**Project Checkpoint 1**

Our group has decided to work with SuperTravel. We are interested in this scenario due to the dynamic nature of travel, the opportunity to contribute to a project that will bring incredible value to this virtual client and also a good practice that we may apply in a real working environment. Our goal is to deliver an optimized system that can efficiently handle vast amounts of data, ensuring smooth operations for SuperTravel and a seamless experience for their customers.

In the first phase of the project, we will conduct comprehensive background research to fully understand the intricacies of the travel industry, focusing on its operational procedures and data management practices. This will equip us with the necessary insights to formulate an effective database design that aligns with industry standards and potential requirements by SuperTravel.

Next, we will try appropriate methods to source high-quality data, such as downloads from Kaggle, API requests, or web scraping, depending on the quality and availability of the data. Alternatively, if real data is not accessible or limited, we can also prepare our own mock data that adequately simulates actual industry data.

Since what SuperTravel needs is a database for their new system(services), instead of moving data from an existing database, a good design across all database schemas will be crucially important. SuperTravel provides its customers with services in finding the best deals on not only flights but also hotels and car rentals, it could be possible that SuperTravel may decide to expand its business in more fields. Our next focus will be on defining the architecture of the database, where we will establish the entities, their attributes, and the relationships between them. Leveraging the ER diagram, we will design a logical blueprint of the database to ensure we are capturing all necessary fields SuperTravel is interested in, and that they are organized in a way that promotes efficient data retrieval.

Once the ER diagram is finalized, we will proceed to implement the database physically. This phase will involve writing SQL queries to create tables, defining constraints, and populating the database with our sourced or simulated data. And at the same time, we will think of the complex queries that lead to valuable insights. Since there may be many schemas in our database (flights, hotel, car rental, etc), it might result in a final implementation of an incredibly large and complex database management system, whereas if SuperTravel's customer base increases the database will grow even larger. Therefore, efficiency will be a key focus in our project that we strive to maintain. We want to utilize techniques that ensure our database management system can handle complex data queries within a relatively reasonable timeframe, for the best benefit of SuperTravel. To do that, we will first normalize our database design (to 3NF) and utilize techniques such as implementing indices to make queries more efficient.

In addition, we will focus on data visualization. Using advanced tools like RShiny or Metabase, we will create an interactive dashboard that translates raw data into easy-to-understand, actionable insights. This will provide SuperTravel with the ability to make data-driven decisions and identify patterns and trends that can aid in strategic planning.

To conclude, our objective for this group project is to construct a fully normalized and scalable relational database for SuperTravel that is easily maintainable and enables swift data querying. By the completion of this project, we anticipate that SuperTravel will be equipped with a powerful tool that not only enhances their operational efficiency but also drives their decision-making process through data-driven insights.