

Human Computer Interaction (CS421)

GIKI Food Ordering System

Project Milestone #1

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# Problem Statement

The aim of the project is to build a Food Ordering System for the restaurants of GIKI. The system will serve to provide a convenient, efficient, transparent, and reliable experience of food deliveries within the premises of GIKI. It will have interfaces for all essential users involved in the delivery process and the interfaces will be built while maintaining the principles of usability, user experience, and interaction design. This will ultimately help the stakeholders of the system in performing their tasks within the domain of the system effectively.

# Users Analysis

We identified four major user classes for our web application. A representative from each user class was interviewed and through observation of their work and interaction with them throughout our time here at GIKI, we were able to come up with characteristics of each of these classes and the major problems they face that we can solve with our web application.

Delivery Man

This user group will consist of all personnel involved in the delivery of food items. The size of this user group is 10-15 on regular days but can vary based on requirement; like, during exam days it can be up to 20. The group’s age range is from 18 to 30 years. The user group consists of only males. Urdu is the main language of interaction for the group. Maximum education level of the group is matriculation and the majority in it has very basic education. The user group has no physical disabilities. All delivery men can interact with touch interactive system as they have been using smartphones in their daily life for other purposes. They also have the experience of using mobile applications in their daily lives. None of them have used any similar product before. All of them will be first-time users of this product.

Till now, this user group has been using cellphones to communicate, collect, and deliver orders. This current system is very inefficient and inconvenient for them as they must keep track of their delivered orders manually, rely on paper-based receipts to identify and match orders and lastly make call manually to inform customers that they are outside their address. Our web app will help these users in managing and delivering orders efficiently and conveniently.

Kitchen Manager

This user group consist of personnel in charge of receiving the order from the cashier. When the order is ready, they will give it to the delivery man. The kitchen manager will also update and edit menus. The size of this user group is from 2 to 3 persons. Their age range is from 18 to 60 years. Urdu is their main language of interaction. The maximum education level in this user group is matriculation and some have very basic education. This user group has no physical disabilities, but weak eyesight can be a problem for some individuals. They have been using smartphones in their daily life for other purposes. They have the experience of using mobile application in their daily lives. None of them have used any similar product before. All of them will be first-time users of this product.

If the frequency of orders is high, it becomes very hectic for the kitchen manger to receive and dispatch orders. Also, the information of orders going in and out are gathered and logged through paper-based receipts. This process increases the chances of entering wrong information due to human error. There is also currently no automated system in place for updating menu items such that the customers and cashiers can know which orders can be completed given the current state of inventory. Because of this, the kitchen managers often have to face receipts of orders which cannot be fulfilled. Our web app will help this user group to perform their tasks effectively and efficiently.

Cashier

This user group consists of personnel that receives the order from the customer and pass it to the kitchen manager, they also receive payment from the delivery person. Their job is to maintain the registers of the restaurant. The size of this user group is from 2 to 3 persons. Their age range is from 18 to 60 years. All of them all are males. Urdu is their main language of interaction. The maximum education level in this user group is matriculation and some have very basic education. However, they are all capable of bookkeeping and doing basic mathematics. This user group has no physical disabilities. All of them can interact with touch interactive system. They have been using smartphones in their daily life for other purposes. They have the experience of using mobile application in their daily lives. None of them have used any similar product before. All of them will be the first-time user of this product.

In the current system, during peak hours, it is difficult to manage the dine-in orders and delivery order without being overwhelmed. The user group need to do all the calculations by hand which can turn to be very exhaustive and erroneous. Like the kitchen managers, due to unavailability of certain items listed in the menu, this user group also has to face inconvenience in form of returning payments. An automated system will help this user group in focusing on greater financial matters such as inventory management and cash inflow optimizations rather than worrying about keeping registers.

Customers

This user group consist of everyone who orders food. The group consists of students and faculty members and their families. The size of this user group is 1600 to 1700 people. Their age range is from 16 to 60 years. 70% of them are males and rest are females. Most of them have English as their first language and Urdu is the second language. The maximum education level is post doctorate and with some people having basic education level. Most of them are skillful enough to use smartphones. They have also used similar products in the past.

Whenever this user group needs to make an order, they must do so through a call or an SMS. This is very inefficient and inconvenient as this user group is usually looking to save time. During the call, they must first ask for the menu and only then they can decide the final order. While on the other hand, ordering though SMS means no access to menus and lack of confirmation of receiving of order. Usually, an order ends up taking 2 to 4 minutes in the current system. Also, during the whole delivery process, the customer is unaware of their order status. Our application aims to provide a more friendly and efficient system for ordering food for these users.

# Task Analysis

We identified four essential tasks in the food ordering process. We discuss and decompose these tasks in detail below.

Order Food

Ordering of food is carried out by the customer class. Currently the task involves the customers deciding a general category of food and calling the restaurant to query about the availability and cost of items of that category. From our observations, we noted that mostly the customers are students who prefer to order in groups of 2-4 to save delivery costs. Thus, during the call, the students communicate to each other their specific preferences and their final order based on the response of queries from the restaurant’s person on the call. This increases the time of call and increase call queue times. Often, if the call continues for too long, the restaurant person requests the customers to text them order details through SMS. Besides the food items and their quantities and any special requests, the customers specify their address before confirming and submitting the order. There are no or very insignificant number of customers who use food ordering for pickup. Almost all food ordering use cases involve delivery services and there are little to no use cases of take away.

Task Decomposition on Interface

1. Order food
   1. Browse Menu
   2. Select Item
   3. Enter additional item details
      1. Enter item quantity
      2. Enter additional text-based instructions
   4. Add item to cart
   5. Review cart and enter address
   6. Confirm and submit

Plan 0: Do 1 - 2 - 3 - 4 - 5 - 6 in order

Plan 3: Do 3.1 - 3.2 in order

Deliver Food

Food delivery is carried out by delivery persons user class. Delivery of food involves picking up food items, reviewing the addresses of customers to whom delivery is to be made, planning an efficient route, and driving to each address.

Usually, the food delivery persons divide items to be delivered amongst themselves to optimize routes. For example, one delivery person will take all orders that are to be delivered to the same hostel or around a certain area of the university. The key thing to observe here is that the delivery management is being done by the delivery persons themselves. They only have to report back with bills once they have delivered the items.

On reaching the delivery address, the delivery persons call each customer and hand them the order after receiving the payment. Since they are usually delivering multiple orders to the same hostel/building, they must confirm with the customers what was ordered to identify which order belongs to what customer.

Usually either the customer or the delivery person is short of change and gives their word to pay it in the next order.

Task Decomposition on Interface

1. Deliver Food
   1. Pick delivery items
      1. Flag each picked item as being assigned
   2. Review item destinations and plan route
   3. Drive to each order’s destination
      1. Call order receiver
      2. Hand order to receiver and collect payment
         1. Ask receiver what their order is
         2. Check order details and payment
         3. Exchange order for payment
            1. Enter received amount
            2. Enter returned amount
      3. Drive to next order destination
   4. Report back to restaurant to collect next batch orders

Plan 0: Do 1 - 2 - 3 in order until no more orders left and then do 4

Plan 3: Do 3.1 - 3.2 - 3.3 in order

Plan 3.2: Do 3.2.1 - 3.2.2 - 3.2.3 in order

Update Food Menu

Food menus are updated by kitchen managers. There are two types of food menus. The daily basis menus which are specifically for lunch and dinner are updated on daily basis as every day a new menu of 6-7 items is offered. The kitchen mangers update a whiteboard where they write the name of items and their prices. The permanent menu is only updated seasonally in which some items are removed while others are added. Often however, some items in permanent menu become unavailable temporarily as the kitchen may run out of recipe contents of that item for the day.

Task Decomposition on Interface

1. Update Menu
   1. Update daily basis menu (Lunch/Dinner)
      1. Update daily basis menu availability time
         1. Set lunch start and end time
         2. Set dinner start and end time
      2. Acquire daily basis menu for the day
      3. Insert a new list in place of previous day’s list
         1. Add Item in list
   2. Update permanent menu
      1. Update permanent menu availability time
         1. Set permanent menu time slots
      2. Flag an item as unavailable
         1. View available items list
         2. Select item to set as unavailable
      3. Flag an item as available
         1. View unavailable items list
         2. Select item to set as available
      4. Add item to permanent menu
      5. Remove item from permanent menu

Plan 1: Do 1.1 to update availability schedule

Do 1.2 – 1.3 to update menu

Plan 2: Do 2.1 to update availability schedule

Do 2.2 – when an item is unavailable temporarily

Do 2.3 when an unavailable item becomes available

Do 2.4 to add item

Do 2.5 to remove item

Confirm/Close Order

Confirmation and closing of order are handled by cashier user class. The cashier receives an order form the customer through a call or SMS, generates a receipt if the order is acceptable and sends it out to the kitchen. Once the order is delivered and delivery person returns, the cashier receives the receipt along with the payment and marks order as completed and closes it.

Task Decomposition on Interface

1. Order food
   1. Review new received order
   2. Cancel Order
   3. Confirm Order
   4. Receive payment from delivery person after delivery
   5. Mark order as completed

Plan 0: Do 1 and go to 3

If order is not acceptable do 2 and stop

Plan 3: Do 4 and wait for delivery person to complete deliver and return and do 5 and 6

# Domain Analysis

## Entity – Relationship Diagram