**EE4717 Web Application Design – Project Report**

Design project group number: F35-DG16

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**Project Title: NTU Pizzeria online ordering service**

**Summary of Project:**

The project I will be developing will be a website for the NTU Pizzeria. The site will provide the Pizzeria’s customers with a quick and easy-to-use method of ordering their pizza online. The site will have the capacity to display to the user what pizza is offered for delivery. The user will be able to submit their order with payment and delivery details inclusive. In addition, the site will also be able to inform the user of existing deals offered by the NTU pizzeria and allow them to purchase existing promotion deals. Furthermore, the site will provide links to various pages including the menu, locate us page and user feedback review page. Once the user has ordered, the site will send the user email confirmation stating the status of the user’s order.

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# 1. Applications Requirements and Specifications

The website will allow customers to order pizza/s from the NTU Pizzeria. The site allows customers to input their order details to the site and the pizzeria will prepare the order for delivery. The site will contain various links presented using banners, images, text and navigation bars with the end goal of directing and assisting the user to submit an order to the NTU Pizzeria. The site should display features such as the menu and existing promotion in an easy-to-use manner in order to enhance the sites usability and to ensure the user is easily able to submit their order. To do this, the following features will be incorporated:

R1 – The website will begin by featuring the home page of the site. The home page will contain the NTU Pizzeria’s logo, signup/login links, access to the main navigation bar items and various banners displaying existing promo deals offered by the NTU Pizzeria. The user/customer will be able to click on each banner to view the corresponding promotion deal.

R2 – Each page will incorporate the main navigation bar which will navigate the user to the “menu”, “promotions”, “locate us” and “review” pages. Each navigation item, when clicked will take the user to the corresponding page.

R3 – The menu page will consist of each available pizza offered by the NTU Pizzeria with its associated title, image, cost, description and an add icon.

R4 – The promotions page will display any existing promotions offered by the NTU Pizzeria. The promotions will show an image of the meal, the price of the promotion and the promotion’s description.

R5 – In order for the customer to user to contact the pizzeria, a “Locate us/Contact us” link will need to be provided. This page will contain an image of where the pizzeria is located on the map as well as the pizzeria’s contact details.

R6 – The customer will need to enter their delivery details such as name, email and delivery address for the pizza to be delivered. Therefore, the site will contain a signup/login link which after the user fills out a form to create an account, will store their delivery details.

R7 – To support the users order, the site will require a cart which will store the users/customers order for checkout.

R8 – The site will require the user to review their delivery details before the order is sent to the pizzeria.

R9 – Once the customer submits their order and order details, they will be notified of the status of their order via email.

R10 - After the customer has received their order, they will able to review the service and quality of the pizza from the home page.

R11 – The site will need to provide an FAQ page. This will answer commonly asked questions from customers. Users will be able to view the answers to these questions in the FAQ page.

R12 – The site will need to provide the user with a method to pay for the order.

# 2. Functional Requirements and Specifications

F1 – (R1) The home page will be the first page displayed. The home page will provide the user with navigation links directing the user to different aspects of the site such as the menu, existing promotions, locate us page and review page through the navigation bar. In order to make the page creative and appealing, the home page will need to contain banners of existing promotion deals offered by the pizzeria. The banners will need to extend across the entire home page to attract the user’s attention.

F2 – (R2) The navigation bar displayed on each page will contain links to the pizzeria’s menu, promotion deals, locate us link and order review form. Each of these links, if clicked will direct the user to the corresponding page. It will need to be featured on each page so the user can go to any page, thus providing quick access throughout the site. The navigation bar is an important component of the website as it acts like the GPS between pages. In order to enhance the navigation bar, the text of the bar will need to contrast with the background in order to make the navigation bar standout.

F3 – (R3) The menu page will list the variety of pizzas offered by the NTU Pizzeria. However, several pizzas onto one page can be overwhelming for the user, so I have decided to use a second navigation bar to split the menu page. The navigation bar will incorporate links to decipher between “NTU Classics” pizzas and “Student Specials”. Each pizza offered by the pizzeria will be sorted into one of the categories from the pizza navigation bar. The user can view and potentially order one of these pizzas by clicking on its category and then clicking the add icon of the pizza. Furthermore, each item on the menu will have a description and cost corresponding to the pizza displayed. Each menu item will also require a link in the form of a plus (“+”) icon which will allow the user to add the item to the cart. The item will then be added to the order and can be viewed later before checkout.

F4 – (R4) One of the features that attracts customers to the pizzeria is the existing promotions. The site will need an appealing and attractive way to display the promotions at the forefront of the site. Therefore, the promotions page can be navigated to using either the navigation bar on any page or by clicking on the existing banners being displayed on the home page. If clicked on, the promotions page will display existing promotions offered by the NTU Pizzeria. Each promotion displayed will need to display an image of the meal, a description and a promotional cost so the user knows what is included in each promotion as well as a plus (“+”) icon. If the user wishes to add the promotion to their meal, they may click on the associated plus icon which will add the promotional meal to the cart. The promotions will be sorted by the date that the promotion expires.

F5 – (R5) If the user wishes to contact or visit the pizzeria, they will require a way to find out where to go or who to contact. When the user clicks on “Locate us/Contact Us” in the navigation bar or footer content of each page, a picture of where NTU Pizzeria is located will be displayed to show the user where the pizzeria is located. A textual description of the pizzeria’s address will also be given in correspondence to the image. The page will also need to provide contact details to the pizzeria’s email address and contact number, so the user is able to contact the pizzeria.

F6 – (R6) The site will require a signup/login page which will ask the user to fill out a form to create an account and further store their user details such as name, email address and delivery details. The user will need to enter their delivery details before they order, so the site will store their details, so the user does not have to enter them every time they wish to order.

F7 – (R7) To support the users purchase of the online order, the pizzeria site will provide the user with an order cart which will store all the menu items that the user has wished to add to their order. Once the user decides to checkout, the user will click on the cart/checkout button, in which the items in the order cart will be displayed to the user for review. When the cart is displayed, the user will be presented with a customization text box. The user may enter any customizations they would like made to the order (For example, the user may enter: “I would like no pineapple on my pizza”). The user will then be asked to enter/confirm customer and payment details.

F8 – (R8) The site will require the user to review their delivery details before each order. These details are acquired when the user creates an account. This page will display and confirm with the user their name, email, order cost and delivery address. Once the user is happy with these details, they can confirm this and move to payment.

F9 – (R9) Upon submission and payment of the order, like any service, the customer will receive a confirmation email to state the status of the order such as “The order is being prepared.” The email will be obtained from the customer’s account upon signup/login and the customer will be updated upon delivery of the order status.

F10 – (R10) For feedback purposes, the site will provide the user with an option to provide feedback on the site ordering system or the service and quality provided by the pizzeria. The user can access this page through the navigation bar link “Review”. The user will be asked to fill out a textual form in which they will be able to enter their opinion of the pizzeria. Upon submission through the submission icon, the form will be sent back to the pizzeria.

F11 – (R11) The user will be assisted with an FAQ (Frequently Asked Questions) page. This page will list both commonly asked questions to the pizzeria in relation to ordering through the site. A textual description will be provided to the user answering their questions in both a clear and concise format. The user will be able to access the FAQ page in the footer content of the site.

F12 – (R12) The site will need to allow the user to pay for the purchase. Therefore, upon confirmation of delivery details, the user will be redirected to a 3rd party site for payment. If the user attempts to pay for their order and they are unsuccessful, they will be redirected back to their order delivery review page in which they will be notified that no payment was made, and the online transaction was unsuccessful. This requirement is not addressed in the storyboard, wireframe or sitemap as it is handled externally.

# 3. Sitemap

A screenshot of a cell phone

Description automatically generated

REFERENCE: Sitemap generated from draw.io

The above image is the sitemap for my pizzeria site which demonstrates the structure of the project. As mentioned in section 2, functional requirement 1, the sites first page displayed will be the home page. From the diagram, the home page will have several links to various pages throughout the site. Each page is designed to incorporate an “Order now” button and a navigation bar which will provide quick access to the menu, instead of the user having to go back to the home page to access the menu. Assuming the user is creating an order and is logged in, the user will be able to click on the menu link or the promotions link in the navigation bar (Functional requirement 2 and 3), which will display the available items offered by the pizzeria (Functional Requirements 3 and 4 for menu and promotions). The menu is split up into two pages. “NTU Classics” and “Student Specials”. Each page contains different menu items and the user may alternate between options to add different pizzas to their order. Once the user is finished with the menu and their desired pizzas have been added to the cart, the user will be able to click on the cart (functional requirement 7 of section 2) to review their order and further checkout. The cart will display the users order with the orders corresponding pricing. Finally, once the user is happy with all the items in the cart, they will be asked to confirm their customer delivery details (Functional Requirement 8) which are obtained from the users account. The user will then be directed to a 3rd party payment site (Functional Requirement 12, Section 2). After the user has finished their order, they will be sent a confirmation email which is not listed in the sitemap above, however, the email will contain the status of the order (functional requirement 9 of section 2). From here, the user will be redirected to the home page in which they will have the option to review the order and service (Functional Requirement 10, Section 2).In addition, from the home page, the user will also be able to view the locate/contact details of the pizzeria if they wish to visit or contact the store (Functional Requirement 5).

# 4. Storyboard

* References to Section 2 are below
* Requirements are in circles
* Textual description on Right hand side

A close up of text on a white background

Description automatically generated

# A close up of text on a white background Description automatically generatedA close up of a map Description automatically generated5. Wireframes

# 5. Wireframe cont’d:

A close up of text on a white background

Description automatically generated

# Database:

The NTU Pizzeria database contains 3 tables. Each table is used for a different purpose throughout the site.

## Customer Table:

***A screenshot of a cell phone

Description automatically generatedFigure 1.1:***

***A screenshot of a cell phone

Description automatically generatedFigure 1.2***

Figure 1.1 depicts the structure of the Customers database. Once the user fills in the required fields in the sign-up page, the associated record will be created and appended to the table using the SQL code which can be found in the appendix. The Customers database is designed specifically to store information regarding each customer that signs up to the NTU Pizzeria. If a customer wishes to login to their account to make an order, after the customer has entered their corresponding email address and password successfully, the associated record will be fetched from this database and the user will be logged in. The Customers database consists of records/tuples for the following:

* **Full\_Name:** Stores the full name of each customer. The datatype in the database is a VARCHAR (String) of maximum length of 100 characters.
* **Customer ID (Primary Key):** Each customer that signs up to the NTU Pizzeria site will have a unique ID Number which is stored as an integer of maximum length of 8. This ID number will not be shown to the customer; however, it may be used if the NTU Pizzeria wishes to retrieve a specific customer in the future. The Customer\_ID field is auto incremented ensuring that each ID will be different. An example is shown in Figure 1.2.
* **Email:** The Email field stores the customers associated email address. This field stores a string of maximum length of 100 characters. The email field is validated by HTML during the signup/login process to ensure that each email address is of the correct syntax.
* **Password:** The Password field is stored as a VARCHAR (String) field of maximum length of 256 characters. The examples of the passwords in figure 1.2 are hashed out. This means that in the database, the passwords will not be shown for security purposes.
* **DOB:** The user will be required to enter their date of birth. The date of birth entered is validated in the program to ensure that the date is in the past. The database stores the date of birth in a YY-MM-DD format.
* **Address:** The address in the Customers table is stored as a VARCHAR (String) of a maximum length of 100 characters. The string inputted is a concatenation of both Unit/Apt Number, Street Name, Suburb and Postcode of 6 digits exactly. This is stored and is used later in the program as the delivery address, so the customer is not required to enter their delivery address every time.

## Pizza Table:

The Pizza’s table stores a table for the pizzas that are offered by the NTU Pizzeria. This table is stored with for the admin if they wish to update the pricing of the pizzas. If an admin updates the pizza price in the admin page, this table will automatically be updated along with the price offered on the website.

A screenshot of a social media post

Description automatically generated***Figure 2.1***

***Figure 2.2***

A screenshot of a cell phone

Description automatically generated

The Pizza’s table store the following:

* **Pizza\_ID:** Each pizza stored in the table has a corresponding ID Number to uniquely identify the Pizza if necessary. The pizza ID is stored as an auto incrementing integer with a maximum length of 8 numbers.
* **Pizza\_Name:** Each pizza name will be stored. This will be used in the update query in the admin page if the pizza price needs to be updated. The pizza name is stored as a VARCHAR (String) of a maximum length of 256 characters.
* **Pizza\_Price:** Each Pizza has a corresponding price. The price in the admin page can be updated. If the price is updated, then the price on the site retrieves this value and is updated automatically. The pizza price is stored as a double which is a maximum of 8 characters and will be rounded to 2 decimal places.

## Orders Table:

The orders table is used to store the orders submitted by each customer. Once a customer submits a valid order, their order is sent automatically to this database.

***Figure 3.1:***

A screenshot of a cell phone

Description automatically generated

***Figure 3.2:***

A screenshot of a social media post

Description automatically generated

The order table shows the following:

* **Order\_ID:** Each order has an order ID that is the primary key. This can be used to uniquely identify the order. The order ID is stored as an auto incrementing integer variable with a maximum length of 10 digits.
* **Customer\_ID:** The Customer ID is a foreign key in the orders ID table. It references the customer ID in the customers table. Like the customers table, the Customer ID is stored as an integer variable with a maximum length of 10 digits.
* **Total\_Paid:** The total paid is the amount of the customer’s order. The Total Paid field is stored as a decimal data type which is a maximum length of 12 digits and rounded of to 2 decimal places.
* **Delivery\_Address:** The delivery address is the address that it is obtained from the customers account.This is obtained from signup/login. It is stored as a VARCHAR (String) of maximum length of 100 characters. It is a concatenation of the Unit/Apt Number, Street Name, Suburb and 6-digit postcode.

# Web Application Design Tests:

## Homepage Tests

|  |  |
| --- | --- |
| **Test** | **Pass/Fail Test** |
| 1. Home page successfully displays wide banner in top half of screen and smaller banners as the user scrolls down. | Test Passed |
| 1. When the clicks on each navigation item, they are redirected to the correct corresponding page. The home icon should stay on the same page but refresh the page. | 5/5 Tests Passed |
| 1. When the user hovers over the Sign up/Login page, the user will see a drop-down list containing 4 items. | 4/4 Tests Passed |
| 1. After scrolling to the bottom of the home page, the user should see a footer below the banners. | Test Passed |
| 1. If user is logged in, then their name is displayed | Test Passed |

## Sign up/Login Tests

|  |  |
| --- | --- |
| **Test** | **Pass/Fail Test** |
| 1. When page is displayed, user should see both a login and sign up form. | Test Passed |
| 1. User is required to fill in all forms in either sign up or login before being able to submit. | Test Passed |
| 1. Once the user signs up, then their data is added to the database. | Test Passed |
| 1. Upon submission of password in sign up field, the user’s password is hashed out so it cannot be seen in the database. | Test Passed |
| 1. Full Name requires 2 words minimum. | Test Passed |
| 1. Email address must contain “@” and “.”symbols and is validated by HTML5. | Test Passed |
| 1. Password entered throws alert error if it does not contain at least 1 capital letter and a minimum of 8 characters. | Test Passed |
| 1. Date of Birth entered throws alert error if date is not in the past. | Test Passed |
| 1. Unit/Apt No must be an integer value. | Test Passed |
| 1. Street Name must be at least one word with letters only. | Test Passed |
| 1. Suburb must be a string of letters only. | Test Passed |
| 1. Postcode must be an integer of exactly 6 numbers. | Test Passed |
| 1. Upon clicking Login, the user’s data is validated against the database. If their record does not exist, then they’re redirected to the same page. | Test Passed |
| 1. Once the user selects “Create Account”, and all data has been validated to be true, then their record is added to the database. | Test Passed |
| 1. Upon resizing the page, the form fields can still be accessed. | Test Passed |

|  |  |
| --- | --- |
| **Test** | **Pass/Fail Test** |
| 1. The users name is displayed in the top left corner box of the menu page if they’re logged in successfully. | Test Passed |
| 1. 3 Pizza images are displayed with their corresponding text and price from the database. A textbox for the user to enter the quantity is also included. | Test Passed. |
| 1. An add icon is displayed for each item. | Test Passed |
| 1. If the add item is clicked, then the user’s item is added to the table on the left-hand side. | Test Passed |
| 1. When the user hovers over the menu navigation bar (NTU Classics | Student Specials), then the corresponding item is highlighted. | Test Passed |
| 1. The “Go to Cart” button redirects the user to the NTU Classics page if there are no items in the cart and displays an alert error. | Test Passed |
| 1. The “Go to cart” button redirects the user to login/signup page if they are not found to be logged in. | Test Passed |
| 1. If both the user is logged in and they have successfully added items to their cart, then they are able to successfully view their cart. | Test Passed |
| 1. Items are successfully added to cart. | Test Passed |
| 1. Item prices are successfully updated if the admin price is submitted. | Test Passed |
| 1. Alert the user if an entry is less than 0. | Test Passed |

## Menu and Promotions: (NTU Classics, Student Specials, Our Deals, Absolute Steals)

## Locate Us:

|  |  |
| --- | --- |
| **Test** | **Pass/Fail Test** |
| 1. The users name is displayed in the top left corner box of the menu page if they’re logged in successfully. | Test Passed |
| 1. The opening hours, delivery hours, pizzeria address and contact number and email address are displayed. | Test Passed |
| 1. A map of where the user can find the pizzeria is displayed. | Test Passed |

## Review Us:

|  |  |
| --- | --- |
| **Test** | **Pass/Fail Test** |
| 1. If any field in the review page is not filled in, then alert the user before proceeding | Test Passed |
| 1. On entry, check that the user has entered a valid address syntactically. The email must contain the “@” and “.” Symbols to be a valid email. | Test Passed |
| 1. Upon submission, the user (web server address) will receive an email saying their review has been received by the NTU Pizzeria | Test Passed |

## Cart Controller:

|  |  |
| --- | --- |
| **Test** | **Pass/Fail Test** |
| 1. All items that were added in the menu page by the user appear in the menu page. | Test Passed |
| 1. All quantities entered by the user should be accumulated in the cart if multiple entries exist and data should be correct. | Test Passed |
| 1. Price should be accumulated based on each subtotal. | Test Passed |

## Delivery Review:

|  |  |
| --- | --- |
| **Test** | **Pass/Fail Test** |
| 1. No entries are left as empty or invalid. | Test Passed |
| 1. Entries should correspond to the user’s profile | Test Passed |
| 1. Date generated is the current date/time. | Test Passed |

# Appendices: