**Variation in User Behavior Towards the Usage of Mobile Devices**

**Overview**

This project analyzes user behavior towards mobile device usage, focusing on factors such as operating system, device model, and usage patterns. We explore the rate of mobile device usage among male and female users and investigate how usage affects device configuration.

**Resources**

The following resources were used in this project:

* **Python**: The programming language used.
* **Anaconda Navigator**: The IDE utilized for this project.
* **Jupyter Notebook**: Used for running the project.
* **Pandas**: A Python library for data cleaning and analysis.
* **Matplotlib**: A Python library for data visualization.
* **Seaborn**: Another Python library for data visualization.
* **GitHub**: Used for version control and project hosting.
* **Kaggle**: The dataset was downloaded from the Kaggle website.

**Installation Instructions**

**How to Install Anaconda Navigator**

1. Open a web browser (e.g. Chrome).
2. In the search bar, type "Anaconda Navigator".
3. Click on the official Anaconda website and navigate to the download menu.
4. Download the Anaconda package suitable for your operating system. Make sure to download the latest version for the best features.
5. Follow the Anaconda setup instructions to install and configure the environment.

**How to Use Python Libraries**

1. Open Anaconda Navigator and navigate to its environment.
2. Check the package index to see if the desired library is available. If not, update the index.
3. If the library is still unavailable, install it using the command **!pip install** **library\_name** in Jupyter Notebook.
4. Import the library in your Jupyter Notebook to use it.

**How to Download the Dataset**

1. Open the Kaggle website and type "User Behavior" in the search bar.
2. Download the dataset from the search results.

**Data Cleaning**

The data was converted from text to a table format using the Pandas library. Duplicates and null values were removed using appropriate Python commands.

**Questions to Answer**

1. Total number of users using both iOS and Android operating systems.
2. Total amount of time spent (in minutes per day) on each device model.
3. Variations in battery level and data drainage in relation to device models.
4. Total number of apps installed on each mobile device.

**Methodology**

**Total Number of Users by Operating System**

1. Filter the data for iOS and Android operating systems separately.
2. Create a pivot table using the operating system as the column, gender as the index, and size for the aggregate function.
3. Create a pie chart to visualize the data.

**Total Amount of Time Spent on Each Device Model**

1. Filter the data to include Device Model, Gender, and App Usage Time (min/day).
2. Use the groupby function to group by Device Model and Gender, then sum the App Usage Time.
3. Plot a horizontal bar chart to show variations in device usage.

**Variations in Battery Level and Data Drainage by Device Model**

1. Create a pivot table using Device Model as the index and Battery Drain (mAh/day) and Data Usage (MB/day) as the columns, applying the sum function.
2. Plot a chart to illustrate how data usage affects battery level.

**Total Number of Apps Installed on Each Device**

1. Filter the data for Device Model and Number of Apps Installed.
2. Use the groupby function to group by Device Model and apply the sum function to Number of Apps Installed.
3. Plot a chart to show variations in app installations by device model

## Observations and Conclusions

From the analyzed and visualized data, we found that female users of the iPhone 12 spend more time on their mobile devices compared to other users, although male users generally use mobile devices more frequently. The increased time spent by female users on their devices may be attributed to factors such as the quality of the device, as iPhones are known for their premium features. In contrast, female users of the Galaxy Samsung S21 spend less time on their devices.

When examining the operating systems, the data indicates that male users prefer Android devices, while female users tend to favor iOS. The amount of time spent using these devices is associated with high battery drainage, despite the common perception that iPhones have poor battery life. Furthermore, the number of apps installed on each device can contribute to rapid battery drainage and increased data usage.

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