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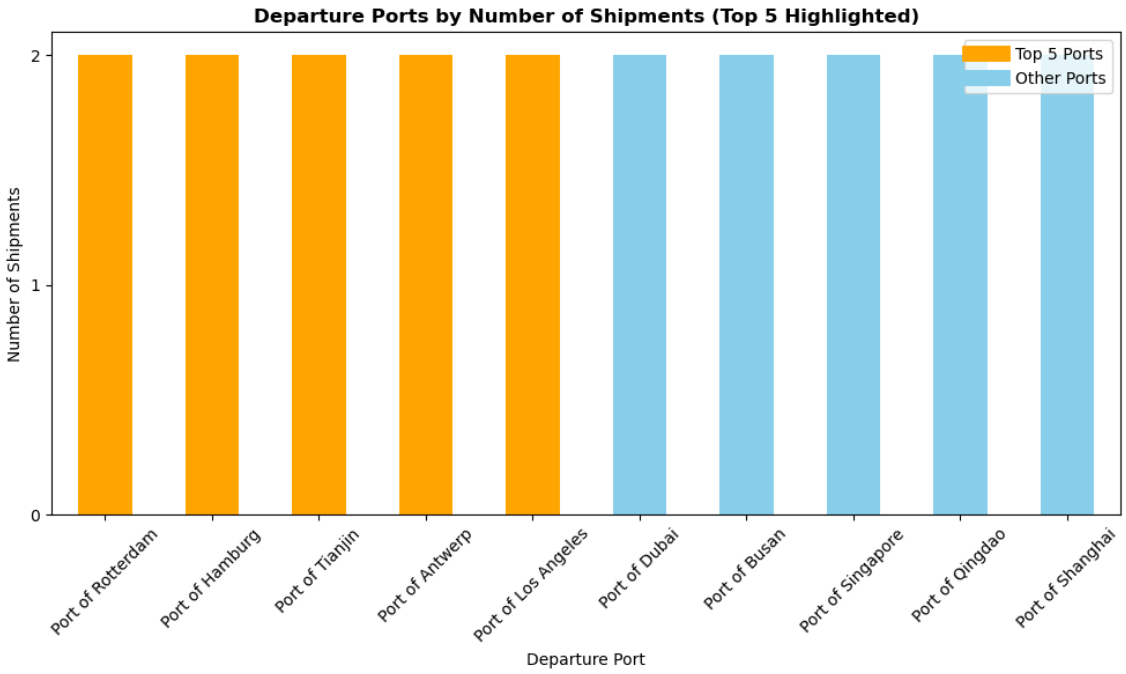
Shipping Analysis Assignment

Please find the assignment in this github link below
https://github.com/primantah/Shipping-Analysis

Tasks and Result

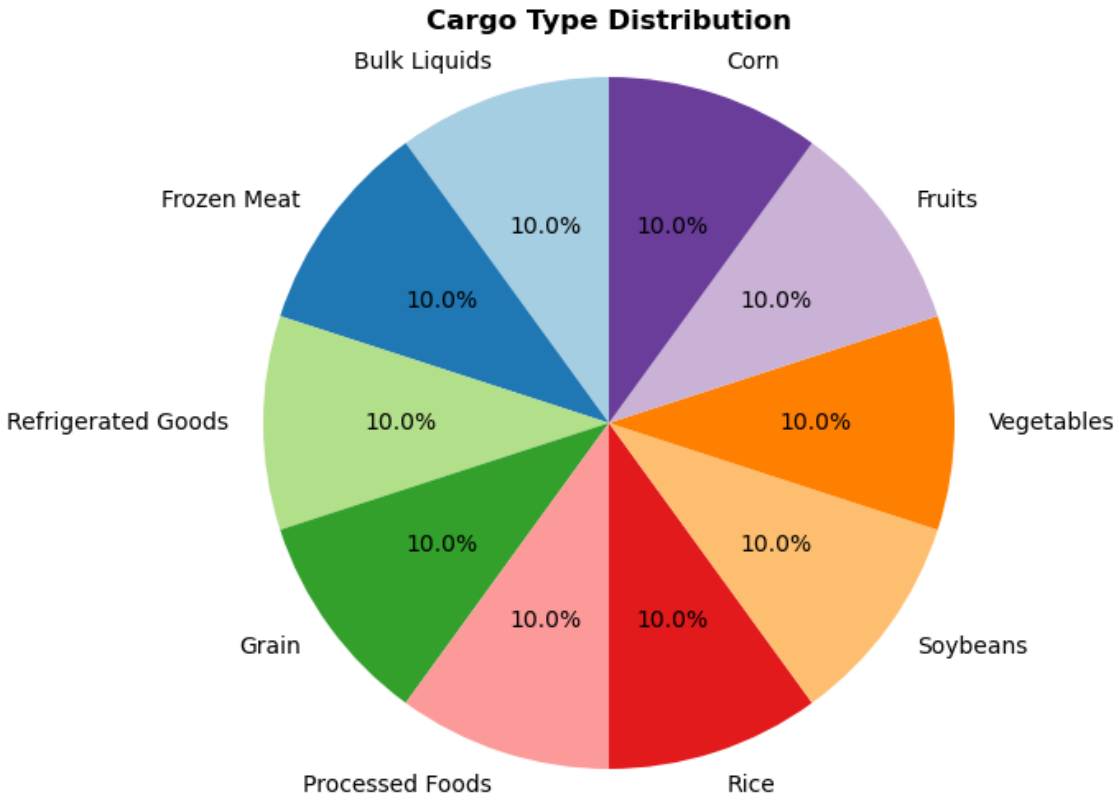
1. Top 5 Departure Ports:
   Create a bar chart showing the number of shipments departing from each port. Highlight the top 5 ports with the highest number of departures.



Insights:

- Each port has exactly 2 shipments, indicating an equal distribution of the shipping load across all ports in the dataset.
- There is no dominant port in terms of departures, and the top 5 ports are highlighted based on their detection order rather than volume.
- The chart also shows a global distribution of ports across Europe, Asia, the Middle East, and North America, reflecting a well-balanced global shipping network.

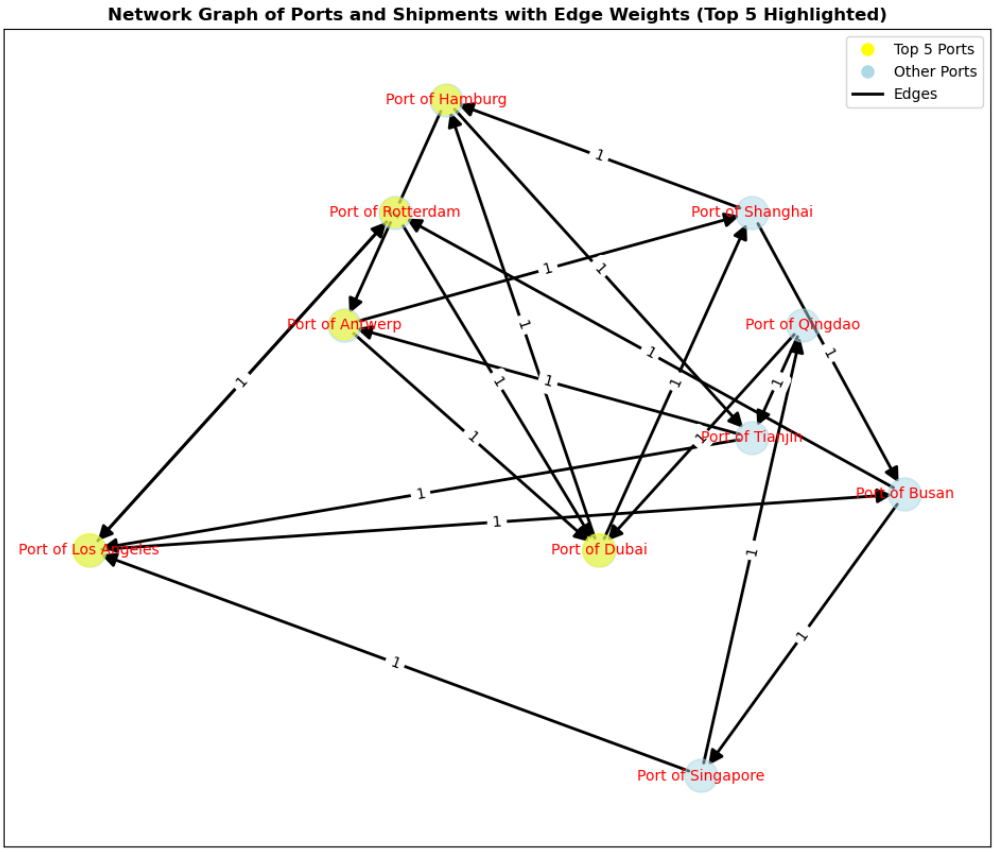
2. Cargo Type Distribution:
   Generate a pie chart illustrating the distribution of different cargo types across all shipments.



Insights:

- All cargo types—Bulk Liquids, Corn, Fruits, Vegetables, Soybeans, Rice, Processed Foods, Grain, Refrigerated Goods, and Frozen Meat—make up an equal share (10%) of the total shipments.
- This indicates a balanced variety of goods, with no emphasis on any single type, serving industries like agriculture, food processing, and energy
- The inclusion of temperature-controlled goods (Frozen Meat, Refrigerated Goods) suggests the network supports such shipments, highlighting the importance of speed and efficiency.
- This equal distribution may also reflect a strategy to reduce risk by diversifying the cargo base, making operations more resilient to market disruptions.

3. Network:
    - Construct a Network Graph:
        - Nodes: Represent ports.
        - Directed Edges: Represent shipments from a departure port to an arrival port.
        - Edge Weight: Number of shipments between two ports.
    - Visualize the Network:
        - Create a network graph highlighting the top 5 most connected ports based on the number of shipments.
        - Use node size or color to indicate the degree of connectivity.



Insights:

- Dubai and Los Angeles are the most active ports, with 5 connections to other key ports, highlighting their role as central hubs in the shipping network.
- Hamburg, Rotterdam, Antwerp, Tianjin, and Shanghai also play significant roles with 4 connections, reinforcing their importance in global shipping.
- Each edge has a weight of 1, indicating only one shipment between each pair of connected ports, suggesting that no single route is heavily trafficked.

- Each port has exactly 2 shipments, indicating an equal distribution of the shipping load across all ports in the dataset.
- The chart also shows a global distribution of ports across Europe, Asia, the Middle East, and North America, reflecting a well-balanced global shipping network.

Additional Insights

- I believe there are several additional aspects that have not yet been fully analyzed. For instance, the analysis could be extended to examine the time of the shipments in more detail, such as trends in departure and arrival times across different ports. Another valuable aspect would be to explore the relationship between cargo type and port activity, such as identifying which types of cargo are sent or received more frequently at ports.

- Analyzing these aspects could reveal potential seasonal patterns, port specialization based on cargo types, or other time-based trends in shipping efficiency. I would love to continue exploring these factors to gain deeper insights into how they might influence shipping operations and improve decision-making for routing, cargo management, and resource allocation.