Bilkent University

Department of Computer Engineering

CS 353 - Database Systems

Project Proposal

Group No: 12

Online Flower Shopping System

Project Name: FlowerGarden

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1. Introduction

Online ordering became an important part of human life. Today, we are ordering foods, books, electronic devices online. Similarly, in this project an online flower shopping system, FlowerGarden is going to be proposed, designed and implemented. In this report, the boundaries of the system will be proposed and how a reliable and efficient online flower shopping system is going to be implemented will be explained. After the project description section, why a database system is necessary for this project and how it is going to be utilized is going to be explained. In this project, there are four types of users: Customers, Sellers, Couriers, and Customer-Services. Each type of user requires and expects different operations from the system. The requirements of those four types of users will be given next. Performance, reliability, usability, and supportability are the non-functional requirements of this project. The exact criteria for these requirements are going to be explained in section four followed by the limitations of the system. Finally, the conceptual design of the system will be given in the form of an E/R diagram.

1.1. Webpage

Project reports will be available on:

https://burakintisah.github.io/FlowerGarden/

2. Project Description

This project will design an online flower shopping system that is used by 4 different types of users. There will be sellers that sell flower arrangements, customers that buy flower arrangements, couriers that deliver those flower arrangements to the customers and customer services that deal with the problems that occur during these selling processes. A flower arrangement can contain one or multiple types of flowers with the variable number of flowers for each type. Since there will be multiple sellers each customer will be able to select the flower arrangements of the different sellers from the given list that will be provided based on the address of the receiver. We do not allow customers to arrange new flower arrangements because some combinations of flowers might not be appropriate to make flower arrangements. Therefore, sellers specify the flower arrangements they will sell. In this system, sellers are able to accept or reject any order, when they accept the order they should assign a courier for that order who delivers orders in the district of the order. Couriers are classified in terms of the maximum volume they can carry. Finally, the project will contain a complaint mechanism. For each order, the corresponding customer will be allowed to create a complaint and a customer service will deal with the customer's problem until the problem is solved. If the customer is not satisfied with the answer given by the customer service, he/she will be able to create another complaint about his/her order. The project will include the design and implementation of the database system along with the software modules and related user interfaces.

2.1. Necessity of the Database

There are three main reasons to use the database in this project: maintaining data integrity, dealing with large amounts of data and providing privacy/security. In the FlowerGarden, multiple sellers and customers will interact with each other simultaneously

which can cause concurrent access to the same data. Different customers might wish to buy the same product from the same seller and to avoid selling a flower more than once or in other words, to maintain the data integrity, the utilization of database systems that provide data concurrency and integrity becomes an essential part of the project. In this project, a lot of information regarding customers, sellers, flowers, etc. are going to be stored and processed. When the increasing demand for speed in any application and efficient retrieval/manipulation of data in DBMSs are considered, it becomes clear that meeting the speed demand of customers easier when a DBMS is utilized instead of a file-based system. Lastly, different types of users will interact with FlowerGarden such as customers, couriers, sellers. The information they require differs significantly and providing the security of users is important for any project. Utilizing a DBMS will also make it easier to provide security and privacy.

2.2. Utilization of the Database

In the database system, the data of the customer, courier, flower-seller, customer-service, order, flower arrangement, flower, and complaints will be stored. Also, the database will be used to access and manipulate the data through queries.

3. Functional Requirements

In this section, the functional requirements of our project are discussed.

3.1. Customer Side

A customer can register to the system with a name, phone number, and email address. Before looking at flower arrangements, the customer should select the district of the address from which the order will be delivered. The customer can see the flower arrangements that can be delivered to the selected district and flower shops that can deliver to the selected district. The customer can select a flower shop and display the flower arrangements from that shop. The customer can add a flower arrangement by specifying a delivery date. The customer can remove any flower arrangement from his/her order before completing the payment. The customer can save different addresses and credit card information. The customer can display the flower arrangements s/he has selected and specify the receivers' address and phone numbers for each arrangement. Then the customer can complete the order by either picking saved credit card information from the system or entering new credit card information for the payment. The customer can display the status of the order. The customer can display his/her old orders and select an old order to make a complaint about the order.

3.2. Seller Side

A seller can register to the system with a name, phone number, email address, IBAN information and working hours. After the registration, the seller should be validated by the administrator to create a flower arrangement listing. The seller can add flower arrangements with their photo, name, price, volume, and occasions that the arrangement is appropriate to his/her page. The seller can remove any flower arrangements of his/her from the system. The seller can enter the name of the flowers in the flower arrangements to the system. The

seller can display orders that contain their flower arrangements. The seller can reject an order. The seller can display the couriers that make delivery in the same district with him/her and order address district. Then the seller can assign the order to a courier. The seller can see whether the courier accepts or rejects the order. The seller can display the old orders of him/her. The seller can see whether s/he has paid the monthly due to the FlowerGarden.

3.3. Courier Side

A courier can register to the system with a name, phone number, email address, working hours, IBAN information, a maximum volume that s/he can carry at once and districts that s/he can make delivery. After the registration, the courier should be validated by the administrator to get an order delivery. The courier can display the orders assigned to him/her. The courier can reject or accept the order and update the transportation status with respect to that. The courier can update the transportation status to be delivered after the delivery. The courier can display the old deliveries assigned to him/her. The courier can see whether s/he has paid the monthly due to the FlowerGarden from the system.

3.4. Customer Service Side

A customer service employee will be registered to the system with a name, phone number, and email address by the administrator. The customer service can display the complaints and respond to the customer. The customer service can write to a relevant seller or courier about the complaint.

3.5. Administrator

An administrator account can access and manipulate the data in the database through the system. The validation of the sellers and the couriers are made by the administrator. The administrator can add and remove an account, order, listing of a flower arrangement, flower, district, and province.

4. Non-Functional Requirements

In this section, the non-functional requirements of our project are discussed.

4.1. Performance

4.1.1. Response Time

- The system will require a rapid response to queries to be able to offer a high performance to users. Therefore, queries should be well optimized.
- The database management system (DBMS) that is used in the project should provide high transfer speed.
- The database should serve multiple requests from multiple customers at the same time. Therefore, the server should not be blocked by a request.
- The system will be implemented in a way that the user does not wait for more than 2 seconds to perform the ordering, picking flowers, assigning a courier, etc.

4.1.2. Scalability

- The system will operate on the existence of the customers, sellers, couriers, flower arrangements and their interactions. Thus, it should not limit the number of the users, items or the interactions among them.
- The number of variables in the database should be only limited by the database management server used in the implementation.

4.2. Security

- All of the users in the system will be required to enter email and password in order to secure their data.
- The users will be able to access and change their data by going through an authentication process that asks email and password.
- One user's personal information will not be visible to other users.
- The data of the sellers, customers, and couriers will not be shared with any other third-party systems.

4.3. User-Friendly Interface or Usability

- The system will be used by people of all ages. Therefore, the usage of the website should be simple and easy to understand.
- The user interface will be implemented in a distinguishable manner, which means the design will be done understandable and noticeable.
- The user interface will be designed in such a way that navigation between pages can be done easily.

4.4. Supportability

- The system will be a web-based application. Thus, users will be able to use it any operating system.
- To be able to support further improvements and not to have technical debt, classes and methods will be coded in an organized manner.

5. Limitations

Program:

- The emails and the passwords of the accounts will be unique.

Customer:

- The customer should submit a phone number and address of the receiver for each flower arrangement in the order.
- The customer should choose the district of the receiver through the system in order to get the list of the flower arrangements that can be delivered to.
- The customer should pay the price of the order to start the preparation process of the flower arrangements.
- The customer cannot create another complaint related to the same order until a response to the existing complaint received from the customer service.

Seller:

- The sellers should submit their phones and addresses.
- The sellers should be validated by the administrator to sell through the system.
- The sellers should specify the districts that they will serve.
- The flower arrangements of the sellers will be shown to the customers according to their working hours that are specified by the sellers.
- A seller cannot have the same flower arrangement in more than one listing.
- The sellers cannot assign the same order that is rejected by the courier to the same courier.
- The seller should specify the price and volume of the flower arrangement.
- The seller should submit the status of the order until the order is given to the courier.

Courier:

- The couriers should submit their phones and addresses.
- The couriers should specify the districts that they will serve.
- The couriers should specify the maximum volume they can carry at once.
- The orders can be assigned according to couriers working hours that are specified by them.
- The orders cannot be assigned to the couriers if the sum of the assigned orders' and the new order volumes are more than the maximum volume that the courier can carry.
- The couriers should submit the transportation status of the order after the order is given to them.
- The couriers can reject the orders up to 5 consecutive times.

Customer Service Employee:

- The customer service employees should respond to at least 20, at most 30 complaints if there are enough complaints in the system.

6. Conceptual Design of the Database

6.1. ER Diagram