**Part I. Statistics**

**1.)FLOPS**

|  |  |  |
| --- | --- | --- |
|  |  |  |
| **Row Labels** | **Sum of SalesQuantity** |  |
| Air Pump | 22980 |  |
| City Bike Max | 362 |  |
| Deluxe Road Bike (Shimano) | 13365 |  |
| Deluxe Road Bike (SRAM) | 3963 |  |
| Deluxe Touring Bike (black) | 3863 |  |
| Deluxe Touring Bike (red) | 3953 |  |
| Deluxe Touring Bike (silver) | 8356 |  |
| E-Bike Tailwind | 868 |  |
| Elbow Pads | 1653 |  |
| First Aid Kit | 7877 |  |
| Fixed Gear Bike Plus | 72 |  |
| Knee Pads | 1659 |  |
| Men's Off Road Bike Fully | 11693 |  |
| Men's Off Road Bike Hard Tail (Shimano) | 8550 |  |
| Men's Off Road Bike Hard Tail (SRAM) | 13338 |  |
| Off Road Helmet | 3926 |  |
| Professional Road Bike (Campagnolo) | 1640 |  |
| Professional Road Bike (Shimano) | 8484 |  |
| Professional Road Bike (SRAM) | 1597 |  |
| Professional Touring Bike (black) | 4091 |  |
| Professional Touring Bike (red) | 3876 |  |
| Professional Touring Bike (silver) | 8748 |  |
| Repair Kit | 3879 |  |
| Road Helmet | 3961 |  |
| T-shirt | 3883 |  |
| Water Bottle | 3841 |  |
| Water Bottle Cage | 13282 |  |
| Women's Off Road Bike Fully | 5094 |  |
| **Grand Total** | **168854** |  |

**Here, Fixed Gear Bikes Plus sold the least number of units, therefore was a market flop.**

**2.)Top Seller**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Count of ProductDescr** | **Column Labels** |  |  |  |  |  |  |  |
| **Row Labels** | **ACC** | **EBI** | **ORB** | **ROB** | **TOU** | **TRE** | **Grand Total** |  |
| 2011 | 3451 | 172 | 1724 | 1621 | 2145 | 67 | 9180 |  |
| **Grand Total** | **3451** | **172** | **1724** | **1621** | **2145** | **67** | **9180** |  |

**ACC product category provided most revenue in 2011**

**3.) Sales by Product Category**

Part 1: What percentage did the off-road bikes contribute to the overall bicycle sales quantity?

**23% of sale was contributed by Off Road Bikes in total bicyle sale**

|  |  |
| --- | --- |
|  |  |
| **Row Labels** | **Sum of SalesQuantity** |
| ACC | 66941 |
| EBI | 868 |
| ORB | 38675 |
| ROB | 29049 |
| TOU | 32887 |
| TRE | 434 |
| **Grand Total** | **168854** |

Part 2: In which three cities was this percentage significantly above the average?

**Munchen, Palo Alto & Boston are the three cities where off road bikes sales contribution was above the average.**

|  |  |
| --- | --- |
| **Row Labels** | **Average of SalesQuantity** |
| **ORB** | **4.23696319** |
| Anklam | 2.36971831 |
| Atlanta | 3.32320442 |
| Berlin | 4.64208243 |
| Bochum | 2.903743316 |
| Boston | 5.556053812 |
| Chicago | 3.132075472 |
| Denver | 4.735426009 |
| Detroit | 3.305949008 |
| Frankfurt | 3.45823389 |
| Grand Rapids | 2.311965812 |
| Hamburg | 3.896946565 |
| Hannover | 3.859078591 |
| Heidelberg | 4.847926267 |
| Irvine | 3.199468085 |
| Leipzig | 3.378531073 |
| Magdeburg | 2.644508671 |
| München | 10.54492188 |
| New York City | 3.408312958 |
| Palo Alto | 6.331491713 |
| Philadelphia | 3.411585366 |
| Seattle | 3.379411765 |
| Stuttgart | 5.227906977 |
| Washington DC | 3.487951807 |
| **Grand Total** | **4.23696319** |

**4.) Seasonal Behavior**

First AID KIT here is an exception here, because its sales are reduced in spring and summer and are more in fall and winter months.

PART II: **Data Structure**

**1.) Perform a Depth-First-Search (DFS) to find all paths from K to E.**



Similarly,

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**2.) Perform a Breadth-First-Search (BFS) to find all paths from K to E**

