Assignment name, number and/or title

Template version 1.4 – March 12, 2020

PA1234: Course name

November 13, 2022

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Submission/change history (latest entry on top)	
Date	**Changes made**
2022-11-13	Initial submission.

In the table above, you should briefly describe the revision history of your submission.

1 Introduction to the Mobile Application

The demand for food delivery app development is rising. Digital orders and deliveries have grown 300 faster than traditional dine-in sales since 2014. According to Statista, the 'platform-to-consumer' delivery segment is expected to reach US96.8 million worldwide by 2024. Considering the consequences of COVID-19, this growth will remain steady for the foreseeable future. COVID-19 created an increased need for food delivery services amid social-distancing protocols and people's fear of infection. In this way, 2020 seems to have marked the beginning of a golden era for food delivery, especially for aggregators like Uber Eats, Deliveroo, and DoorDash. The grocery delivery service Instacart said it achieved its 2022 goals after just three weeks of 2020's lockdown. In the post-lockdown period, everyone expected the trend will soon experience a decline but the trend has increased in the post-lockdown periods. The revenue figure with respect to each year has been given in the below table1. Artificial Intelligence is also one of the most trending industries in the 21st Century. After analyzing the behavior and factor of these both industries, we decided to develop a product which is **'FoodKart'** powered by Artificial Intelligence.

FoodKart contains entirely an Artificial intelligence layer, which contains many dynamically trained machine learning models. However, the main objective of FoodKart is to help users to order various varieties of food from various restaurants without even visiting them. This food delivery app provides food delivery at your door in very less time and with the best packaging. Providing food from every famous food place near you and ordering food with the best user experience. To build a successful product, it is necessary to make a differentiation from other industry giants. In FoodKart, A new Artificial Intelligence layer will integrate which helps in decision-making and understanding the sentiment of the customers easily. However, the use cases of FoodKart are enormous and the interactivity is high because the application will develop using in-depth knowledge of **data structures and Algorithms**.

2 Targeted User

Online Food delivery has got a massive consumer segment in just one year of trend. A dynamically changed mindset of the consumer also creates a big gap between the consumers and the restaurants eventually filled by the online delivery companies. To look at an example, the main reason behind the success of Amazon is its ability to predict the consumer mindset and make policies accordingly. However, For FoodKart, the Target user is a key judgemental factor that decides the success, it is important to find the audience who are or who will be most active in the food domain.

Before deciding on the target user, various case studies have been analyzed, and many trends have been noticed in the food delivery apps as well as social media apps such as Twitter and Facebook. The first main trend we have noticed is an increasing number of smartphone users in the US, in 2019 the total number of smartphone users are 36 million and in the current year, the number of users increased to 54 million.

Year	market value
2020	26 Billion Usd
2021	28 Billion Usd
2022	30 Billion Usd
2023	33 Billion Usd
2024	37 Billion Usd
2025	42 Billion Usd

Table 1: forecast market value of food deliver.

The increase in smartphone users indicates more and more users are connecting to the internet, which increases the size of the market for online delivery apps. For our further research, a case study by Start.io is analyzed, which shows that the earnings of the consumers are also an important factor. From the study, it was clear that consumers with more than 75k USD dollars earning ordering more food items using food delivery apps. But, the data also shows that this trend is decreasing over time. The second most important factor in online delivery is to understand which age group orders the most. From various studies, it was quite evident that the age group between 18 to 41 contributes 80percent of total online orders. After analyzing all the data and studies, it is decided that FoodKart will focus on the age group 18 to 41 irrespective of their income.

From our personal research, it is found that the age group 18 to 24 does not have a major effect on their income to order food. Several steps such as providing faster service and high discounts will be taken in the application which attracts these age groups. The other target audience which we are focusing on is the couple, in these recent days, it is quite difficult for couples to find great dining to celebrate their special occasions. To solve these problems a natural language processing-based machine learning model will develop which assists couples with probably the best dining experience. The input data provided to the model will be scrapped from the internet such as reviews etc. We personally believe that the growth of FoodKart will be exponential as our recommendation system powered by Artificial intelligence plays a critical role.

Name	**Deeksha**	**Vikas**
Status, Age	Married, 30	Single, 23
Expectation	After completing a day full of work, having a peaceful dinner with my husband is a dream. For making it a reality without any kind of struggles. She personally uses the option of food ordering.	As I'm a traveler exploring places and food has been my highest priority. For satisfying my enthusiastic cravings. I prefer using online food services because of their seamless services.
Problem	Having a great option for ordering food. Has the major disadvantage of suggesting unnecessary things to customers which makes them difficult to select an item.	We all know the problem with GPS accuracy which depends on signal strength. In simple words, it gives a mostly inaccurate address and as I have less knowledge about the surroundings it makes it difficult for correcting with a delivery partner.

Figure 1: Users journey

3 Product Niche

Food delivery apps were once a niche market, mainly serving the more mobile-savvy and tech-native Gen Z and millennials. However, when faced with lockdowns, restaurants all over the world took to food delivery apps as a way to grab the target audience's attention, continue to serve customers, and increase business opportunities. There are many players such as uber eats who are emerged as the dominant players in this market. As far as their business model is more generalized to all target customers which causes some mindset conflicts between various age groups. These giants still do not possess the whole integration of their application into the Artificial Intelligence Domains. Due to their lack of expertise in Artificial Intelligence, it was very hard for these companies to predict the sentiment of the customers accurately. While researching these companies we have found that their business models are entirely consumer-centric, which also leads to many clashes such as sharing revenue on orders, high commissions, and canceling orders with the restaurants. After researching all these giants, many features such as filtering reviews, and a verified ordered millennial reviews button will introduce in FoodKart which helps both consumers and restaurants to get their best quality deals.

4 Features and Functionalities

4.1 User Login and Privacy

This is the initial phase of onboarding a customer into our application. A custom build software will be developed which assists the customers in signup with stronger passwords. This software also helps to maintain the satisfaction of the customers by developing an interactive UI. Which contains different flags which will be designed for the target users (18 to 24). As far as privacy is concerned a graph-based data structure is implemented which increases security by providing two-factor authentication. These data structures also increase the speed of the onboarding application by storing data in the form of objects.

4.2 Search Filters

A new feature that is based on natural language processing will be introduced in this application. Which takes input keywords from the users and predict the user sentiment and displays restaurants according to ling. Accordingly, users should search for items based on timely delivery, distances, or even menu choices, which vary from place to More is required for an app for a single restaurant or chain.

4.3 Order History

A dictionary data structure will be maintained for each user which saves all the user preferences and their searched keywords.

4.4 Reward/Discount Programs, Cashback Programs, and Loyalty Programs

This feature is implemented by almost all the giants but in FoodKart, the main differentiator is this feature is only targeted at the audience with low earnings and falls in the 18-41 age

group. They have a dynamically changing capacity based on user order

5 Development plan

The development plan to build FoodKart is majorly divided into three categories.

5.1 Front End

The Front End of the FoodKart is Developed using Flutter, Android Studion as a platform. in Front end development the following parts are implemented.

- Developing user interface
- User-interface sequences
- Designing the buttons and screens.
- Feature implementation
- Filters, search bar
- Orders
- Kart (contains wish listed and history of ordered items)

5.2 Back End

To develop the backend we are primarily aiming to use java language which has some good object-oriented support. A Flow chart has been provided below which can be considered as the future replica of our project.

5.3 Artificial Intelligence

As mentioned above, a new Artificial intelligence layer has been added to our app which will be trained on various reviews using natural language processing and machine learning algorithms. However, data collected to train the model will be taken from social media platforms using web scrapping techniques such as selenium and python. the main technologies used to develop the Artificial intelligence layer are TensorFlow framework, sklearn, and python.

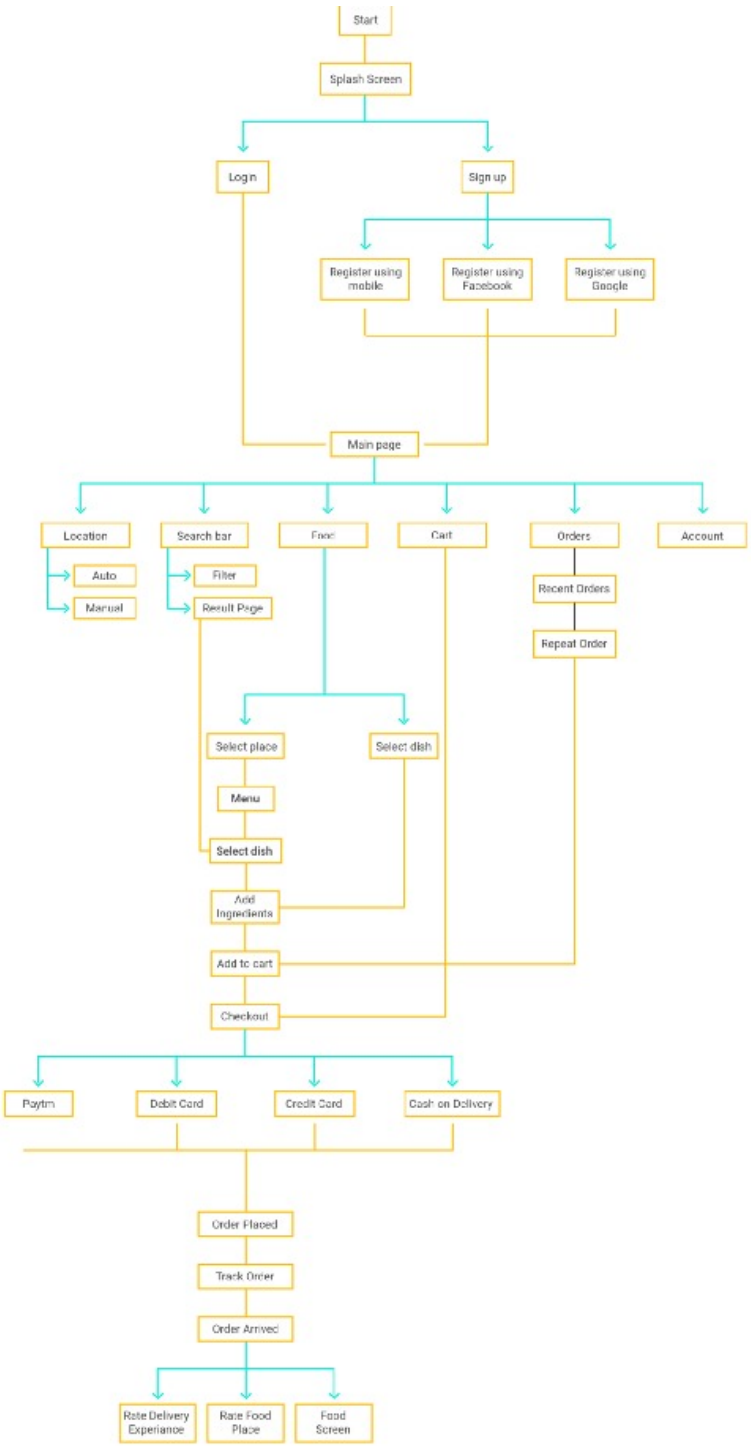

Figure 2: Caption