

Food Feast Application using Android through GPS

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Abstract:

Food Feast is an Android (Android Google API 1.5 or higher) based Mobile Food Ordering Application. Food Feast is a process of ordering food from the food court through an FF application. This application allow customers to keep accounts with the food court in order to make frequent ordering convenient. Food Feast consists of four modulus, they are Login module: it is used to set the customer details ^[12], Items Display module: it is used to display the number of items to the customer, Order Tracking module: it is used to track the food using GPS ^[24], Feedback module: it is used to improve the service and know the satisfaction level using Digital Signature ^[4]. The Rapid growth of wireless technology and Mobile devices Creates great impact on people`s lives. A quality of service has to be improved such as order the food using mobile phone and delivery it to the customer ^[11]. This application may increases the services and customer satisfaction. This system is efficient and reliable when compared to the food delivery on call system ^[1] in such a way that it help customer in making order easily, to give detail information needed by customer, to help food court in receiving order, and to help courier while doing delivery.

1 Introduction

Our campus is an ideal amalgam of tradition and innovation. With a build-up area of 1.5 square feet, the campus sprawls across 49 acres. The time consumption for refreshments and the lunch is unethically more. Therefore, all people expect an easy access to their food and also reduce the complexity in ordering the food and receiving it from the food court. The food court keep improving their quality of service; one of the services is delivery order. Delivery order by making order through mobile phone. Making orders through phone calling, short messages, or even website does not give order status information in real time to its customer. Moreover, customers can not see their order history which has been done before. Nowadays,

mobile phone is not used for calling or SMS only, many mobile phones also provide application that support people daily activities ^[3]

Based on the data in the end of 2011, the smart phone operating system that is widely used is dominated by some leading platforms such as Android, iOS, and Blackberry. Android is one of the most rapidly increased platforms ^[18]. From all perspectives, the decision to create an ordering food application with Android OS platform named "Food Feast". Food Feast application gives restaurant list information with menus; provides some features such as new order, order history, and order status with Global Positioning System (GPS) service.

2 Research Method

Food Feast application is created by using incremental model of System Development Life Cycle (SDLC) ^[15] The SDLC phases are:

1. Requirements definition

Analyzes based on similar application and determines the necessary features in the application, as well as do the details about the features that will be created with function of each features. Features that are needed in application for customer as follows:

a. New Order

New Order is the main feature of the customer side application that will be used to make orders. There are two ways to make an orders, the first one is using Make a new order feature to make an order by choosing menus provided freely, and the second one is using My Favorites feature to make an order by choosing one of the top three favorites food items ordered earlier.

b. Order History

Order History is the feature that will be used to show

Customer's order history. This feature is divided to three parts, which are Last order, Last 3 orders, and Last 7 orders that have been made by customer.

c. Order Status

Order status is the feature that will be used to show order status consist of "order received" means that order has been received by food court, "order confirmed" means that order has been confirmed by restaurant, "cooking" means that order has being prepare by restaurant, "delivering order" means that order has being delivery, and "done" means that order has been done. Customer can also show the delivery map while the status is on "delivering order".

d. Profile Setting

Profile Setting is the feature that will be used to show and to change customer profile, consist of name, password, email id, phone number.

a. Order

Order is the feature that will be used to show the incoming order. Food court can also update order status, assign courier, and show order history through this feature.

b. Courier

Courier is the feature that will be used to show the courier list of ordered items. Restaurant can also modify its courier data including change availability status and declare delivery starting to run by courier through this feature.

c. Delivery Details

Delivery Details is the feature that will be used to show the time of delivery and delivery person name. After confirmed the order.

d. Order Tracking

Order Tracking is the feature that will be used to show the customer's ordered food where it is. GPS used for the tracking.

e. Customer Feedback

Customer Feedback is the feature that will be used to show the customer satisfaction level and it's also used to improve the service. Digital Signature is used for customer feedback.

f. Payment

2. System and software design

Make the application design workflow for customer side, restaurant side, courier side, and admin side using the storyboard design; the user experience design; the Unified Modeling Language (UML) design consist of use case, class diagram, sequence diagram, and activity diagram [7]; and database structure design.

a. Storyboard design

The storyboard design is designing the user interface including each interface description.

b. User experience design [12]

The user experience design is designing the totality of end user perception when interacting with the application.

Payment is the feature that will be used to show the mode of payment. There are two ways to pay the money.

1) Cash On Delivery

The Customer after receiving their ordered food that will be pay to the delivery person.

2) Online Payment

The ordered food cost may above Rs.500, the customer may choose the online payment.

Features that are needed in website for admin are as follows:

a. Order

Order is the feature that will be used to show order list which has been done by each customers.

b. Menu

Menu is the feature that will be used to show menu list of each items. Admin can also modify each menu through this feature.

c. Courier

Courier is the feature that will be used to show courier list of each delivery orders. Admin can also modify each courier data through this feature.

d. Customer Feedback

Customer Feedback is the way to know the customer's satisfaction and comments to improve the quality of services.

Features that are needed in application for courier

Are as follows:

a. Delivery List

Delivery list is the feature that will be used to show delivery list progressing by courier. Courier can mark the delivery which has been done through this feature.

b. Tracking Order

Tracking order is the feature that will be used to show delivery map, consist of courier position and customer address. Google Map is used to find the destination place.

c. Shortest Path Finding

Shortest Path Finding is feature that will be used to know the short path to deliver the ordered food. DSR (Destination Source Routing) Algorithm is used for path finding the shortest path

c. UML design

The UML design consists of use case to define the system function from each actor perspective then completed by explanation in use case narrative, activity diagram to draw the process of each actor in diagram, class diagram to draw object or class of system with its relationship, and sequence diagram to draw the message interaction with its objects base on its order of time.

d. Database structure design

Database structure design is made by the result of class diagram. It draws the classes that need to be saved in database and its relationship.

3. Implementation and unit testing

This is the developing application phase; it includes making database and translating the design result done in the previous phases to programming language codes. After that, a program unit testing will be done.^[8]

The application development divided to two phases, which are:

a. Database making

Database is made based on the design ^[2]. It used MySQL database management system which will be related between the applications developed in Android OS and the website developed in using JSP ^[6].

b. Application and website development

This phase is translating the result of design into Java Programming for customer and courier side application, and JSP for restaurant side and admin side websites. After doing these two phases, a program unit testing will be done.

4. Integration and system testing

After doing program unit testing in the previous phase, all applications and websites will be integrated into one whole system. After that, a system testing will be done. The applications and websites will be integrated using one database.

5. Operation and maintenance

After doing integration into one whole system, if there is any changes or reparations needed then the previous phases can be back ^[13].

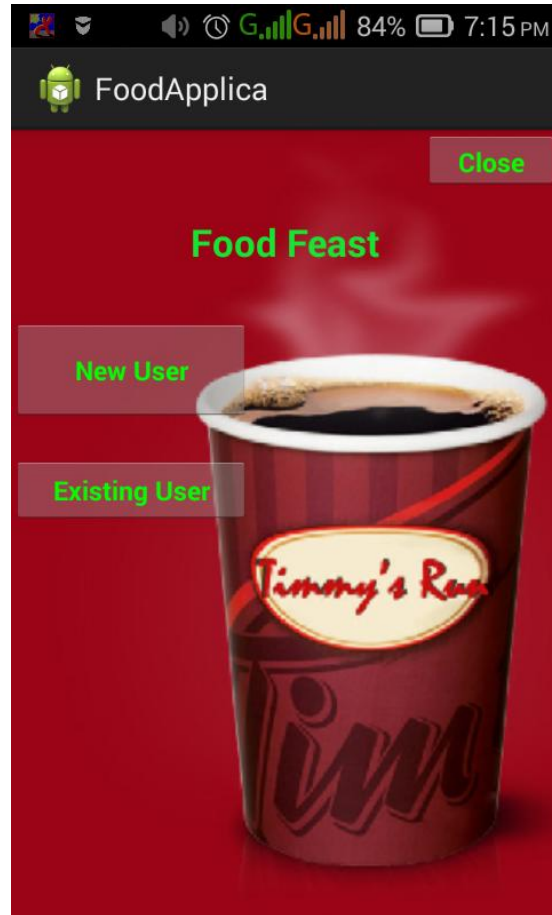
3. Expected Results

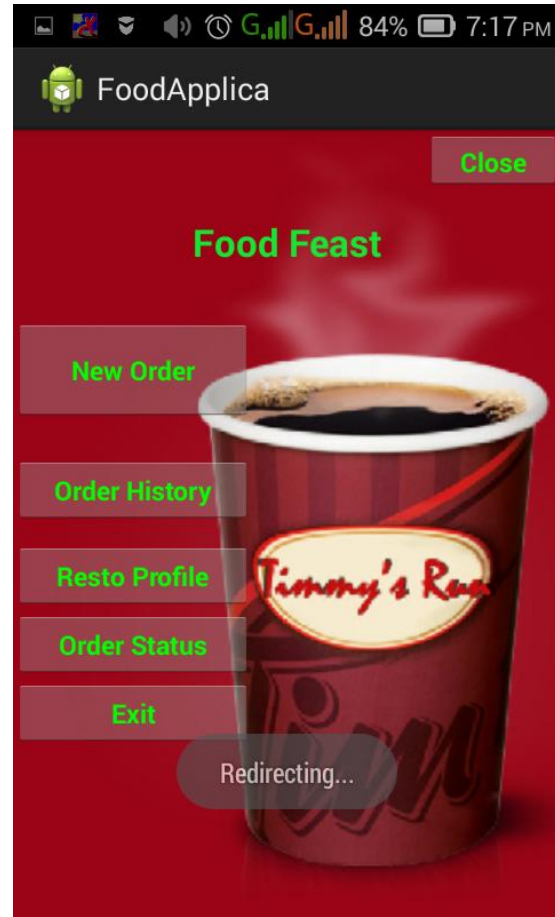
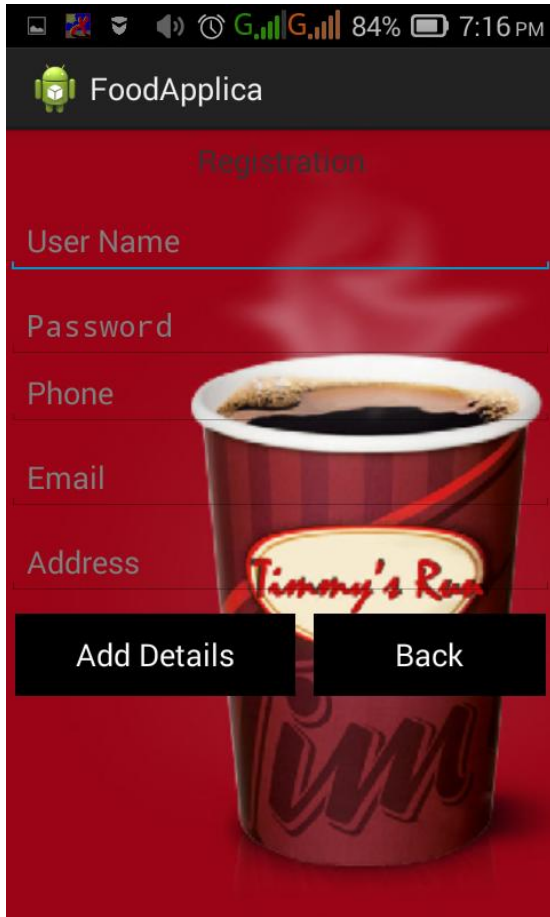
3.1 Application Implementation Criteria

The application has to be implemented in such a way that it should be validated before use. The validation criteria should be generally when an application should work based on the college timing. The population in an institution is wide and hence the chances for misuse of the application is more.

3.1.1 Application Screenshots

Below are several screenshots of Food Feast application for customer.





3.1.2 Application Implementation Criteria

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3.1.3 Customer Admin Relationship

The customer should possess a profile of his/her own identity. The profile of a customer might criteria that makes them unique.

The admin should possess the access to the addition to the cost of each food stuffs should be made accessible to the administrator.

3.1.4 Constraints

Timing Constraints

The application will be made available to the user only from 7 am to 7 pm.

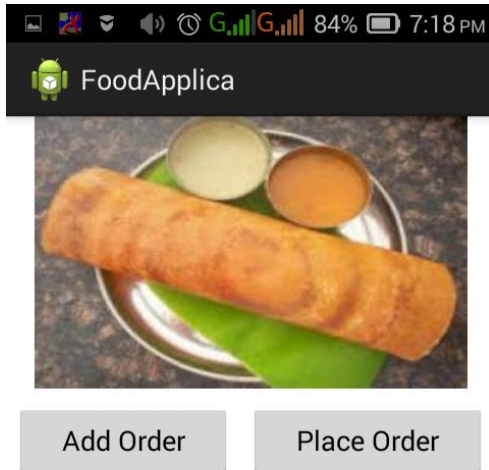
Delivery Constraints:

The food stuffs that has been ordered through the app will be delivered to the customer using two methods such as door delivery and on place delivery.

This criterion is based on priority where only few customers can have this privilege to avail. his/her order to his/her place inside an institution. This criterion should be mentioned in the application.

Tracking constraints.:

The order can be tracked from the time of the order until delivery.

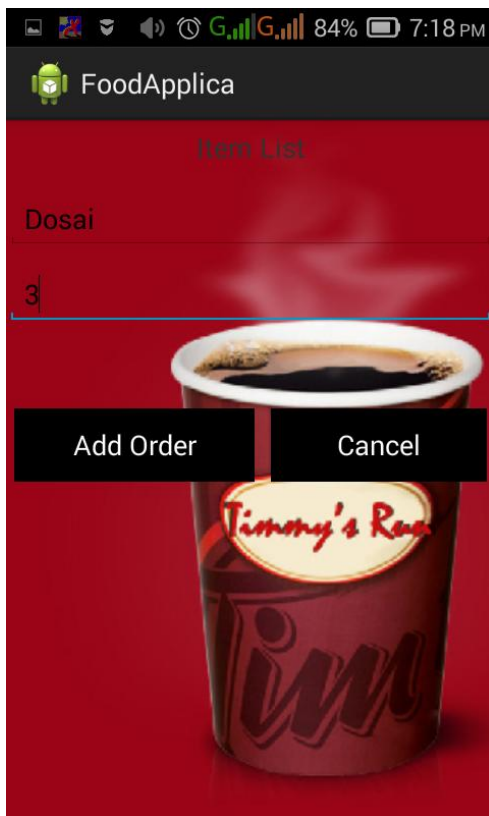


3.2 Application Evaluation Based on Similar Application Comparison

The food feast application can be compared to a similar application food on call. Food on call is a manual application whereas food feast- a digital one.

Table 3. Similar application comparison

Feature Delivery	Food on call	Food Feast
Based on Android OS	Yes	Yes
Order by Phone Calling	Yes	Yes
View order	No	Yes
GPS Tracking	No	Yes
Category Menu	No	Yes
Order History	No	Yes
Order by Application	No	Yes
Order Status(real time)	No	Yes
View order	No	Yes
My Favorite	No	Yes



The similar application compared to Food Feast application is Food Delivery food on Call application. By comparing to Food Feast application, it can only be run in offline mode, it can only be used to show menu, and the order can only be made by phone calling, while Food Feast application show user the menu pictures and description, moreover the order is made through application in online mode. Food Delivery food on Call application does not have several features provided in Food Feast application, such as "Order History" to show the order which has been made by user, "My Favorite" to show user's favorite menu, and "Order Status" to show order status in real time to user.

3.3 Application Evaluation Based on Eight

Golden Rules

Below are the user interface evaluation based on eight golden rules:

1. Consistency

Food Feast keeps its consistency by using the same font type, color, layout, menu, and menu icon in each pages. It applies to website application and mobile application.

2. Provide Universal Usability

Food feast interface is made user friendly so it eases user to use the application. It can be seen in the Back button provided in both customer side and courier side application which is using the universal icon and similar to user.

3. Provide Information Feedback

Food Feast gives appropriate feedbacks to users, so if there is any error happened, and then there will be a feedback dialog toward users.

4. Design Final Dialog

Food Feast application is made to ease user in understanding their action while using it. For example, in the application for customer, there is a final dialog confirmation in setting interface while users try to edit their profile.

5. Simple Error Handling

Food Feast application is designed to avoid user doing fatal errors. For example in the application for customer side, there is a message appeared in the beginning and if users do not choose any menu and press the next button directly, then there will be an error handling dialog appeared.

6. Reversal Action Allowance

Food Feast application has integrated the simple reversal action. For example, there is a Back button in almost all interfaces for both customer side and courier side application.

7. Internal Locus of Control

In Food Feast application, users become the system controller and system will response user's action.

For example in the customer side application, there is a feature to let users change their own profile.

8. Reduce the Information Capacity for Short-Term Memory

Food Feast application has integrated the reduction of information capacity for short-term memory. For Example, the menu icons used relevant icons with the menu such as exit button used the exit door icon.

4 Conclusions and Suggestions

4.1 Conclusions

Based on the expected result of this research, it can be concluded:

1. Food Feast application can help customer in making order easily,
2. Food Feast application gives detailed information needed in making orders.
3. Food Feast website application enables frequent ordering convenient.
4. Food Feast website application uses digital signature for the feedback.
5. Food Feast application involves tracking using GPS handler in-built in cell phones.

4.2 Suggestions

Below are some suggestions addressed to the next Food Feast application development process.

1. For the next development, this application can be developed to another platform such as Blackberry and iOS, therefore other customers who are using Blackberry operating system and iOS can also use this application and the target user segmentation will also be wider.
2. For the next development, this application can be developed by adding other payment method such as Klik BCA, Visa, MasterCard, etc. to facilitate customer in payment process.
3. For the next development, this application can be integrated with social media such as Facebook, Twitter, etc. to facilitate customer in getting Food Feast application information.
4. For next development, this application can be elaborated for many other restaurants

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