Introduction and features of technology

Android

Android is an open source and Linux-based **Operating System** for mobile devices such as smartphones and tablet computers. Android was developed by the *Open Handset Alliance*, led by Google, and other companies.

Android offers a unified approach to application development for mobile devices which means developers need only develop for Android, and their applications should be able to run on different devices powered by Android.

The first beta version of the Android Software Development Kit (SDK) was released by Google in 2007 where as the first commercial version, Android 1.0, was released in September 2008.

On June 27, 2012, at the Google I/O conference, Google announced the next Android version, 4.1 **Jelly Bean**. Jelly Bean is an incremental update, with the primary aim of improving the user interface, both in terms of functionality and performance.

The source code for Android is available under free and open source software licenses. Google publishes most of the code under the Apache License version 2.0 and the rest, Linux kernel changes, under the GNU General Public License version 2.

Features of Android

Android is a powerful operating system competing with Apple 4GS and supports great features. Few of them are listed below −

Sr No.	Feature & Description
1	**Beautiful UI** Android OS basic screen provides a beautiful and intuitive user interface.
2	**Connectivity** GSM/EDGE, IDEN, CDMA, EV-DO, UMTS, Bluetooth, Wi-Fi, LTE, NFC and WiMAX.
3	**Storage** SQLite, a lightweight relational database, is used for data storage purposes.
4	**Media support** H.263, H.264, MPEG-4 SP, AMR, AMR-WB, AAC, HE-AAC, AAC 5.1, MP3, MIDI, Ogg Vorbis, WAV, JPEG, PNG, GIF, and BMP.
5	**Messaging**

	SMS and MMS
6	**Web browser** Based on the open-source WebKit layout engine, coupled with Chrome's V8 JavaScript engine supporting HTML5 and CSS3.
7	**Multi-touch** Android has native support for multi-touch which was initially made available in handsets such as the HTC Hero.
8	**Multi-tasking** User can jump from one task to another and same time various application can run simultaneously.
9	**Resizable widgets** Widgets are resizable, so users can expand them to show more content or shrink them to save space.
10	**Multi-Language** Supports single direction and bi-directional text.
11	**GCM** Google Cloud Messaging (GCM) is a service that lets developers send short message data to their users on Android devices, without needing a proprietary sync solution.
12	**Wi-Fi Direct** A technology that lets apps discover and pair directly, over a high-bandwidth peer-to-peer connection.
13	**Android Beam** A popular NFC-based technology that lets users instantly share, just by touching two NFC-enabled phones together.

Android Studio

Android Studio is the official integrated development environment (IDE) for Google's Android operating system, built on JetBrains' IntelliJ IDEA software and designed specifically for Android development. It is available for download on Windows, macOS and Linux based operating systems. It is a replacement for

the Eclipse Android Development Tools (E-ADT) as the primary IDE for native Android application development.

Android Studio was announced on May 16, 2013, at the Google I/O conference. It was in early access preview stage starting from version 0.1 in May 2013, then entered beta stage starting from version 0.8 which was released in June 2014. The first stable build was released in December 2014, starting from version 1.0. At the end of 2015, Google dropped support for Eclipse ADT, making Android Studio the only officially supported IDE for Android development.

On May 7, 2019 Kotlin replaced Java as Google's preferred language for Android app development. Java is still supported, as is C++.

Features of android studio

- Gradle-based build support
- Android-specific refactoring and quick fixes
- Lint tools to catch performance, usability, version compatibility and other problems
- ProGuard integration and app-signing capabilities
- Template-based wizards to create common Android designs and components
- A rich layout editor that allows users to drag-and-drop UI components, option to preview layouts on multiple screen configurations
- Support for building Android Wear apps
- Built-in support for Google Cloud Platform, enabling integration with Firebase Cloud Messaging (Earlier 'Google Cloud Messaging') and Google App Engine
- Android Virtual Device (Emulator) to run and debug apps in the Android studio.

Kotlin

Kotlin (/ˈkɒtlɪn/) is a cross-platform, statically typed, general-purpose programming language with type inference. Kotlin is designed to interoperate fully with Java, and the JVM version of Kotlin's standard library depends on the Java Class Library, but type inference allows its syntax to be more concise. Kotlin mainly targets the JVM, but also compiles to JavaScript (e.g., for frontend web applications using React) or native code via LLVM (e.g., for native iOS apps sharing business logic with Android apps). Language development costs are borne by JetBrains, while the Kotlin Foundation protects the Kotlin trademark.

On 7 May 2019, Google announced that the Kotlin programming language is now its preferred language for Android app developers. Since the release of Android Studio 3.0 in October 2017, Kotlin has been included as an alternative to the standard Java compiler. The Android Kotlin compiler produces Java 8 bytecode by default (which runs in any later JVM), but lets the programmer choose to target Java 9 up to 18, for optimization, or allows for more features; has bidirectional record class interoperability support for JVM, introduced in Java 16, considered stable as of Kotlin 1.5.

Kotlin has support for the web; by compiling to JavaScript (i.e., Kotlin/JS with the classic back-end, is declared stable since version 1.3), while the newer Kotlin/JS (IR-based) is in beta as of version 1.5.30. Kotlin/Native (for e.g. Apple silicon support) is considered beta since version 1.3.

Introduction for project

Abstract

Mobile applications can be one of the best ways to keep consumers engaged with a brand as they are on the move. With the increase in demand for smart phones and efficiency of wireless networks, the demand for mobile applications has increased incredibly. Android is one of the most popular open source platforms that offer the developer full access to the framework API's so as to build innovative applications. Our project "FoodRunner" is an android application which helps the user to order the desired food from the restaurants. This projects overall gives the easier way to order the desired food from home be the restaurant which will save time with its simple and effectiveness. The main aim of this project is to build an Android application that helps the users to order food from home with specified restaurants and according to the specified tastes. The users can register and login to the app by providing their details. The users can order the food as their desire and they can pay through Cash On Delivery or Credit Card/Debit Card. The admin will have control over the entire system. He can view everyone's profile associated with the restaurant. The admin can view records of users and as well all the users associated to the app have to register. Only registered people can have access to order.

The users should get registered to order the food. The user can view the restaurants and order the available items through the application. They can also view the restaurant's profiles only to know their specialization, their records so that they can approach those- specific restaurant to get food.

Introduction

FoodRunner Food Delivery App is a application designed primarily for use in the food delivery industry. This application will allow restaurants, hotel, cafe and street vendors to increase scope of business by reducing the labor cost involved. Application presents an interactive and up-to-date menu with all options available in an easy to use manner. Customers can signup and signin in the app while they can use Google Signin to use the app. Customers can choose one or more 'orders from the desired restaurants. If Customer wants to remove one of the order then there is a drag and drop option which will help customers to remove the order. After ordering customer will land to cart option and then to the checkout where they can pay via Cash On Delivery or Credit Card/Debit Card. After Successful Order the Customers can see the Map where they can track the order and can see the time of the orders to be delivered. Once the order is placed it is entered in the database and retrieved in pretty much real time.
This Application will allow Restaurants to register and login and add the details for their restaurants like restaurant name, restaurant image, food name, food price and food images which will be shown to the Customers.

This Application will allow Restaurants to register and login and add the details for their restaurants like restaurant name, restaurant image, food name, food price and food images which will be shown to the Customers.

This Application will have Admin Login Where the admin can operate whole app and all the details of customers and restaurants. Admin can Update, Add and Delete Informations.
Informations.

Goal and objective

Goal

Mobile applications can be one of the best ways to keep consumers engaged with a brand as they are on the move. With the increase in demand for smart phones and efficiency of wireless networks the demand for mobile applications has increased incredibly. Android is one of the most popular open source platforms that offers the developers full access to the framework API's so as to build innovative applications

The main aim of this project is to build an Android application that helps the users to order food from the specified restaurants and according to the specified tastes The main features provided by the FoodTukk application are as follows:

- Customers can signup and sign in and also they can sign in via Google.
- Restaurant can signup and sig in.

- Provides the searching facilities based on various factors. Such as Food item, Cart Order, Customer.

- It also manage the Delivery details online for Order details, Customer details, Food item
- It tracks all the information of Category, Delivery, Order etc
- Manage the information of Category.
- Shows the information and description of the Food item, Cart.
- To increase efficiency of managing the Food item, Category.
- It deals with monitoring the information and transactions of Order.
- Manage the information of Food item.
- Manage the information of Order.

Objective

The main objective of the Project on Online Food Delivery Application is to manage the details of Food item, Category, Cart, Order, Customer. It manages all the information about Food item, Delivery, Customer, Food item. The project is totally built at user, restaurant and administrator end and thus only the administrator is guaranteed the access. The purpose of the project is to build an application program to reduce the manual work for managing the Food item, Category, Delivery, Cart. It tracks all the details about the Cart, Order, Customer.

Problem definition

The technology we recommend is an easy-to-use online meal ordering system for customers. It overcomes the disadvantages of traditional queueing systems. Our system is both a convenient way to order food from restaurants and a mess service. The procedure of taking a customer's order is made easier with this technology. Customers may place orders fast utilising the online meal ordering system, which generates an online menu. Customers can also use a meal menu to keep track of their orders. Users can also rate the food goods using this system's feedback feature. In addition, based on the user's ratings, the proposed system can recommend hotels and meals, and the hotel staff will be notified of any quality adjustments.

Motivation

My motivation for creating this app stemmed from the fact that my family works in the fast food industry, and I dislike waiting in lines or having to call ahead to place an order, especially during peak lunch or dinner hours. In addition, I value my current knowledge of the Java and JSP programming languages, as well as understanding how strong and dynamic they are when it comes to web design and application development. Because I found them to be highly beneficial when working on the technologies, I used JavaScript, JSP, HTML, and Java to develop this application on the client side, and Oracle database on the back end.

Feasibility study

A project feasibility study is a comprehensive report that examines in detail the five frames of analysis of a given project. It also takes into consideration its four Ps, its risks and POVs, and its constraints (calendar, costs, and norms of quality). The goal is to determine whether the project should go ahead, be redesigned, or else abandoned altogether.[6] The five frames of analysis are: The frame of definition; the frame of contextual risks; the frame of potentiality; the parametric frame; the frame of dominant and contingency strategies.

The four Ps are traditionally defined as Plan, Processes, People, and Power. The risks are considered to be external to the project (e.g., weather conditions) and are divided in eight categories: (Plan) financial and organizational (e.g., government structure for a private project); (Processes) environmental and technological; (People) marketing and sociocultural; and (Power) legal and political. POVs are Points of Vulnerability: they differ from risks in the sense that they are internal to the project and can be controlled or else eliminated.

The constraints are the standard constraints of calendar, costs and norms of quality that can each be objectively determined and measured along the entire project lifecycle. Depending on projects, portions of the study may suffice to produce a feasibility study; smaller projects, for example, may not require an exhaustive environmental assessment.

Common factors

TELOS is an acronym in project management used to define five areas of feasibility that determine whether a project should run or not.

1. T - Technical - Is the project technically possible?
2. E - Economic - Can the project be afforded? Will it increase profit?
3. L - Legal - Is the project legal?
4. O - Operational - How will the current operations support the change?
5. S - Scheduling - Can the project be done in time?

Technical feasibility

This assessment is based on an outline design of system requirements, to determine whether the company has the technical expertise to handle completion of the project.[10][11][12] When writing a feasibility report, the following should be taken to consideration:

- A brief description of the business to assess more possible factors which could affect the study
- The part of the business being examined
- The human and economic factor
- The possible solutions to the problem

At this level, the concern is whether the proposal is both *technically* and *legally* feasible (assuming moderate cost).

The technical feasibility assessment is focused on gaining an understanding of the present technical resources of the organization and their applicability to the expected needs of the proposed system. It is an evaluation of the hardware and software and how it meets the need of the proposed system.

Method of production

The selection among a number of methods to produce the same commodity should be undertaken first. Factors that make one method being preferred to other method in agricultural projects are the following:

- Availability of inputs or raw materials and their quality and prices.
- Availability of markets for outputs of each method and the expected prices for these outputs.
- Various efficiency factors such as the expected increase in one additional unit of fertilizer or productivity of a specified crop per one thing

Production technique

After we determine the appropriate method of production of a commodity, it is necessary to look for the optimal technique to produce this commodity.

Project requirement

Once the method of production and its technique are determined, technical people have to determine the projects' requirements during the investment and operating periods. These include:

- Determination of tools and equipment needed for the project such as drinkers and feeders or pumps or pipes ...etc.
- Determination of projects' requirements of constructions such as buildings, storage, and roads ...etc. in addition to internal designs for these requirements.
- Determination of projects' requirements of skilled and unskilled labor and managerial and financial labor.
- Determination of construction period concerning the costs of designs and consultations and the costs of constructions and other tools.
- Determination of minimum storage of inputs, cash money to cope with operating and contingency costs.

Project location

The most important factors that determine the selection of project location are the following:

- Availability of land (proper acreage and reasonable costs).
- The impact of the project on the environment and the approval of the concerned institutions for license.
- The costs of transporting inputs and outputs to the project's location (i.e., the distance from the markets).
- Availability of various services related to the project such as availability of extension services or veterinary or water or electricity or good roads ...etc.

Legal feasibility

It determines whether the proposed system conflicts with legal requirements, e.g., a data processing system must comply with the local data protection regulations and if the proposed venture is acceptable in accordance to the laws of the land.

Operational feasibility study

Operational feasibility is the measure of how well a proposed system solves the problems, and takes advantage of the opportunities identified during scope definition and how it satisfies the requirements identified in the requirements analysis phase of system development.[14]

The operational feasibility assessment focuses on the degree to which the proposed development project fits in with the existing business environment and objectives with regard to development schedule, delivery date, corporate culture and existing business processes.

To ensure success, desired operational outcomes must be imparted during design and development. These include such design-dependent parameters as reliability, maintainability, supportability, usability, producibility, disposability, sustainability, affordability and others. These parameters are required to be considered at the early stages of design if desired operational behaviours are to be realised. A system design and development requires appropriate and timely application of engineering and management efforts to meet the previously mentioned parameters. A system may serve its intended purpose most effectively when its technical and operating characteristics are engineered into the design. Therefore, operational feasibility is a critical aspect of systems engineering that needs to be an integral part of the early design phases.

Time feasibility

A time feasibility study will take into account the period in which the project is going to take up to its completion. A project will fail if it takes too long to be completed before it is useful. Typically this means estimating how long the system will take to develop, and if it can be completed in a given time period using some methods like payback period. Time feasibility is a measure of how reasonable the project timetable is. Given our technical expertise, are the project deadlines reasonable? Some projects are initiated with specific deadlines. It is necessary to determine whether the deadlines are mandatory or desirable.

Other feasibility factors

Resource feasibility

Describe how much time is available to build the new system, when it can be built, whether it interferes with normal business operations, type and amount of resources required, dependencies, and developmental procedures with company revenue prospectus.

Financial feasibility

In case of a new project, financial viability can be judged on the following parameters:

- Total estimated cost of the project
- Financing of the project in terms of its capital structure, debt to equity ratio and promoter's share of total cost
- Existing investment by the promoter in any other business
- Projected cash flow and profitability

The financial viability of a project should provide the following information:[16]

- Full details of the assets to be financed and how liquid those assets are.
- Rate of conversion to cash-liquidity (i.e., how easily the various assets can be converted to cash).
- Project's funding potential and repayment terms.
- Sensitivity in the repayments capability to the following factors:
  - Mild slowing of sales.
  - Acute reduction/slowing of sales.
  - Small increase in cost.
  - Large increase in cost.
  - Adverse economic conditions.

In 1983 the first generation of the Computer Model for Feasibility Analysis and Reporting (COMFAR), a computation tool for financial analysis of investments, was released. Since then, this United Nations Industrial Development Organization (UNIDO) software has been developed to also support the economic appraisal of projects. The COMFAR III Expert is intended as an aid in the analysis of investment projects. The main module of the program accepts financial and economic data, produces financial and economic statements and graphical displays and calculates measures of performance. Supplementary modules assist in the analytical process. Cost-benefit and value-added methods of economic analysis developed by UNIDO are included in the program and the methods of major international development institutions are accommodated. The program is applicable for the analysis of investment in new projects and expansion or rehabilitation of existing enterprises as, e.g., in the case of reprivatisation projects. For joint ventures, the financial perspective of each partner or class of shareholder can be developed. Analysis can be performed under a variety of assumptions concerning inflation, currency revaluation and price escalations.

Project planning

Project Planning: An example of a software project plan is as follows:

1) Within the company: How will the project be implemented? What are the constraints (in terms of time, money, and personnel)? What does it mean to have a market strategy?

2) Client meetings: Meetings with customers on a weekly or timely basis, with a progress update presentation. Customers' feedback is also considered, and modifications and improvements are implemented as needed. Project milestones and deliverables are also shown to the customer.

For a successful software project, the following steps can be followed:

Select a project

- project's aims and objectives are as follows:-
    - o Understanding specification and requirement
    - o Methods of analysis, design and implementation
    - o Testing techniques
    - o Documentation
- Project milestones and deliverables
- Budget allocation o Exceeding limits within control
- Project Estimates
    - o Cost
    - o Time

Methodology adopted

Methodology used in this project is Water Fall method

I use this methodology because-:

The Waterfall process is adopted by project managers who are faced with development projects that:

- Don't have ambiguous requirements.
- Offer a clear picture of how things will proceed from the outset.
- Have clients who seem unlikely to change the scope of the project once it is underway.

If a project manager prefers clearly defined processes, where cost, design, and time requirements are known upfront, then the Waterfall method is the way to go, as long as the project itself is conducive to those constraints.

About water fall model

The waterfall methodology is a project management approach that emphasizes a linear progression from beginning to end of a project. This methodology, often used by engineers, is front-loaded to rely on careful planning, detailed documentation, and consecutive execution.

What is the Waterfall methodology?

The Waterfall methodology — also known as the Waterfall model — is a sequential development process that flows like a waterfall through all phases of a project (analysis, design, development, and testing, for example), with each phase completely wrapping up before the next phase begins.

It is said that the Waterfall methodology follows the adage to "measure twice, cut once." The success of the Waterfall method depends on the amount and quality of the work done on the front end, documenting everything in advance, including the user interface, user stories, and all the features' variations and outcomes.

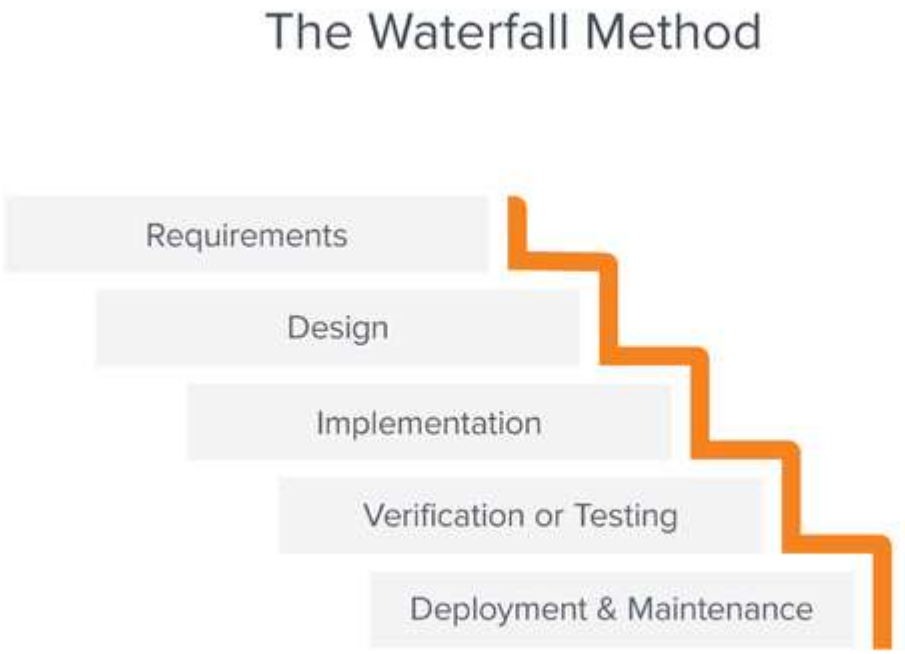
Waterfall software can be desktop or cloud-based. It helps you:

- Structure your processes
- Organize tasks
- Set up Gantt charts and schedules
- Monitor project progress

5 common stages in a Waterfall process.

The Waterfall methodology follows a chronological process and works based on fixed dates, requirements, and outcomes. With this method, the individual execution teams aren't required to be in constant communication and, unless specific integrations are required, are usually self-contained.

Team members also tend to work independently and aren't expected to provide status reports as often as with the Agile approach. Usually, one phase doesn't begin until the previous one is finished.



Using a software development project as an example, the Waterfall process usually includes stages that look like this:

Requirements.

The Waterfall methodology depends on the belief that all project requirements can be gathered and understood upfront. The project manager does their best to get a detailed understanding of the project sponsor's requirements. Written requirements, usually contained in a single document, are used to describe each stage of the project, including the costs, assumptions, risks, dependencies, success metrics, and timelines for completion.

Design.

Here, software developers design a technical solution to the problems set out by the product requirements, including scenarios, layouts, and data models. First, a higher-level or logical design is created that describes the purpose and scope of the project, the general traffic flow of each component, and the integration points.

Once this is complete, it is transformed into a physical design using specific hardware and software technologies.

Implementation.

Once the design is complete, technical implementation starts. This might be the shortest phase of the Waterfall process because painstaking research and design have already been done. In this phase, programmers code applications based on project requirements and specifications, with some testing and implementation taking place as well. If significant changes are required during this stage, this may mean going back to the design phase.

Verification or testing.

Before a product can be released to customers, testing needs to be done to ensure the product has no errors and all of the requirements have been completed, ensuring a good user experience with the software. The testing team will turn to the design documents, personas, and user case scenarios supplied by the product manager to create their test cases.

Deployment and maintenance.

Once the software has been deployed in the market or released to customers, the maintenance phase begins. As defects are found and change requests come in from users, a team will be assigned to take care of updates and release new versions of the software.

Advantages of the Waterfall methodology.

The Waterfall methodology is a straightforward, well-defined project management methodology with a proven track record. Since the requirements are clearly laid out from the beginning, each contributor knows what must be done when, and they can effectively plan their time for the duration of the project.

Other benefits of the Waterfall method include:

- Developers can catch design errors during the analysis and design stages, helping them to avoid writing faulty code during the implementation phase.
- The total cost of the project can be accurately estimated, as can the timeline, after the requirements have been defined.
- With the structured approach, it is easier to measure progress according to clearly defined milestones.
- Developers who join the project in progress can easily get up to speed because everything they need to know should be in the requirements document.
- Customers aren’t always adding new requirements to the project, delaying production.

Disadvantages of the Waterfall methodology.

Like any development process, the strengths in one area might mean weaknesses in the other. The Waterfall methodology's insistence on upfront project planning and commitment to a certain defined progress means that it is less flexible, or agile, later in the game. Changes that come further in the process can be time-consuming, painful, and costly.

Other reasons the Waterfall methodology may not work include:

- Projects can take longer to deliver with this chronological approach than with an iterative one, such as the Agile method.
- Clients often don't fully know what they want at the front end, opening the door to requests for changes and new features later in the process when they're harder to accommodate.
- Clients are not involved in the design and implementation stages.
- Deadline creep — when one phase in the process is delayed, all the other phases are delayed.

Other specification

5.1 Advantages

- It’s fast, easy and comfortable.
- Less hassle for you.
- An online menu is simpler to manage.
- It’s just one click away.

5.2 Limitations of the system

There are also certain limitations to the system. The shopping cart in the system only has basic features and does not allow for extensive cart customisation. Furthermore, server side programming handles almost all of the application's capabilities, including validation. It adds to the server's workload, especially when the programme receives a big number of users. Using client-side languages like JavaScript or HTML 5 to validate data can help solve this problem. The order model has also been developed. On the other hand, the and functions for pushing data into the order table have yet to be built. As a result, you won't be able to see the orders you've placed.

The following is a list of restrictions that can be found in the Online Food Ordering System:

- Due to some criticality, an Excel export for Food Item, Category has not been established.
- Because the transactions are carried out in an off-line environment, no online data for the customer, order collection, or amendment is possible.
- Due to batch mode execution, no off-line reports of Food Item, Confirm Order, or Customer may be created.

5.3 Applications:-

- Food-to-go merchants, restaurants, and takeaways benefit from online food ordering software created expressly for them. Clients appreciate the convenience of ordering food online, hence online food ordering is rapidly growing. Get our online meal ordering app and expand your sales channels.
- Customers can place orders from their PCs, tablets, and cellphones via Celexsa's online meal ordering app. They can browse your menu options, pick what they want, and place an online order. Payment will also be made via the internet. Customers can have their meals delivered or pick them up in person.
- Using an online food ordering app or a restaurant ordering app has several advantages, including lower labour costs, fewer walk-away customers, and quicker wait times. This restaurant online ordering system is designed for multi-location food to go chains and independents, including restaurants, cafes and coffee shops, fast food, take-out, and other catering services.
- Getting your business online allows you to make a lot more sales, which will help you build a better reputation in the market. Existing customers will have a fantastic new way to order with your online menu, and new customers will find you quickly through popular web search engines. The system is customised to match the look and feel of your current website. We assist entrepreneurs in expanding their businesses in the digital age

System implementation

We decided to select food delivery application for our project as it is in heavy demand. We have implemented our application by Kotlin with the help of Android studio. For the implementation of database we have selected Firebase and for the source code editor and automation tool we used Intellij Idea.

4.1 Implementation Details

4.1.1 Software Details

For developing application following are the Software Requirements:-

Operating System: Windows 11

Language: Android Studio

Database: Firebase

Debugger: Android Dalvik Debug Monitor service

For running the application the following are the Software Requirements:

Operating System. Android 5.0 or higher versions
always

Network Wi-Fi Internet or cellular Network 3

Hardware and software requirements

Hardware requirements for Server

Processor : Intel Core i5 (or above)

Speed : 3.4 GHz

Ram : 8GB DDR3 HDD

Space : 1TeraBites 12

Mouse : 3 button scroll mouse

Keyboard : 104 keys keyboard

Monitor : 15” color

Screen Resolution : 1024x768 pixels (32/64 bits)

Graphics Card : Direct X 7 / 64 MB (or above)

Internet Connection : Any Internet Network

Internet Speed : 3.5 Mbps (or above)

Network Card : Any Network interface or modem

Printer : Any Printer (Dot matrix or Lager)

Software requirements

Development Environment : Android Studio

Database Used : Microsoft Sql Server 2008

Operating System : Windows 10

Hardware requirements for user

Android Smartphone

Ram:4gb

Processor speed: 2.4ghz

Storage :64gb

Software requirements

Android version: Lollipop (or above)

GPS :enable

System design

ER diagram

E-R Model is a popular high level conceptual data model. This model and its variations are frequently used for the conceptual design of database application and many database design tools employ its concept.

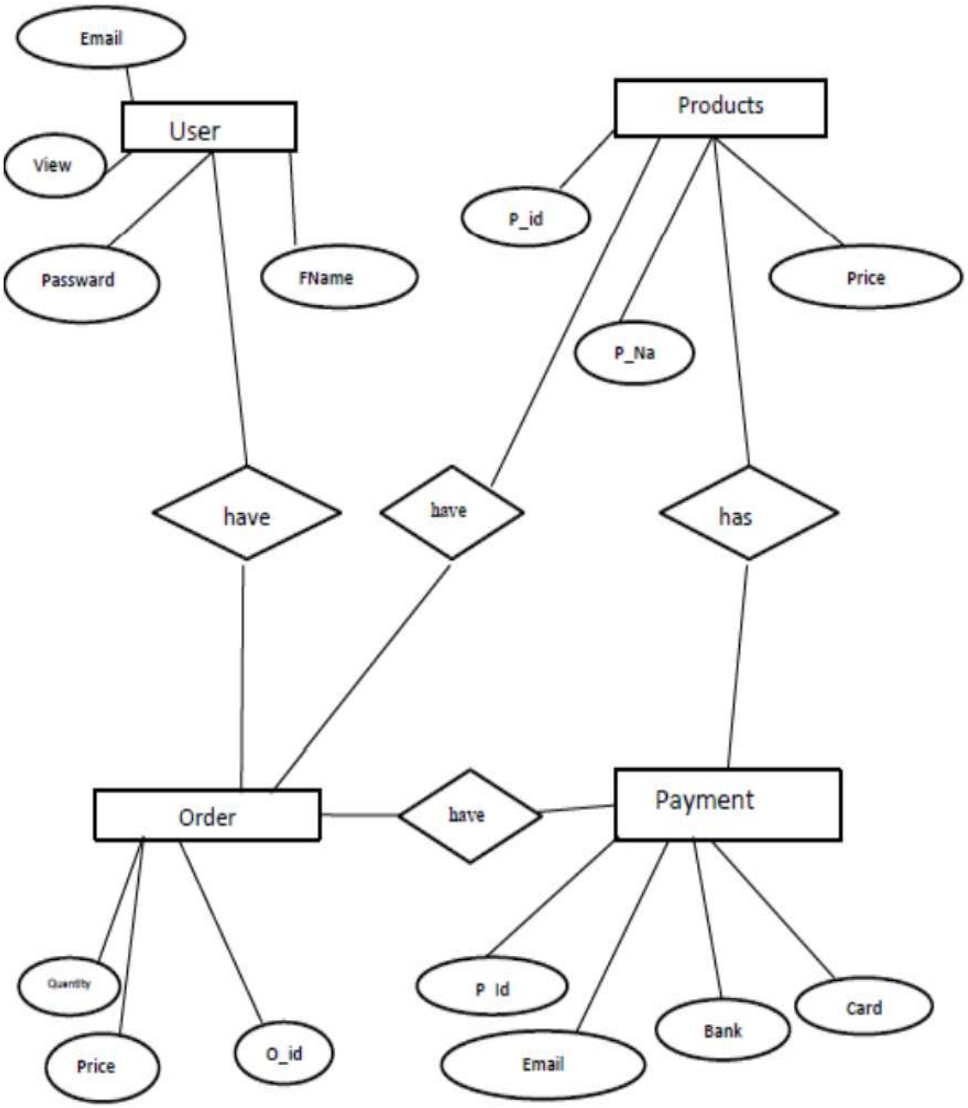
A database that confirms to an E-R diagram can be represented by a collection of tables in the relational system

The mapping of E-R diagram to the entities are:

- Attributes
- Relations
    - Many-to-many
    - One To One
    - Many To one
    - One To many
- Weak entities
- Sub-type and super-type

The entities and their relationships between them are shown using the following conventions.

- An entity is shown in rectangle.
- A diamond represent the relationship among number of entities.
- The attributes shown as ovals are connected to the entities or relationship by lines.
- The attributes shown as ovals are connected to the entities or relationship by lines.
- Diamond, oval and relationships are labelled.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Bank
Card

Data flow diagram

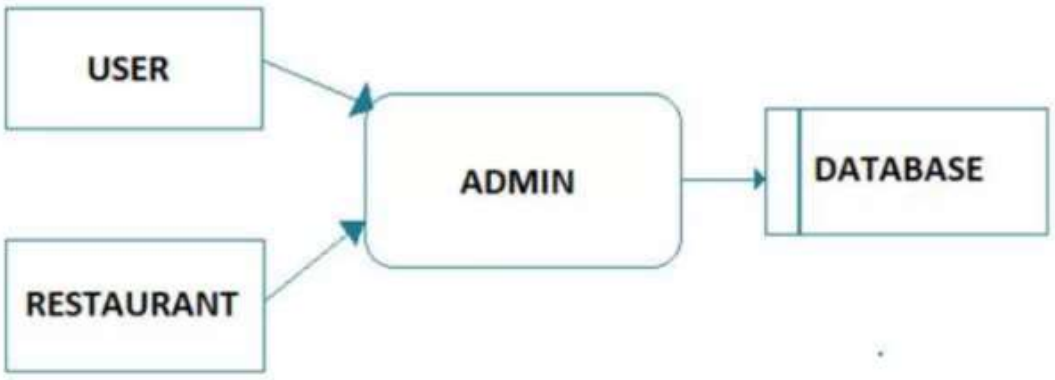
A dataflow diagram is a graphical representation of the flow of data between process. In other words, it shows:

- What goes in
- How it is changed
- What comes out

The following Symbols are generally used:

- Data flow is represented by a labeled arrow
- Process are represented by labeled circles
- Information source and sinks are represented by boxes

0 Level DFD



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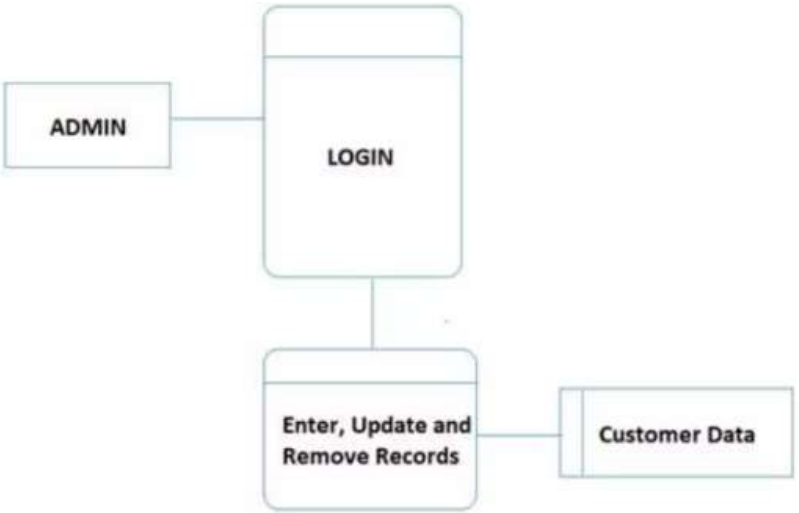
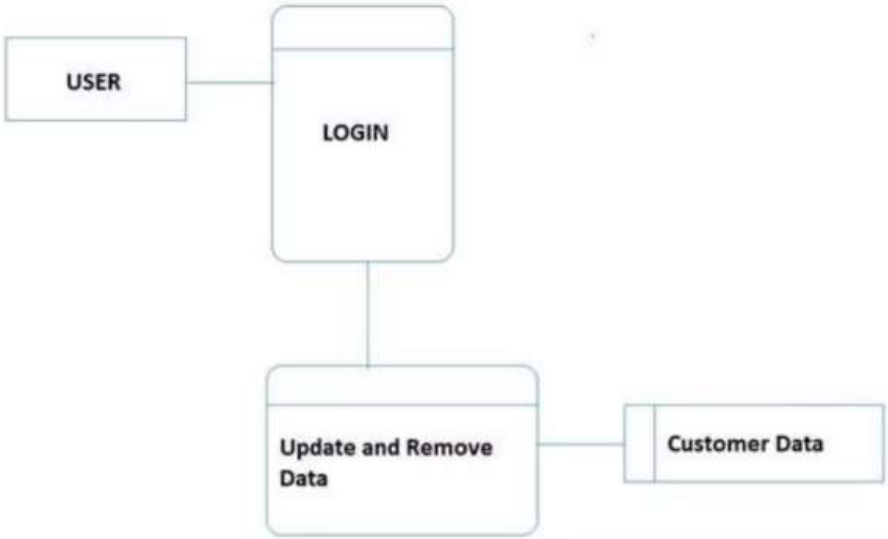
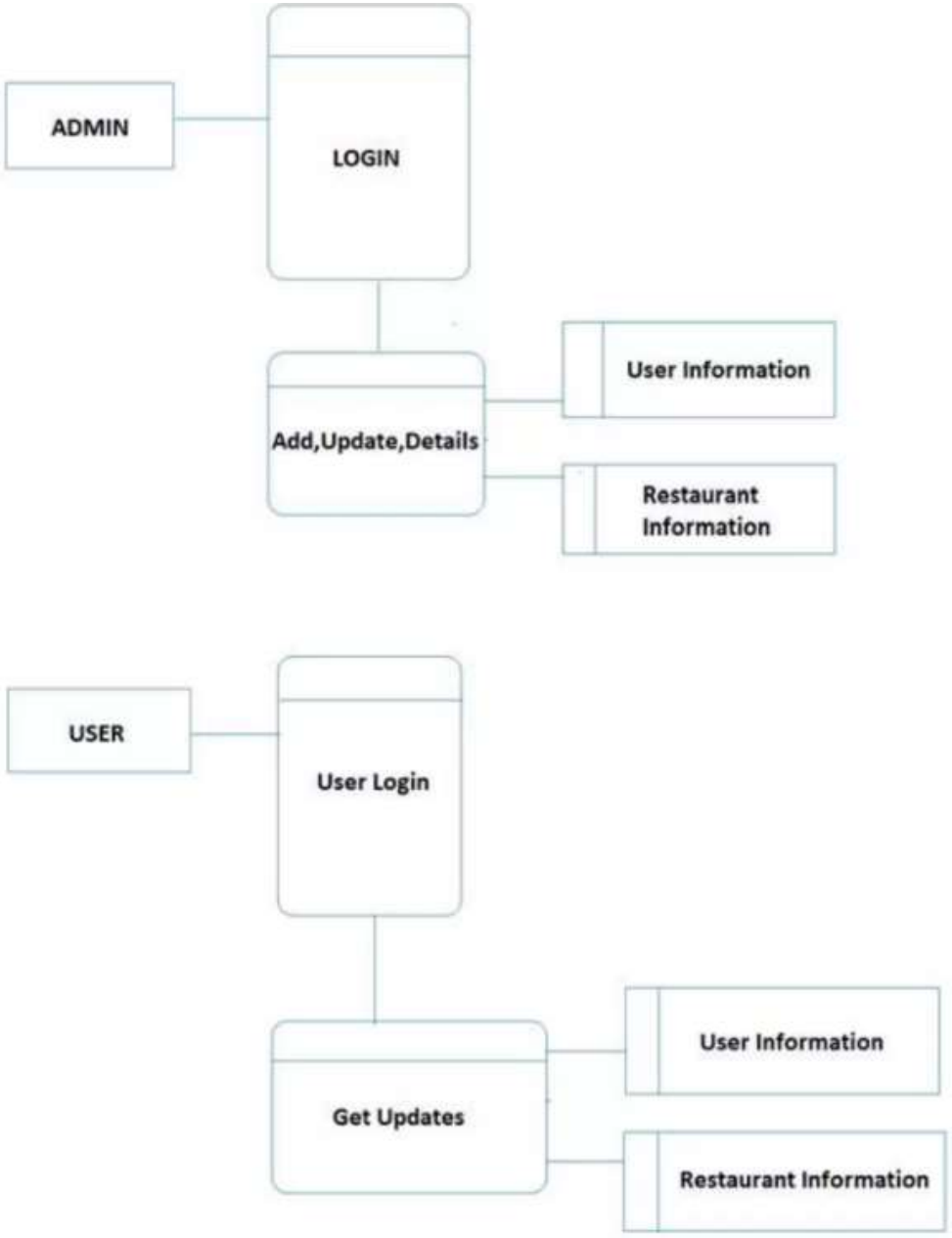

ADMIN
LOGIN
Enter, Update and Remove Records
Customer Data

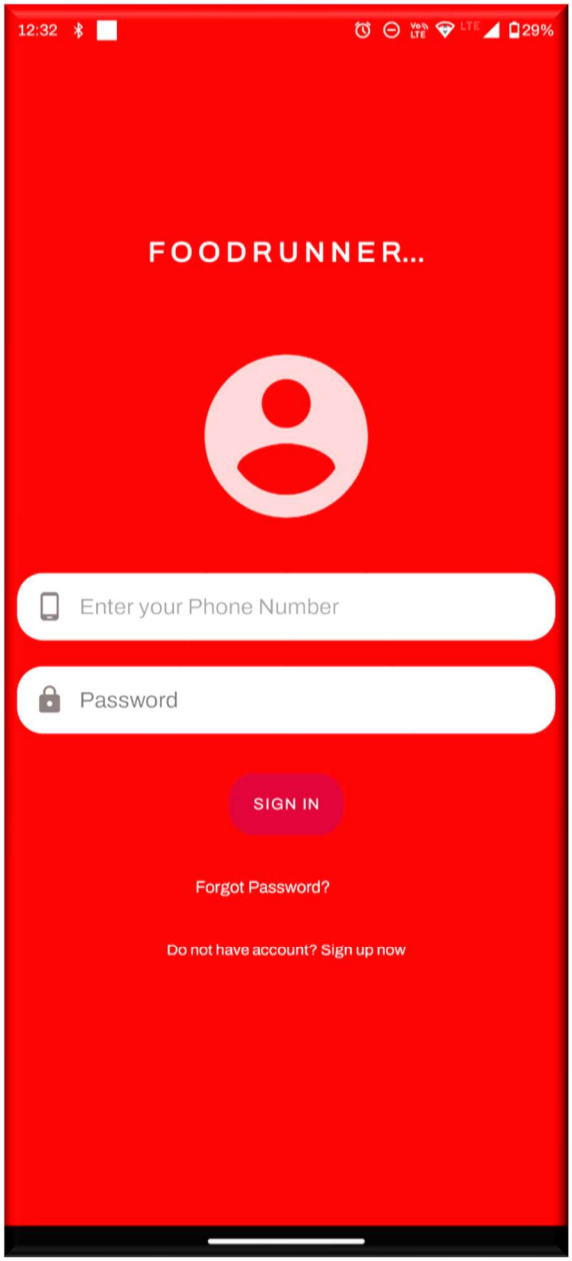

USER
LOGIN
Update and Remove Data
Customer Data

2nd Level DFD

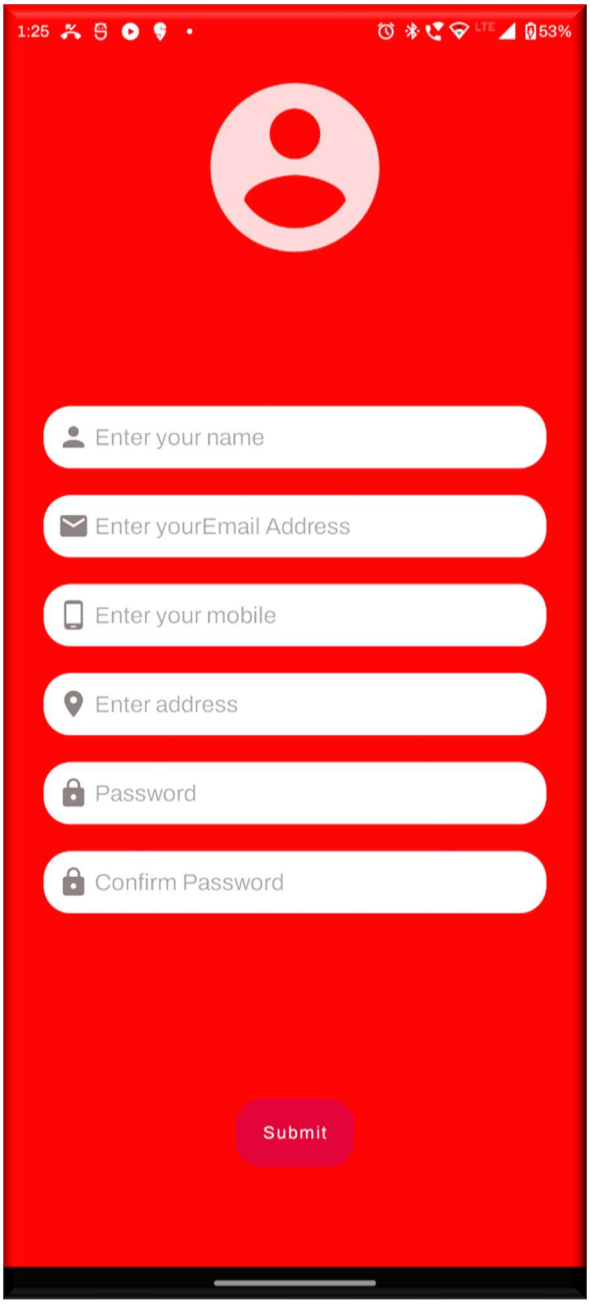


Snap shots

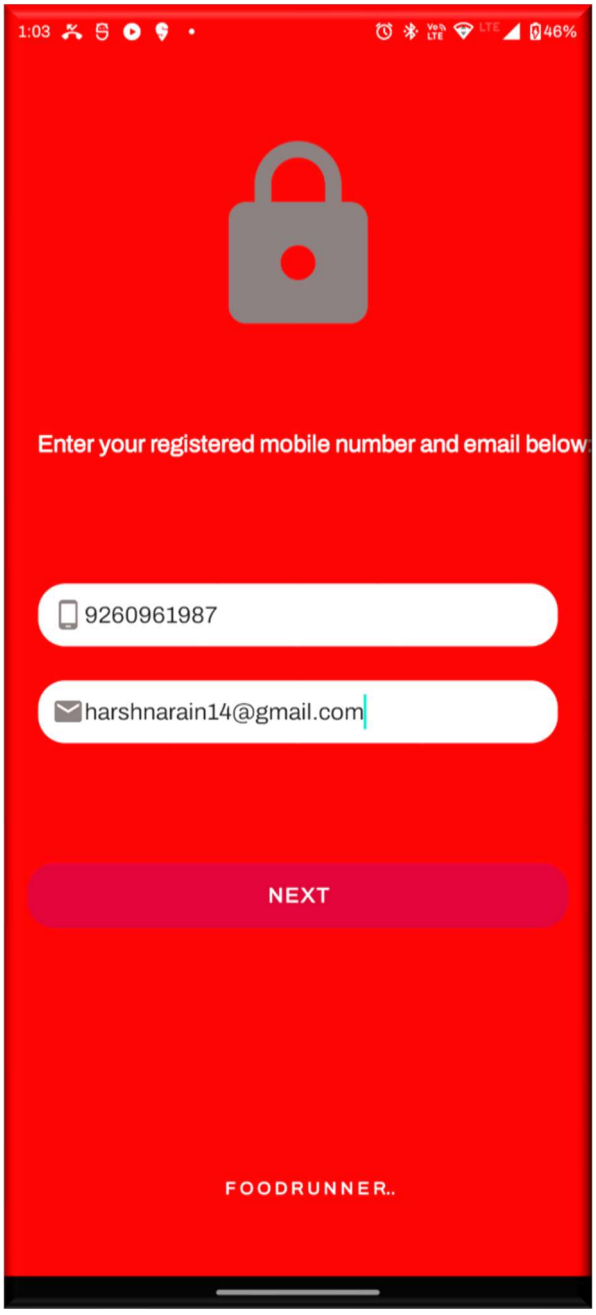
Login interface



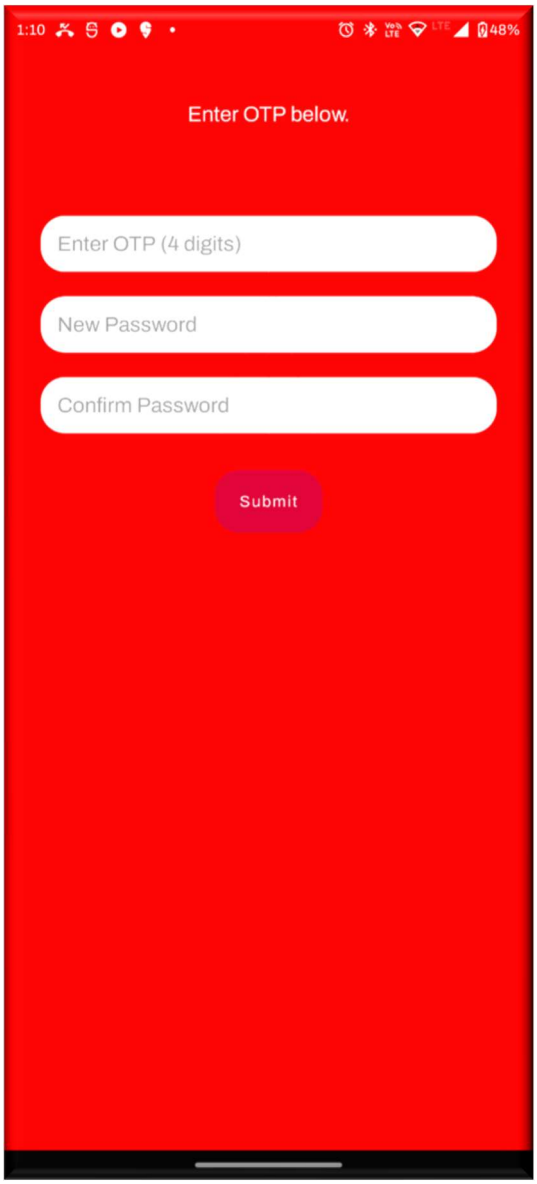
Sign Up page

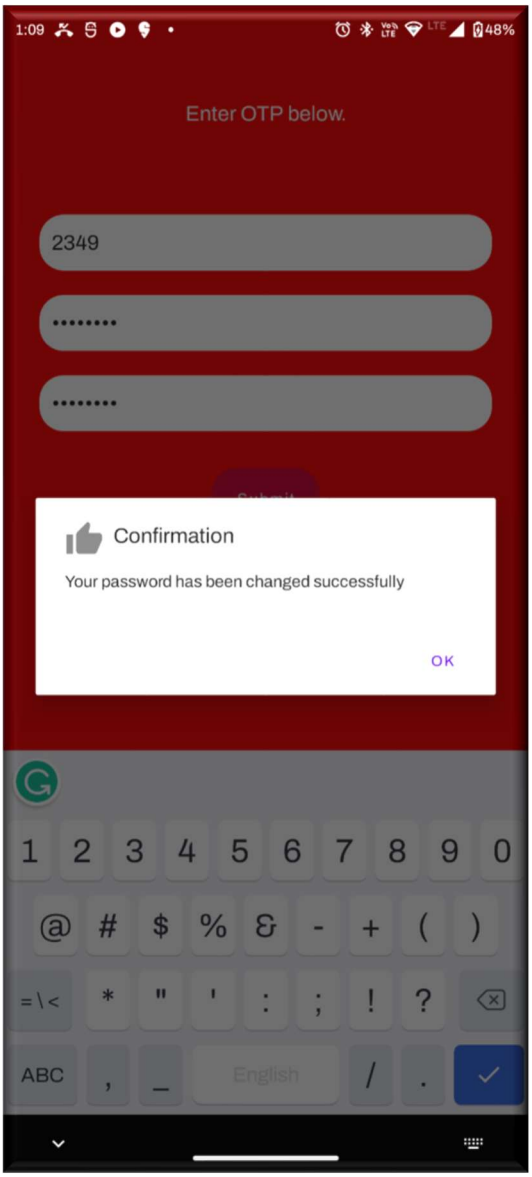

1:25
53%
Enter your name
Enter yourEmail Address
Enter your mobile
Enter address
Password
Confirm Password
Submit

Forgot password page

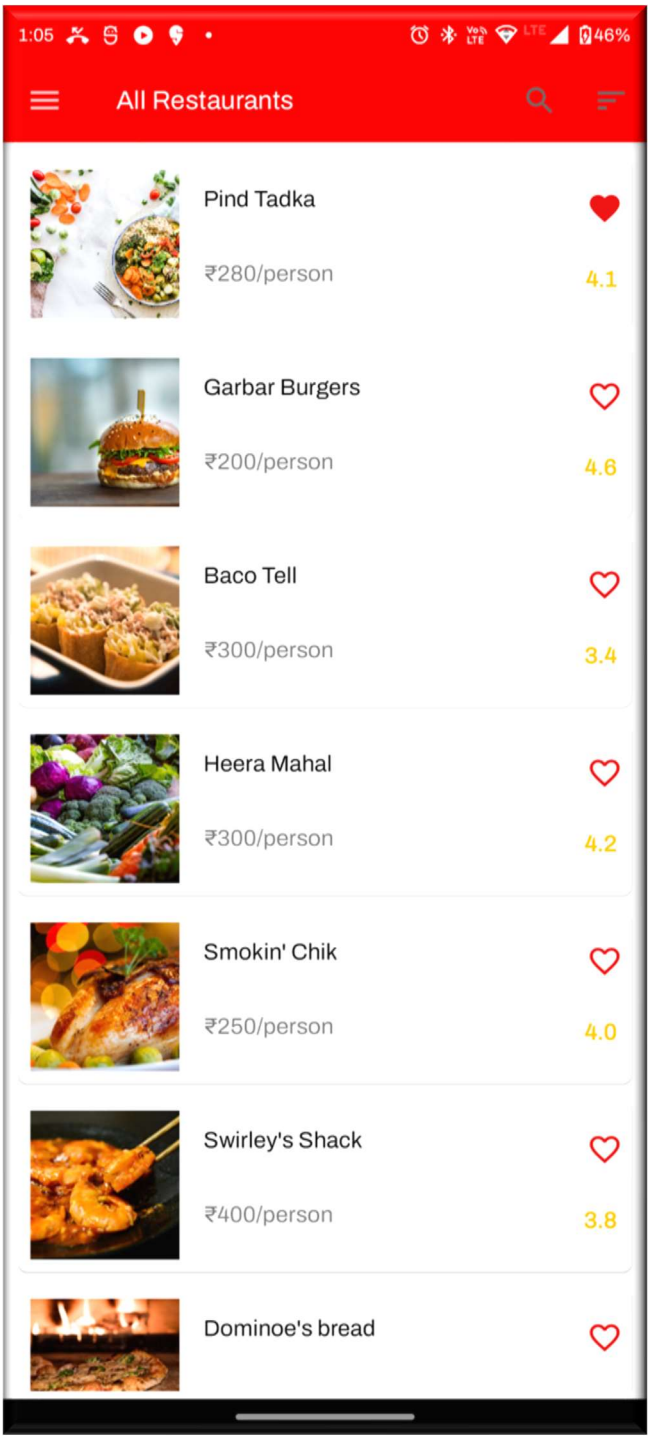


OTP activity

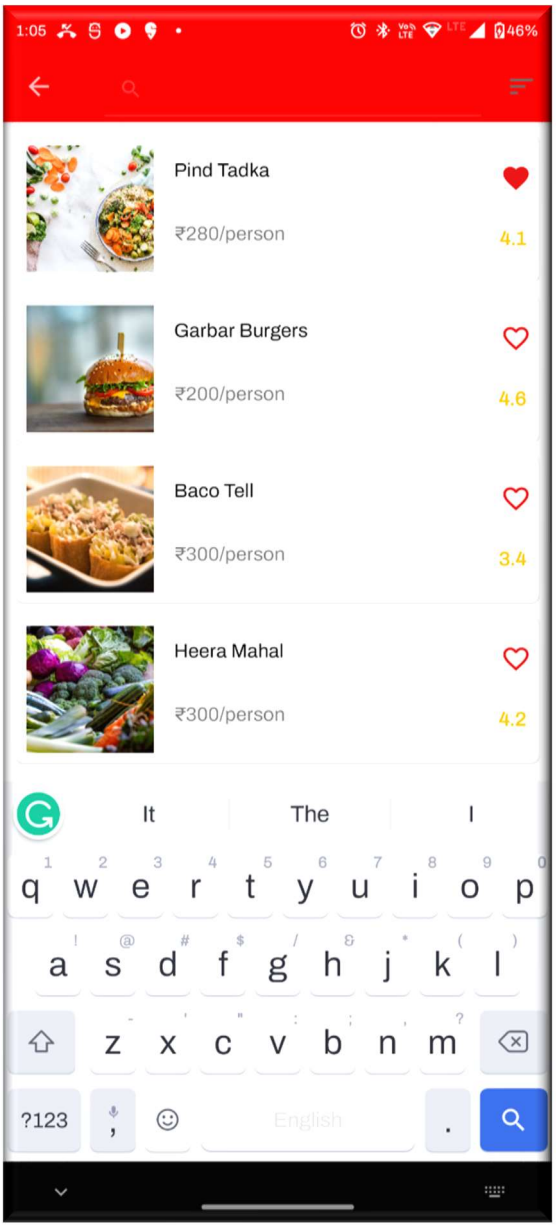


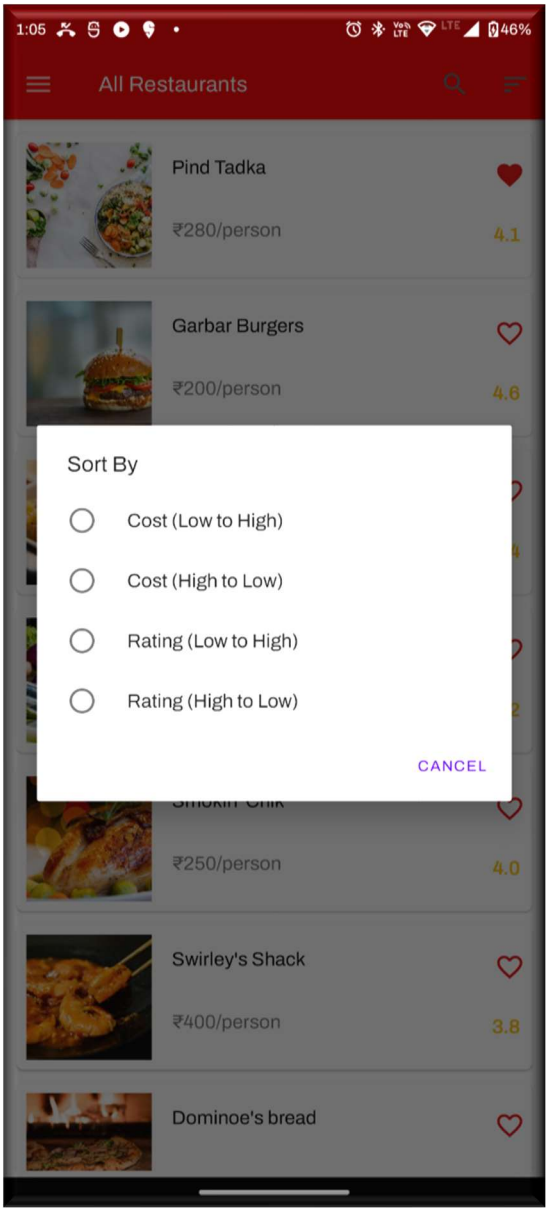


Home restaurant list

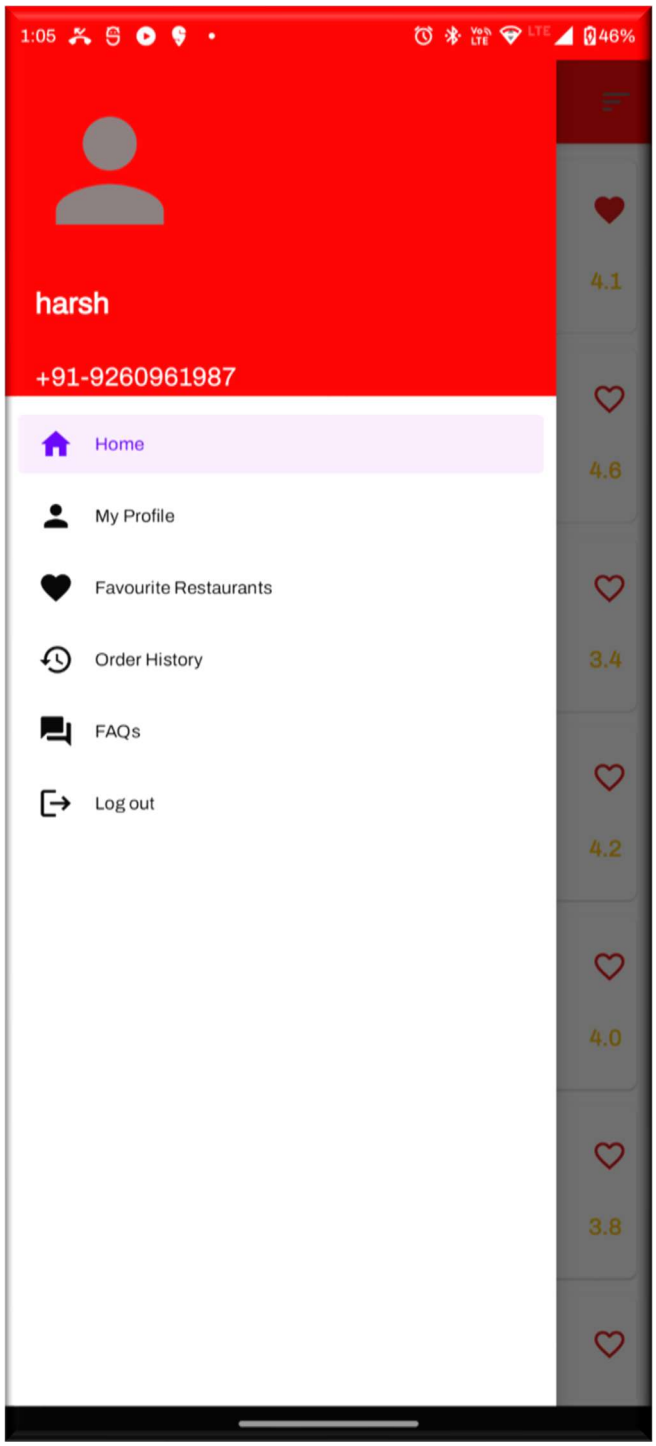


Search bar and sort icon

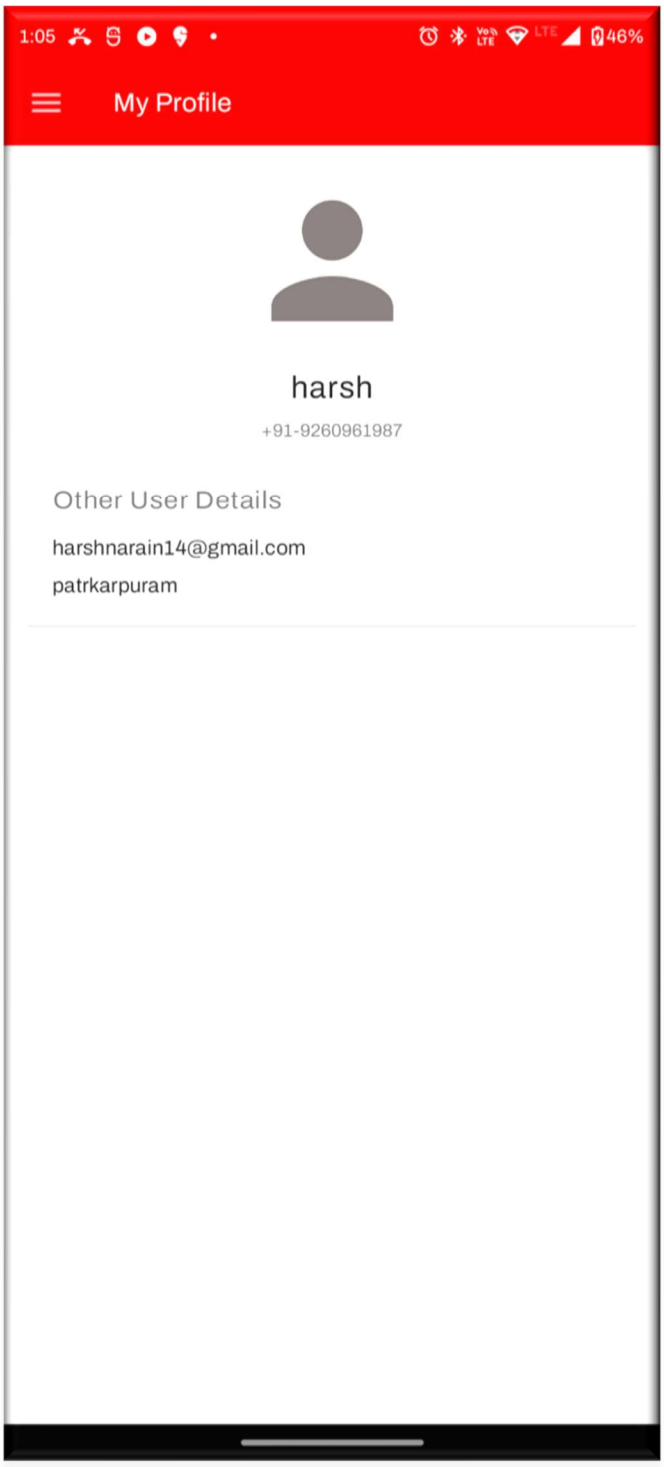




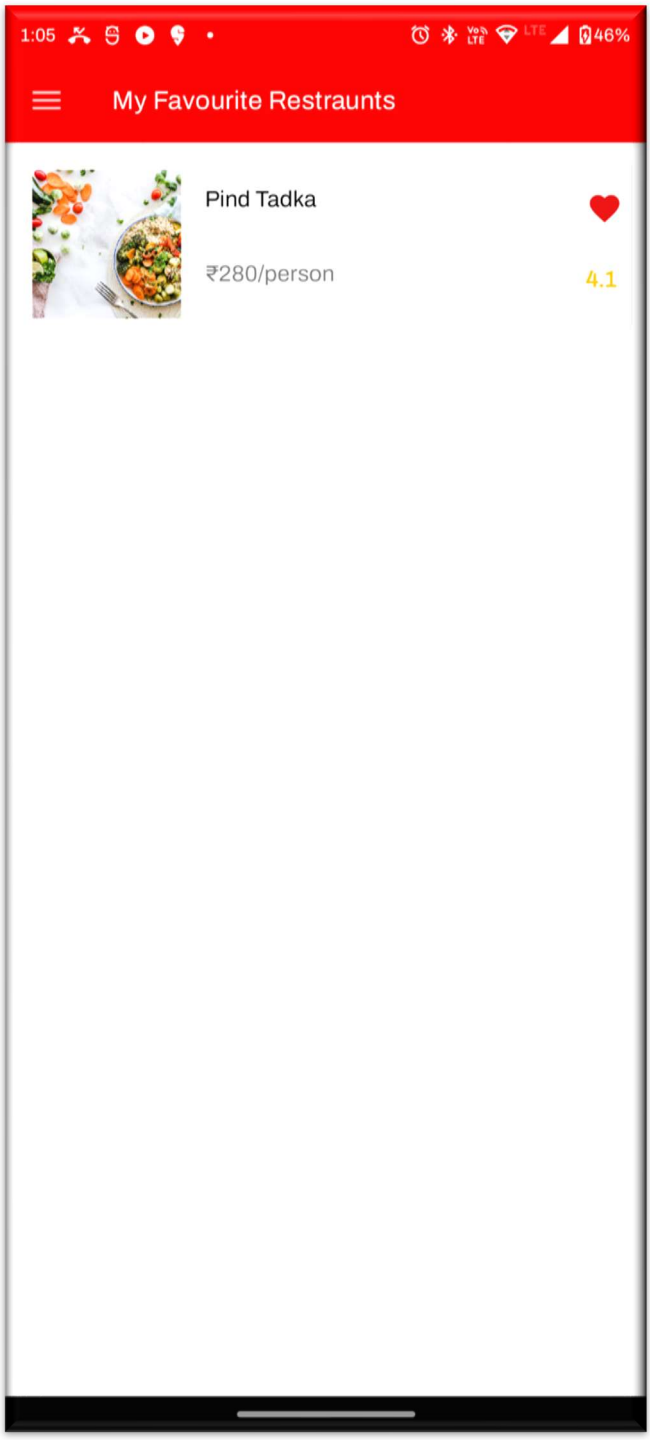
Navigation menu



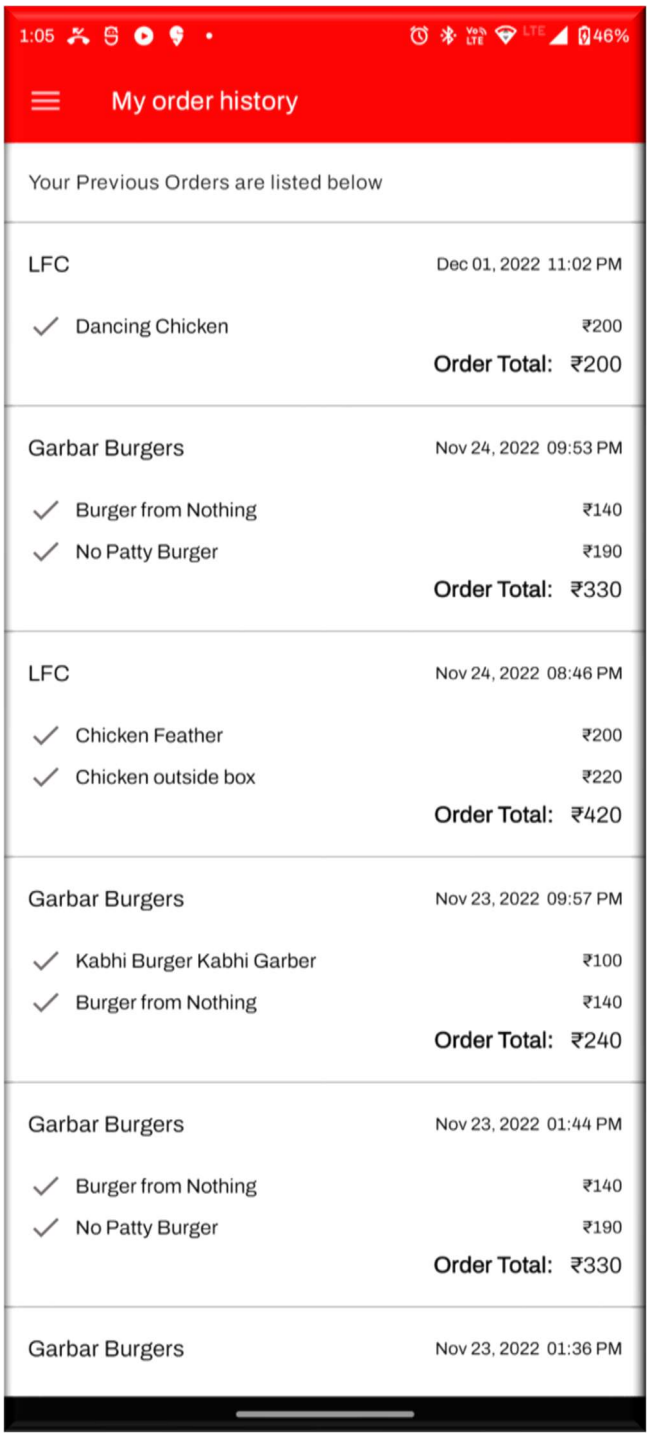
Profile fragment



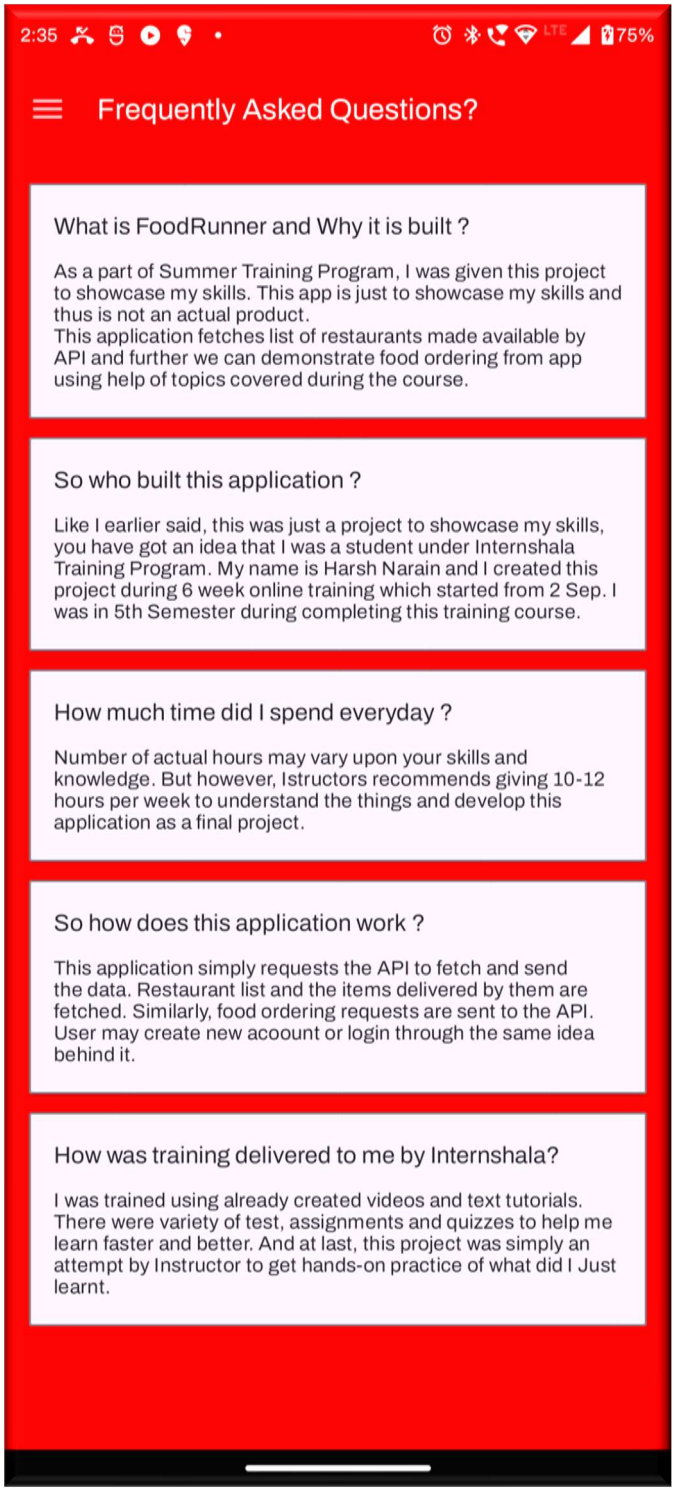
Favourites fragment



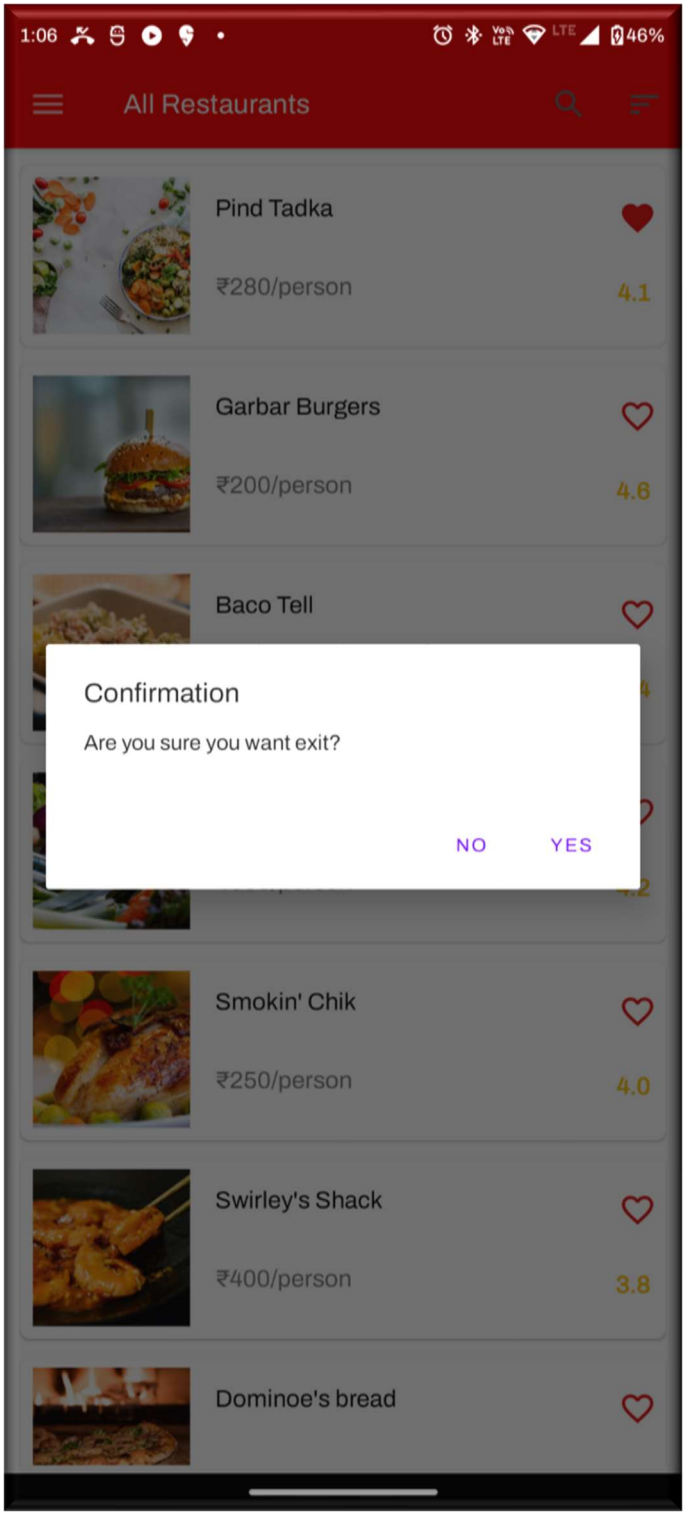
Order history fragment



FAQ' S fragment

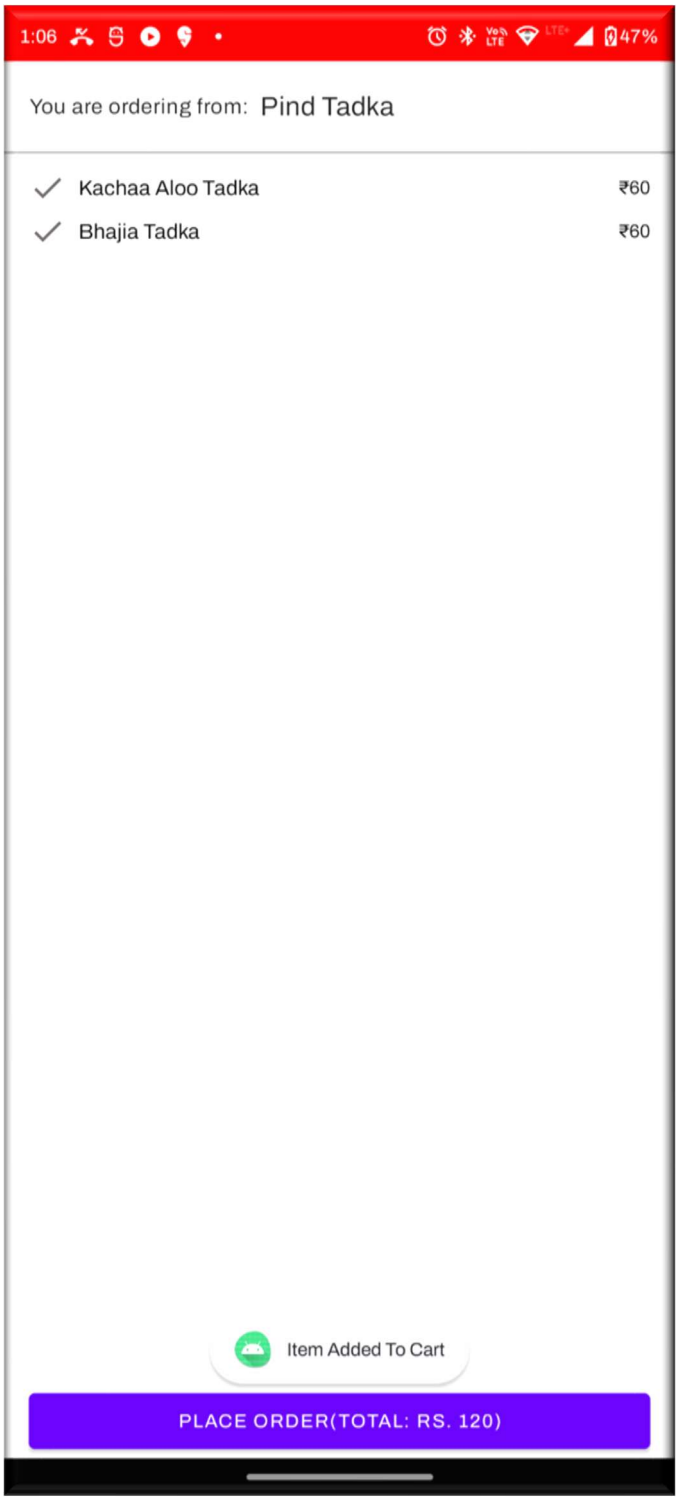


Log Out

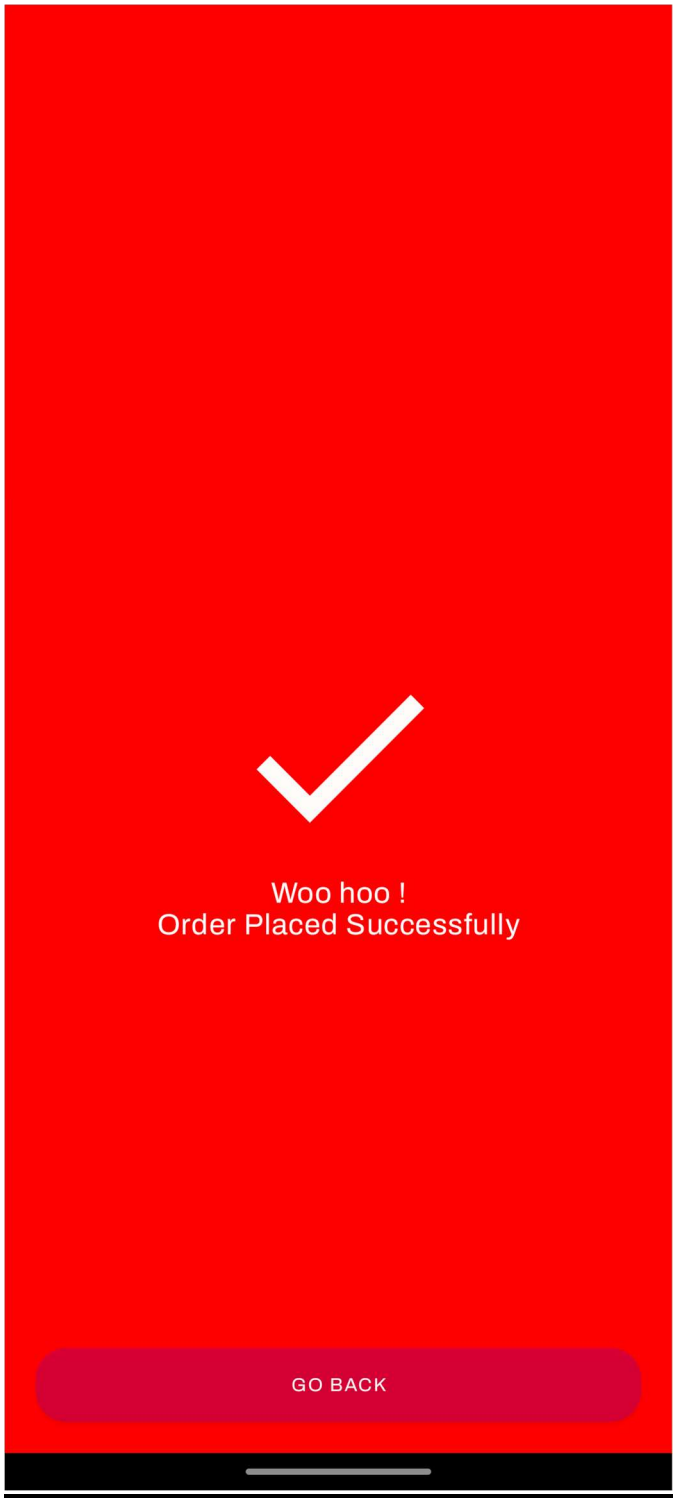

1:06
46%
All Restaurants
Pind Tadka
₹280/person
4.1
Garbar Burgers
₹200/person
4.6
Baco Tell
Confirmation
Are you sure you want exit?
NO
YES
Smokin' Chik
₹250/person
4.0
Swirley's Shack
₹400/person
3.8
Dominoe's bread

Restaurant menu

Cart activity



Order placed



Testing

Testing is vital for the success of any software. no system design is ever perfect. Testing is also carried in two phases. first phase is during the software engineering that is during the module creation. second phase is after the completion of software. this is system testing which verifies that the whole set of programs hanged together.

Testing scope:

Software testing is a critical element of software quality assurance and represents the ultimate review of specification, design and code generation Once source code has been generated, software must be tested to uncover and correct as many errors as possible before delivery to the customer. Our goal is to design a series of test cases that have a high likelihood of finding errors. That's where software-testing techniques come in to the picture. These techniques provide systematic guidance for designing tests that

1. Exercise the internal logic of software components and

2. Exercise the input and output domains of the program to uncover errors in program function, behavior and performance.

A Testing of the software leads to the uncovering of errors in the software functional and performance requirements are met. Testing also provides a good indication of software reliability as software quality as a whole. The result of the different phases of testing are evaluated and then compared with the expected results. If the errors are uncovered they are debugged and corrected. A strategy approach to software testing has the generic

characteristics:

1. Testing begins at the module level and works "outwards towards the integration of the entire computer based system.

2. Different testing techniques are appropriate Testing and Debuging at different points
of time.

3. Testing and Debugging are different activities, but debugging must be accommodated in the testing, strategy A strategy for the software testing must accommodated low level tests that are necessary to verify that a small source code segment is Pertbrining correctly according to the customer's requirements and that
of developer's expectations.

Testing principle:

Testing is the process used to measure the quality of developed computer software software is a Process designed to make computer code does that it was designed to do and that does not do anything unintended. One of the primary causes of poor program testing is the tact that most programmer begin with a false definition of the term They might say testing Is the processed demonstrating that error are not present.

1. The purpose of testing is to show that a program performs its intended function correctly.

2. "Testing is a process of establish confidence that program does what it is supposed to do". this last statement are all based on false primes At the start of testing, a program should not be merely tested to show that it work Rather the test should start with the assumption that the program contains error and the goal is to find as many error as possible.

White box testing

White box testing approach focus on the program control structure Knowing the internal working of program. test can be conducted to ensure that internal operations are performed According to specification and all internal components have been exactly exercised It examines the logic of the program by testing every path of the program White box testing improves its quality through condition testing winch attempts to find errors in the following categories:

1. Boolean operator error

2. Boolean variable error

3. Relational operator error

Complexity of test and uncovered error is limited by the constrained scope establish for unit testing The unit test is white box oriented, and the step can be conducted in parallel for multiple components.

Black box testing

Black box testing This approach locus on the functional requirements of the software Knowing the specified function that a product has been designed to perform tests can be conducted that demonstrate each function is fully operational while at the same time searching for errors in each function. Black box testing attempts to find errors in the following categories

1. Incorrect or missing unction

2. Interface errors

AX 124

3. Errors in database and extemal data base access.

Testing involves the various text and invalid entries in the name text box, trying to filling

of invalid entries in the flex grid, etc.

Test Case: N+1

Test Case: M

Test cases

Unit Testing

Sr no	Test cases Description	Expected Result	Actual Result
1.	On load splash screen	Take maximum 5 sec	pass
2.	On load login page And clicking login button	Working and login successfully	pass
3.	On clicking signUp button	Sign up page loads in 5 sec	pass
4.	On clicking forgot password button	Forgot password page load in 5sec	pass
5.	Load sign up page And click on submit button	Register new user successfully	pass
6.	Load forgot password page and clicking next button	Otp page loads in 5 sec	pass
7.	On loading otp page	Otp received by email in within 5 sec	pass
8.	On loading Homepage	Take maximum 8 sec	Depends upon Internet connection
9.	On clicking Any restaurant	Menu of that restaurant get loaded	pass
10.	On clicking navigation menu bar	Menu drawer display	pass
11.	On clicking profile button in navigation drawer	Profile page loaded with user name address and phone number	pass
12.	On clicking order history in navigation drawer	Order history diplay with all order history of user	pass
13.	On clicking favourite restaurant	List of favourite restaurant display	pass
14.	On clicking FAQs	Some frequent questions came up	pass

15.	Log out	Log out successfully	pass
16.	On clicking sort button	Sorting works	pass
17.	Search button	working	pass
18.	On clicking add button in menu page of any menu item	Add to cart button display at bottom	pass
19.	On clicking add to cart button	Menu item is successfully added to cart and cart page display	pass
20.	On clicking place order button in cart activity	Order placed successfully	pass

Limitations of the system

There are also certain limitations to the system. The shopping cart in the system only has basic features and does not allow for extensive cart customization. Furthermore, server-side programming handles almost all of the application's capabilities, including validation. It adds to the server's workload, especially when the program receives a big number of users. Using client-side languages like JavaScript or HTML 5 to validate data can help solve this problem. The order model has also been developed.

The following is a list of restrictions that can be found in the Online Food Ordering System:

- Online Payments are not attached yet.
- Card payments are also not available.
- User interface is sometimes feels lag.
- Customization of order is not allowed.
- Feedback or a help desk is not available.

Future scope

The work that will be implemented with future editions of the software is described in the following section.

- Allow customers to modify orders: Allow clients to customise their food orders.
- Improve the user interface by include more interactive features for the user. Add information about deals and promotional offers on the home page. Add a week/worth day's of recipes to the home page.
- Payment Options: PayPal, cash, and gift cards are just a few of the options available. Allows you to save payment details for future use.
- Delivery Options: Include a delivery choice.
- Order Process Estimate: Show the customer a graphical order status gauge.
- Order Status: Only active orders will be shown to restaurant employees.
- Order Ready notification: Send an Order Ready notification to the customer.

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Conclusion

Finally, for the online meal ordering system, we created a secure, user-friendly food ordering administration system. Whether they are Administrators or Customers, this system can look after them all. This system will let them manage client meals, delivery boy data, and expand without creating any disruption. This system is completely secure because each user is assigned a unique user ID and password, preventing unauthorised access. With online payment, registration, and cancellation, it's a lot easier to use. As a result, using this strategy will help to minimise labour expenses while also giving clients more opportunity to enjoy the services.

References

Project references

Kirti Bhandge, Tejas Shinde, Dheeraj Ingale, Neeraj Solanki, Reshma Totara," A Proposed System for Touchpad Based Food Ordering System Using Android Application", International Journal of Advanced Research in Computer Science Technology (IJARCST 2015). [2] Varsha Chavan, Priya Jadhav ,Snehal Korade, Priyanka Teli, "Implementing Customizable Online Food Ordering System Using Web Based Application", International Journal of Innovative Science, Engineering Technology(IJISET) 2015.

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