Task 3

1. What do you understand about APIs? What questions will you ask before building them?

API means application programme interface; it is an interface that allows your application to interact with an external service using a simple set of commands. There are totally 4 types of main API's those are open, partner, internal and composite.

Open APIs: Also known as Public APIs, there are no restrictions to access these types of APIs because they are publicly available.

Partner APIs: One needs specific rights or licenses in order to access this type of APIs because they are not available to the public.

Internal APIs: Also known as Private APIs, only internal systems expose this type of API, which is, therefore, less known and often meant to be used inside the company. The company uses this type of API among the different internal teams to be able to improve its products and services.

Composite APIs: This API combines different data and service APIs. It is a sequence of tasks that run synchronously as a result of the execution and not at the request of a task. Its main uses are to speed up the process of execution and improve the performance of the listeners in the web interfaces.

<u>Below are the few points we need to take into consideration before building an API</u>

- Knowing what your API needs to accomplish is of the highest importance.
- The need to understand your audience is just as applicable during an API's Operations stage
- Maintenance and updating time for the API,s should be least.
- Decrease Confusion For The User, Let Provider Handle Complexity
- Use Hypermedia For evolution of system.
- It should be secure system using modern approaches.
- Should be able to store and download data locally.

2.Which web framework can be used for building APIs in Python? What would you prefer?

There are 8 web frame works which can be used for building API's in python. Each web frame work have its own advantage and disadvantage. below are the mentioned web frame works used in python.

Django REST
Flask Restful
Falcon
Connexion
FastAPI
Hug
Eve
Cornice

FastAPI is one of the fastest Python frameworks for building APIs.It can boost development speeds This is widely used in building asynchronous web applications.

This full-fledged web framework comes with a ton of features that make the development process quick and easy. Some features include the likes of interactive API documentation and duplicate code elimination.This Python-based framework reduces bugs and errors.

You can also use common editors like VSCode and PyCharm with autocompletion in FastAPI. The unlimited plug-in support and the integrated security protocols are some nice-to-have features within FastAPI's framework.

3.Which framework in Python will you use for testing these APIs?

There are many frameworks we can use for testing these APIS and the best 6 frameworks are listed below:

1) Robot
2) PyTest
3) Unittest
4) DocTest
5) Nose2
6) Testify

In these six, pytest is considered to br the best web frame work as it eliminates the compulsion to use config file for each suite. All the configurations/parameters are present in the pytest file itself as part of the main code and thus user overhead to maintain clumps of config files is nullified

4.What do you understand about A/B testing and Cohort testing?

A/B testing

A/B testing is known as split tests, allow us to compare 2 versions to learn which is more effective. To perform the A/B testing we need to first analyze the user data. Then develop a hypothesis to test and then conduct hypothesis testing. After the hypothesis testing is done and deciding whether it is null hypothesis or alternate hypothesis, we can analyze our data later. A/B testing is an efficient and effective way to check the audience's response to a design because it doesn't disturb your users' experience or send out disruptive feedback surveys. sending half your traffic to one version of the page and half to another, you can first gather evidence about which one works best before you commit to the change. When starting a test, you create new versions (variants) to challenge your existing champion page. This A/B testing has common targets like email content, individual mails, paid internet advertising, web design, newsletter.

Cohort testing

Cohort analysis is a type of behavioural analytics, which is primarily identified by breaking down customers into related groups in order to gain a better understanding of their behaviours. Cohort is a group of users who have performed a common action or actions during a specific timeframe. Cohort analysis proves to be valuable because it helps to separate growth metrics from engagement metrics as growth can easily mask engagement problems. Use of cohort analysis is to understand the trends and patterns of customers over time and to tailor their offers of products and services to the identified cohorts. Cohort analysis is segregated into three types those are time based, behaviour/segment based and sized based

Time-based cohorts: These customers who signed up for a product or service during a particular time frame.

Segment-Based Cohorts (Behaviour): Segment-based cohorts are those customers who purchased a specific product or paid for a specific service in the past. It groups customers by the type of product or level of service they signed up for.

Sized based cohort: In this the group of customers will be classified on type of customers.