University of Windsor Food Bank

Group – 11

Course – Advanced Software Engineering

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INTRODUCTION

We are going to develop a system through which university full-time students can select the food items from Food Bank as per their needs and can add to cart and acquire free products every two weeks. System works same as manual food bank working at Canterbury College where manual handling of product items is done and also manual entry of students is getting maintained so that each student can get free food every two weeks and one item from each category.

So website handles this inventory of items. Students can also place their favourable food item into wish-list. Moreover, they can edit their Wishlist by changing the food item or deleting it. So complete flow for student will be, selecting products, view product details, and adding items to cart and at checkout they can schedule date and time for picking up products from physical food bank. Also students can directly walk-in to physical food bank and can get product but volunteer need to make an entry for that students and number of items they have taken into a system so that inventory gets maintained properly.

Our important concern for our website is to make flexible and user friendly. Furthermore, the main aspect is to make our website authentic and secure so that students can trust blindly.

The above all statements are related technicality of our website but the food product which is provided in the food bank is donated by the donors and suppliers.

I. PLANNING

We are 4 members in a project. We meet twice a week for 5 hours to work on project. We also collaborate on skype in case anyone faces hurdles in doing task. Initially we utilized our time in deciding features of project, number of users that can use this system, flow of complete project based on flow of individual user interaction with site.

We also took few days in determining the programming language that can be best suited for this definition and required tools. So, for this we did research on different programming languages available and which is highly used in professional field. We end up selecting python as programming language and using Django framework of that language. As this language was new to everyone, we utilized our initial days in learning Django and React.js.

We also did thorough go through for project structure and architecture of project that can be best benefitted so that even when new modules need to be added as a feature then it becomes scalable for existing project to add.

II. EVOLUTION

We started our project by meeting random students in university and we described our idea of making an application of food bank. We took ideas from them that which types of functionalities they want to add in website.

We gathered all the requirements and started searching of how to implement in the system Noting down the requirements, we made artifacts of inception and FURPS+. We got a clear idea of the application of who would be using application, how they would be using, and when would be using. As per the document, we made GRASP and GoF patterns related to our application which were taught in the lecture.

After successfully completing the first task we went on second task to decide which platform and which coding languages which will work for our application. At the current point, we are currently having basic knowledge of HTML, CSS, Javascript so we are trying we are learning some front-end development technologies such as React js, Bootstrap.While Python would be the software language in which we would be coding. Pycharm IDE is the best to work on it. We would be using Django web framework to write the back-end code of the application.

The whole back end system regarding loading of data, fetching data and all other things. We are currently working on the barcode scanning i.e If user wants to buy a particular item then volunteer would be opening the application and scanning the barcode of the particular product which user is wishing to buy. After scanning scanned product will automatically deduct from from the database. We were also going to develop main

front page of our application with React js but we didn't end up with that page so we will be completing that task in project phase II.

III. Similar Products Existing In The Market

There is no such site available with university of Windsor to manage free food products. But similar sites exist in market i.e different universities in Canada also has there own Food Bank for there students and sites which maintains inventory of free products. As there is no such site with university like other universities, this product will help them in maintaining inventory online without any manual interaction.

Univeristy of Alberta Campus Food Bank[1] & University of Waterloo Campus Food Bank[2]:

These universities are having the similar to the solution we are providing. They have the same number of users that is defined by this system. That is Admin, Volunteer, Full-Time students and Suppliers. Separate module of each user is defined in site and with limited access to pages according to role.

The drawback of Manual handling of inventory is the physical store operates on particular day and particular time, due to this students need to form a queue and see all products accordingly available and select products, handling it online, students time will get save more students will get benefits for this. Also in future, if donors increases then frequency of students acquiring free products can get reduce to 1 week or 1 day from 2 weeks so these changes and high rush can be handled by system easily.

IV. Deliverables

We will deliver a system in there will be separate after login sections for all users. Separate landing page for users Admin, Suppliers, Volunteers and Students will be handled. Volunteers and Students need to register and login to this site. They will also have common features like Change Password and Forgot Password. Volunteers will have access to feature that can scan barcode of products acquired by students while walk-in in Food Bank so that using that barcode particular product quantity gets updated in database.

Admin user will have the superrole among users i.e can accepts users registration by matching studentid from database and also matching the course and whether it is part-time or full-time so accordingly can avail benefits. Admin will also update via website to suppliers about which item is running out of stock so that it can be delivered by them. Database Operator is also one of the role that is present in website. User with this role can add, edit, update and remove products accordingly and manages inventory. So when physical products get delivered to food bank, database operates add it to database so that it will get reflect on site to all users.

Users will be able to filter, sort according to price, alphabets, food category and many other choices. We would be displaying them the ingredients of every food item on the details page of the food item.The other functionality which we would be providing to users is facility of Walk-In in which if user don't have access to application and wishes to directly go to the food bank during open hours so he/she would be able to talk to the volunteer and will be able to take the food items they are wishing to take it.

V. Drawbacks

If internet access is not available in locations, it may happen to lose connection you will not be able to access the web application.

When barcode fails to get match from the database entry using available library.

If student transfer the course from full-time to part-time.

If user is ended with the graduation then also he/she can acquire the facility of food bank.

VI. Issues

Before this system developed, the students faced difficulty in getting items which they want as they didn't have any idea about which items were being present in the physical food bank. So, when they went to the Food bank, they ended up getting items which were present in the food bank rather than the items which they wanted. The other problem was that the majority of students were unaware about the locations of Food banks in the city.

Due to this, they were not able to take advantage of the University food bank service. Due to lack of communication between Students and donors, donors were not able to identify the needs of students. Due to which, students were not able to get items of their needs If student was away from the city in the days when food bank items were being provided, they were not able to get those items. IN traditional system, the data about students who took food and available food was kept in Ms Excel, so it was difficult to find details about particular students and food when it is required.

VII. Mitigation Plan

As a solution to problem of barcode fail to match, selecting product from available list will also be provided to volunteer, so that volunteer can select product manually from site and save quantity count if barcode fails to do so. Whenever student changes enrollment from full-time to part-time, in future, university database request will be made so that it can be updated accordingly on this site so whenever student changes enrollment, then student will be denied to avail free products. Another drawback was student completes course then it will be solved by same way that is access to university database in future so that this update is accessible so that after completion of course, student should not have right to avail to this benefit so this will refrain them from doing same.

VIII. Test Strategy

We would be following Test Driven Development approach as a testing strategy [3]. According to this strategy, we are writing test cases first and then start development. Few scenarios will be handled in test cases and if it gets pass then

that code will be used in development and then unit test cases will be executed with complex scenarios to verify the code works properly and as expected.

Also automation scripts will be written to test complete website and then that it will be deployed on Jenkins job so when project development is done, jenkins job will take update from git server and creates build of project and further jenkins job will execute test cases before creating build and automation script on deployable build and accordingly pass and fail test case, deployment will be decided. Testing will be coded by JUnit library, and method wise test cases will be written with different values as input. So above mentioned approach is known as Software Testing Life Cycle which will be followed.

IX. Product Documentation Draft

This product documentation draft is concerned with the outline of delivering products. It must involve consistent with the product that it describes. The product documentation consists of person documentation, which tells users how to use the soft-ware product, and machine documentation, which is principally meant for maintenance engineers. User documentation has an introductory and reference manual that briefly explains the description of all device facilities. System documentation includes practical and non-functionality requirements.

Requirement Documentation:
Functional:

This website includes various features like: Searching, sorting, filtering, adding product to cart, purchasing product, delivering of product, payment of product, adding product to wishlist, users can provide ratings and comments after purchase of products. We will provide highest level of security to all the users and we provide surity that none of your private data would be leaked or will be shared to anyone.

Users - The user would be able to view the food items, select the food items, they can add the food product to the cart, if any item isn't in the stock thern they can add that product to the wishlist so in future if stock comes they will get a notification of the product. After that user have to go to food bank and take the item.

Volunteers - Volunteer would be having privilege to scan the bar code of the products which user wants to take. Volunteer can edit, update, delete and add the details of the products.

Donors - Donors would be able to add, edit, delete food product in the website.

Admin - This person will be having all the rights to system.

All users, donors, volunteers, admin would be able to sign up, sign in, and log out to the system.

Non-Functional Requirement:

Reliable backup of the client database on the cloud. The client's information needs to be encrypted to maintain confidentiality. The system should not crash in between the office operation hours so that the company does not lose valuable time. Users must change the initially assigned login password immediately after the first successful login. Moreover, the initial should never be reused.

It should be capable enough to handle 20 million users with affecting its performance.

User Documentation:

User will be able to give us feedback and as per their feedback we will try to fix the errors. Secondly, there is quality analyst in our team who would be testing the quality of the system.

Different operations such as displaying items available in Food bank, add items to wish list, add to cart, place an order and generating unique Order Id and Requesting unavailable items will be performed in the website. Apart from this, it will generate page not found error if device is not connected to internet but it will automatically be directed to requested page once it gets connected.

Customer will able to perform following activities on website: -

Register:

1)register if user is new
2)Login
3)Adding product to wish list
4)Adding product to cart
5)Purchasing product

X. References

References

[1] University of Waterloo Campus Food Bank https://campusfoodbank.com/

[2] University of Alberta Campus Food Bank http://foodbanksalberta.ca/locations/campus-food-bank-society-university-of-alberta/

[3] Testing Strategy - https://www.guru99.com/how-to-create-test-strategy-document.html