially the

Purchase\_Date column, to ensure it's in the correct date format.

* + **In Tableau:** Go to "Connect to a file," select "Text file," and open the fashion\_iot\_data.csv. Tableau will display the data source, and you can review the data types in the preview pane.

1. **Load Data:** Click "Load" (Power BI) or "Go to Worksheet" (Tableau) to import the data into the tool.

**2. Data Preparation and Transformation**

The provided SQL queries can be used to prepare the data or serve as a blueprint for the calculations you will perform within Power BI or Tableau.

1. **Review the Data:** Examine the columns for any missing values or data inconsistencies. The dataset includes columns such as

Product\_Category, Total\_Spend, and Carbon\_Footprint\_gCO2.

1. **Implement Logic from SQL Queries:** The fashion\_iot\_queries.sql file provides the logic for five specific analyses. You can replicate these calculations within Power BI's Power Query Editor or Tableau's calculated fields.
   * **Problem 1: Top IoT Cities:** Use the City and IoT\_Feature\_Used columns to filter for IoT\_Feature\_Used = 'yes' and then count the number of transactions per city.
   * **Problem 2: Average Carbon Footprint:** Create a calculation to find the average of the Carbon\_Footprint\_gCO2 column, grouped by Product\_Category.
   * **Problem 3: High IoT Engagement Customers:** Create a measure to count the number of times IoT\_Feature\_Used = 'Yes' for each Customer\_ID and filter for those with a count greater than 5.
   * **Problem 4: Sales Growth:** Use the Purchase\_Date and Total\_Spend columns to calculate sales for "Smartwatch" and "IoT Sneakers" for each year from 2020-2025 and compute year-over-year growth.
   * **Problem 5: Connectivity Preference:** Use the Device\_Connectivity column to find the percentage of transactions for each connectivity type (e.g., WiFi, 5G, Bluetooth, NFC).

**3. Report Development and Visualization**

Create visualizations to present the insights from the prepared data.

1. **Create a New Dashboard/Report Page:** Start with a clean canvas in Power BI or Tableau.
2. **Visualize Each Problem Statement:**
   * **Top IoT Cities:** Use a bar chart to show the top 5 cities with the most IoT transactions.
   * **Average Carbon Footprint:** Use a bar chart or a column chart to display the average carbon footprint for each product category.
   * **High IoT Engagement Customers:** Use a table to list the Customer\_ID and the number of times they have used IoT features.
   * **Sales Growth:** Use a line chart to compare the yearly sales of "Smartwatch" and "IoT Sneakers".
   * **Connectivity Preference:** Use a donut chart or a pie chart to show the percentage distribution of device connectivity.
3. **Final Touches and Sharing**
4. **Refine the Report:** Add clear titles for each chart and a main title for the dashboard. Add text boxes to provide context and descriptions.
5. **Save and Share:** Save your work as a .pbix (Power BI) or .twbx (Tableau) file. The report can now be shared with stakeholders. Based on the files provided, here is a step-by-step procedure to create an analytics report in Power BI and Tableau. Please note that while I cannot directly generate a Word document, you can copy the following text into one.

**Step-by-Step Procedure for Power BI and Tableau Reports**

**1. Data Import and Preparation**

* **Source Data**: Begin by importing the fashion\_iot\_data.csv file into your chosen tool, Power BI or Tableau. This file contains 5000 rows and 13 columns. The dataset includes transaction details such as Transaction\_ID, Customer\_ID, Product\_Category, Total\_Spend, and Carbon\_Footprint\_gCO2.
* **Data Types**: Ensure the data types are correctly interpreted by the software. For example, Purchase\_Date should be recognized as a date field and Total\_Spend as a numerical field.
* **Data Cleaning**: Check for any inconsistencies or missing values. For instance, the IoT\_Feature\_Used column has "Yes" or "No" values, and the Device\_Connectivity column has "NA" when IoT features are not used.

**2. Visualizing Key Metrics**

* **Top 5 IoT Cities**: Create a bar chart or a map visualization to show the top 5 cities with the most transactions where IoT features were used. The SQL query provided can be used as a reference to calculate the IoT\_Sales and total\_times\_IoT\_used for each city.
* **Average Carbon Footprint**: Use a bar chart to compare the average carbon footprint for each product category. This will highlight which products have a higher or lower environmental impact.
* **Customer Engagement**: To identify high-value customers, create a table or list showing customers who have used IoT features more than five times. This can be filtered by customer\_id and the IoT\_Feature\_Used count.

**3. Advanced Analysis and Insights**

* **Sales Growth Over Time**: Visualize the year-over-year sales growth for "Smartwatch" and "IoT Sneakers" from 2020 to 2025 using a line chart. This will help in comparing the performance of these two key product categories.
* **Device Connectivity Preference**: Create a pie chart or donut chart to show the percentage of transactions by Device\_Connectivity type (e.g., Wi-Fi, 5G, Bluetooth, NFC). This will provide insight into the most popular connectivity technologies among customers.

**4. Report Design and Interactivity**

* **Create Dashboards**: Arrange the visualizations on different dashboards to tell a cohesive story. For instance, you could have a "Sales Performance" dashboard and a "Customer & Product Insights" dashboard.
* **Add Filters and Slicers**: Include interactive elements such as date range filters, city slicers, and product category filters to allow users to explore the data dynamically.
* **Refine Visuals**: Customize colors, fonts, and labels to ensure the report is clear, professional, and easy to read. Add titles and descriptions to each chart to explain the insights they provide.

By following these steps, you can create a comprehensive analytics report that answers the key problem statements outlined in the provided files.