Case: You are a machine learning engineer working for a hospital group. Recent reports show that patients coming to emergency services with diabetes disease have a rising trend of re-admission to hospital soonish. This situation leads to a decrease in customer satisfaction and results in rising churn rates. As a private hospital, we would like to keep our customers happy about our services both for keeping our reputation good and to cover our customer lifetime value and profit.

The product manager of the digital services of the company comes to you and said that he would like to make use of historical data to give some insights to physicians about the risk of readmission of patients who come to emergency services with diabetes-related complaints. As the only machine learning engineer in the company, your tasks are:

- Designing a Machine learning product that uses patients' demographic data and the therapy they take and give the probability of re-admission of the patient soon.
- The ML product must give the physician what are the top 3 drivers of the output. By using that, doctors will be able to re-arrange the therapy.
- The ML model must be updated frequently since we have a rising number of admissions. The product manager would like to have it automated because we don't have another ML Engineer who can take care of it while you are away.
- All model versions and success metrics have to be historized in case of any emergency rollback requirement.
- You have to create a microservice because it will be part of our main digital portal. As a digital company, we are using a cloud system, the all system must be designed eligible to run and deployable to the cloud.
- Since the last decision is going to be taken by a human and it s a healthcare model the expected minimum accuracy is %55 from the new AI assistant.
- Since the normal procedure is not so fast, we don't have strict response time requirements. The expected response time is <2 seconds.
- All predictions must be saved and historized and reported after the prediction.