ABSTRACT

The broad range of web-applications are moving on creating an API for an e-commerce website. APIs are increasing day-by-day in web-development and web-application projects where it has been popular for accessing back-end databases through the front-end with the use of JSON requests. Previously, connecting and manipulating data from databases were quite difficult for the developers so, most developers nowadays prefer using APIs for the web-developments. API created for this project is based on the e-commerce platform where there are customers, sellers and admin. This projects views on the large numbers of customer who can buy and sell the goods through the website.

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CHAPTER 1
INTRODUCTION

1.1 Overview

This project is based on back-end part of development for web applications. The main motive of this project is creating an API for the E-Commerce website. E-Commerce is most popular form of shopping in present day. E-Commerce is a website that permits individuals to trade actual merchandise, administrations, and computerized items over the web instead of at a physical area. Through an internet business site, a business can handle orders, acknowledge installments, oversee delivery and planned operations, and give client support. Much like a traditional physical retail store, e-commerce websites allow consumers and businesses to buy and sell to one another on a designated platform. The main difference between e-commerce and physical commerce, however, is that e-commerce transactions occur entirely over the internet rather than at a brick-and-mortar location. E-Commerce is the activity of electronically buying or selling of products on online services or over the Internet. E-commerce draws on technologies such as mobile commerce, electronic funds transfer, supply chain management, Internet marketing, online transaction processing, electronic data interchange (EDI), inventory management systems, and automated data collection systems. E-commerce is in turn driven by the technological advances of the semiconductor industry, and is the largest sector of the electronics industry. In E-Commerce, customers can invest less energy looking for what they need. They can without much of a stretch peruse numerous things all at once and purchase what they like. When on the web, clients can find things that are accessible in actual stores far away from them or not tracked down in their region. One of the greatest benefits of online business to business that keep dealers intrigued by internet selling is cost decrease. Numerous dealers need to pay parts to keep up with their actual store. They might have to pay extra straightforward costs like lease, fixes, store configuration, stock and so forth. Much of the time, even subsequent to putting resources into administrations, stock, upkeep and labor force, dealers don't get wanted benefits and ROI. A significant benefit of online business to business is that dealers can give adaptability to clients. One feature is that the item and administrations are prepared 24x7. The outcome is that dealer can offer his thing

any spot, any time. Each interaction is quicker when you start selling on the web. Online business commercial centers offer you a smoothed out coordinated factors or conveyance framework. This means the purchasers request gets conveyed effectively. Item returns the executives is another in addition to point that can be dealt with rapidly - you either discount the installments or give a substitution. Rapidly activities might in fact be applied while answering business sector requests. Consider this web-based business model - when a purchaser sees that a thing is unavailable, he can tap on the 'Tell Me' Choice. This illuminates him when that thing is ready to move once more. It additionally illuminates merchants that they need to restock that thing so they can get more purchasers. Next comes the patterns - Suppose there is interest for voice enacted individual collaborators, a vender can promptly answer that interest by loading these things. He is certain that this item will sell and has seen similar occurring with different merchants to. Shippers can make bargains, advancements rapidly as well. This draws in clients and increment chances of making more deals. Online business venders might design and apply coupons when they like - even modify such proposals for their own store. An application programming point of interaction (API) is a way for at least two PC projects to speak with one another. It is a kind of programming point of interaction, offering a support of different bits of software. A record or standard that depicts how to construct or utilize such an association or point of interaction is called an API particular. A PC framework that fulfills this guideline is said to carry out or uncover an API. The term API might allude either to the determination or to the execution. Rather than a UI, which interfaces a PC to an individual, an application programming point of interaction interfaces PCs or bits of programming to one another. It isn't expected to be utilized straight by an individual (the end client) other than a software engineer who is integrating it into the product. An API is frequently comprised of various parts which go about as apparatuses or administrations that are accessible to the developer. A program or a software engineer that utilizes one of these parts is said to call that piece of the API. The hits that spread the word about up the API are additionally as subroutines, techniques, solicitations, or endpoints. An API particular characterizes these calls, implying that it clears up how for use or carry out them. One reason for APIs is to conceal the interior subtleties of how a framework functions, uncovering just those parts a software engineer will view as valuable and keeping them reliable regardless of whether the inside subtleties later change. An API might be exceptionally worked for a

specific set of frameworks, or it could be a common norm permitting interoperability among numerous frameworks. The term API is frequently used to allude to web APIs, which permit correspondence between PCs that are joined by the web. There are additionally APIs for programming dialects, programming libraries, PC working frameworks, and PC equipment. APIs started during the 1940s, however the term didn't arise until the 1960s and 1970s. Late improvements in using APIs have prompted the ascent in prevalence of microservices, which are eventually approximately coupled administrations gotten to through open APIs. An API simplifies on programming by abstracting the fundamental implementation and just uncovering articles or activities the designer needs. While a graphical point of interaction for an email client could furnish a client with a button that plays out every one of the means for bringing and featuring new messages, an API for document input/result could give the designer a capability that duplicates a record starting with one area then onto the next without expecting that the engineer comprehends the document framework tasks happening in the background. APIs carry another degree of modularity to applications. APIs allow designers to use the aptitude of different applications. At the point when an association fosters an application, they never again need to rehash an already solved problem with regards to things like confirmation, correspondence, installment handling, and guides. Rather designers can use the consistent module abilities and usefulness of APIs. APIs permit applications and framework parts to speak with one another on inward organizations as well as over the Internet. They've become basic to big business endeavors to make interior applications and administrations open over the Internet to business clients, accomplices, providers, and other outsiders. The language used for creating this API is Python 3 and the framework used is FastAPI. The reason behind creating back-end API in FastAPI is because the development of data frameworks is partitioned into two huge parts: front-end development and back-end development. For backend development, the most well-known programming languages are: C++, C#, Java, python, php. Be that as it may, nobody writes in "pure" dialects presently, for the most part utilized supporting tools like libraries and web frameworks. This project is committed to an outline of the most promising web framework for a programming language Python - FastAPI. FastAPI also assumes that for each API access point there is some limitation. In this case, a Boolean expression that defines the conditions when which the user will have access to this access point. This mechanism allows you to very flexibly configure,

or rather, restrict access to a specific functionality of the system. The web terminal system assumes the presence many roles (administrator, seller, customer, and so on), as well as a large number of rights (access to sessions, access to the user panel, etc.). Having such role separation system is easy, in terms of writing code, and in a very understandable way for a person to divide the functionality of the entire system for a user with a specific role or rights. To integrate this system directly with FastAPI itself, used a convenient and flexible tool that is part of the framework itself and called the Dependency Injection system. Its feature is ease of use, as well as ease of integration of third-party components with FastAPI.

1.2 Company Profile

Sajilokhoj is one of the finest Security and Technology Training and Consulting organization, focusing on a range of IT Security Trainings and Information Security Services. Sajilokhoj was established in the year 2019 by a team of experienced and enthusiastic professionals, who have more than 10 years of industry experience. They provide professional training, certification & consulting services related to all areas of Information Technology and Cyber Security. Sajilokhoj offers complete training and consulting solutions to its customers globally. Whether the requirements are technical services, certification or customized training, Sajilokhoj has consistently delivered the highest quality and best success rates in the industry.

1.3 Training Undergone

- Researched Django.
- Learned FastAPI.
- Researched in back-end.
- Learned using PostgresSQL.
- Learned using postman for testing FastAPI.
- Learned how to keep codes neat using routers.
- Learned installing packages in python.
- Learned how to access the database using python.

1.5 Overview of Report

The project “Creating Back-End For Online Business Site Utilizing FastAPI” aims on creating an API for the e-commerce website.

The aim of this project is to achieve all the CRUD functionality through REST API for e-commerce.

The programming language used for this project is python and the application used for developing the API for this project are Pycharm, Postman and PostgresSQL. PyCharm is a Python IDE with complete set of tools for Python development. In addition, the IDE provides capabilities for professional Web development using the Django framework. Code faster and with more easily in a smart and configurable editor with code completion, snippets, code folding and split windows support. Pycharm also features in intelligent coding assistance, intelligent code editor, smart code navigation, built-in developer tools, etc. Postman is an API client that makes it easy for developers to create, share, test and document APIs. This is done by allowing users to create and save simple and complex HTTP/s requests, as well as read their responses. PostgreSQL is a powerful, open-source object-relational database system that uses and extends the SQL language combined with many features that safely store and scale the most complicated data workloads. Reason for using PostgresSQL rather than MySQL is because PostgreSQL is faster when dealing with massive datasets, complicated queries, and read-write operations. On the other hand, MySQL is known to be faster for read-only commands.

1.6 Organization of the Report

This project mainly focuses on Creating back-end for online business for online business site utilizing FastAPI. There are chapters that deals with various details –

Chapter 1

This chapter briefs on the introduction and the motive of the project. It deals with overview of the project and problem statement. It outlines the entire project and provides the detail on the problem statement.

Chapter 2

This chapter includes the literature survey which involves all the problems faced during working on this project.

Chapter 3

This chapter contains the methodology of the project where detailed information about how the system was designed using UML Class diagram.

Chapter 6

This chapter contains the results of the project where all the screenshots of the output which was captures while testing API.

Chapter 7

This chapter contains the conclusions of the project.

CHAPTER 2

PROBLEM STATEMENT AND OBJECTIVES

2.1 Problem statement

The problems faced while creating an e-commerce website without API is that it will be lengthy and confusing process. With the help of API, front-end developers find it easier to fetch the required data without directly coding to access the particular data. While using API, back-end codes is not visible to the front-end developers and is not accessible to the front-end developers which helps developers to debug the codes easily. FastAPI is python-based framework to create REST APIs which uses HTTP and support Transport Layer Security (TLS) encryption, which is a standard that keeps an internet connection private and checks that the data sent between two systems (server-to-server or server-to-client) is encrypted and unmodified.

2.2 Objectives

- To understand about E-Commerce business.
- To create a FastAPI that helps in faster execution.
- To implement and develop the applications using the FastAPI.

CHAPTER 3

METHODOLOGY

3.1 Existing Methodology

The methodology used in the implementation of the software is the Agile Model of System Development Life Cycle, which allows room for scalability as time goes on. Creating back-end for online business site utilizing FastAPI would help in e-commerce to manage data. The method used in the design and collections of information from various sources.

3.2 Introduction on system

Systems are designed to make development of a project easier and the problems that are yet to occur known. All systems are designed to its respective formats and requirements. This project focuses on how the management of an ecommerce website is made easier after using API.

Using of UML Class diagram helps illustrate the data models accurately, regardless of the complexity involved with the classes and data. UML Class diagram clearly maps out the structure of a particular system by modeling its classes, attributes, operations and relationships between objects.

- **Colorama (0.4.4)** - Makes ANSI escape character sequences (for producing colored terminal text and cursor positioning) work under MS Windows.

- **Cryptography (37.0.1)** – Cryptography s a package which provides cryptographic recipes and primitives to Python developers. Our goal is for it to be your "cryptographic standard library". It supports Python 3.6+ and PyPy3 7.2+. Cryptography includes both high level recipes and low-level interfaces to common cryptographic algorithms such as symmetric ciphers, message digests, and key derivation functions.
- **Cssselect (1.1.0)** - cssselect parses CSS3 Selectors and translate them to XPath 1.0 expressions. Such expressions can be used in lxml or another XPath engine to find the matching elements in an XML or HTML document.

- **Databases (0.5.5)** - Databases gives you simple asyncio support for a range of databases. It allows you to make queries using the powerful SQLAlchemy Core expression language, and provides support for PostgreSQL, MySQL, and SQLite. Databases is suitable for integrating against any async Web framework, such as Starlette, Sanic, Responder, Quart, aiohttp, Tornado, or FastAPI.

- **Dnspython (2.2.1)** - dnspython is a DNS toolkit for Python. It supports almost all record types. It can be used for queries, zone transfers, and dynamic updates. It supports TSIG authenticated messages and EDNS0. dnspython provides both high- and low-level access to DNS. The high-level classes perform queries for data of a given name, type, and class, and return an answer set. The low-level classes allow direct manipulation of DNS zones, messages, names, and records.
- **Ecdsa (0.17.0)** - This is an easy-to-use implementation of ECC (Elliptic Curve Cryptography) with support for ECDSA (Elliptic Curve Digital Signature Algorithm), EdDSA (Edwards-curve Digital Signature Algorithm) and ECDH (Elliptic Curve Diffie-Hellman), implemented purely in Python, released under the MIT license. With this library, you can quickly create key pairs (signing key and verifying key), sign messages, and verify the signatures. You can also agree on a shared secret key based on exchanged public keys. The keys and signatures are very short, making them easy to handle and incorporate into other protocols.