# Sample Question Set framed by Prof.Animesh Giri

## API and REST Questions

* Write RESTful API endpoints for managing customer service profiles in a company adopting the 'API-First' approach. Assume fields like id, name, age, and address, with the domain name 'NextGenServices'.
* Provide RESTful API endpoints for a library system that tracks books and their availability. Assume the system has fields for title, author, category, and price.
* Design APIs for a travel booking system that includes CRUD operations for flights and hotels. Use the domain name 'TravelMaster'.
* Write the API design for an e-commerce site with CRUD operations for product catalog, user profiles, and orders.

## Conceptual and Analytical Questions

* Differentiate between the roles of a Data Scientist and a Machine Learning Engineer, focusing on key responsibilities and overlaps.
* Evaluate whether the CI/CD process is limited to automation and provide supporting arguments.
* Compare monolithic CI/CD pipelines with microservices-based pipelines, including examples and team structure differences.
* Challenge the statement: 'HTTP POST is idempotent.' Provide examples to support your stance.

## Machine Learning and Data Analysis

* Explain how to apply the SEMMA methodology to a dataset predicting customer churn based on demographics and purchase history.
* Using the machine learning lifecycle, discuss its application to predict heart disease from a medical dataset.
* Differentiate between DataOps and MLOps, providing practical examples and discussing scenarios where MLOps might not apply.
* Discuss the importance of a confusion matrix in evaluating multi-class classification models.

## Case Studies and Applications

* Discuss the role of DataOps and MLOps in supporting the 'QuickFlicks' application, focusing on their impact on scalability and efficiency.
* Propose how a jewelry store application could use gRPC to fetch live rates for precious metals based on input weight.
* Describe how APIs can support a movie streaming platform to manage user interactions like search, comments, and recommendations.
* Suggest a design for APIs that can handle real-time price updates for stocks on a trading platform.

## Technical and Theoretical Questions

* Explain the difference between synchronous APIs and asynchronous APIs, detailing their use cases.
* Compare and contrast REST, GraphQL, and gRPC, identifying scenarios where each should be used.
* Design a gRPC 'proto' file to calculate grades for students based on their scores in different subjects.
* Suggest RESTful API designs for an online bookstore to handle operations like adding new books, updating stock, and retrieving book details.