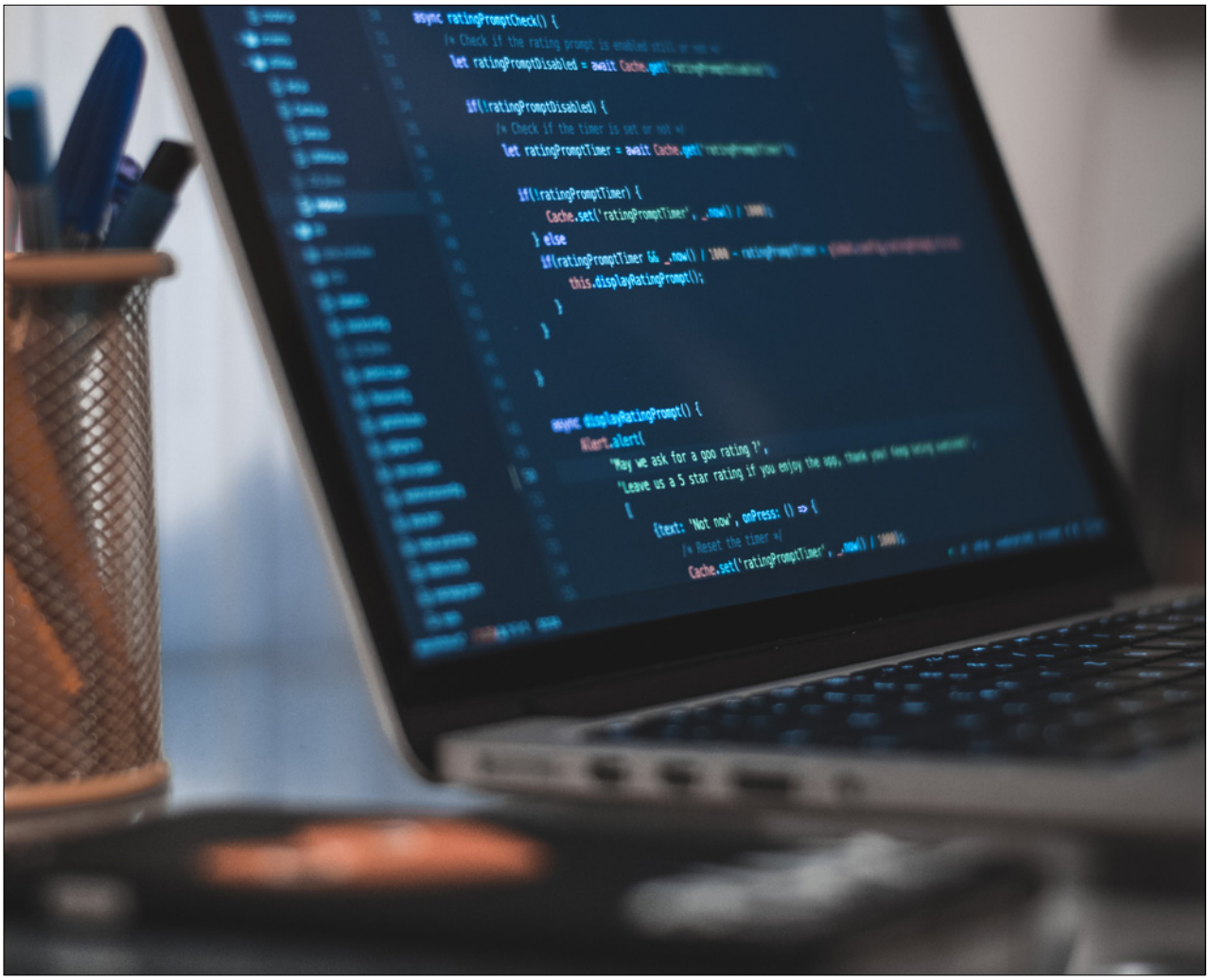


Information Processes and Technology

Task 3 - HSC 2020

Cooper Beltrami

CONTENTS

Understanding the Problem

REQUIREMENTS REPORT

SYSTEM PURPOSE

The Delicious Delicacies is an online ordering system for pizza. The system will be in the form of a web front end and database backend where all necessary data will be stored such as customer and sales information, pizzas and purchase history. Customers will access the online ordering website to select, order and purchase their pizza and will be accurate and effective in its delivery of data and information to the customer.

NEEDS OF USERS

There are key factors which are necessary for the successful operation of the online ordering system. Customers will require an electronic device, ideally a phone or computer to view and access the website. They will also require an internet connection, either in the form of wired ethernet or wireless internet. Aforementioned hardware devices also require the appropriate software to enable customers to access and utilize the online ordering system. An operating system such as Microsoft Windows or Apple macOS will be required and and additional software in the form of a web browser will be required to access the website. The user will be required to input their personal information such as address, name, payment type, payment information and their order information to effectively utilize and communicate with the system.

SYSTEM SCOPE

What the Database performs

- Store customer information (Name, Address, Payment method and Payment information and Phone number)
- Store products and their description, price and ingredients
- Store purchases (Order ID, Customer ID, Date, Product IDs, Price)
- Integrate with a frontend website to facilitate online ordering with realtime information and data updates
- Provide valid information and data to the website such as products name, pricing and short description
- Organize and store sensitive customer or sales information taking consideration to privacy and security, alongside other social and ethical issues
- Provide access to various forms and queries

What the Website performs

- Allow the user to select their preferred method of payment
- Secure method of authenticating to the website for users
- Display accurate data and information to the user
- Present an useable and accessible interface fo the user
- Allow customers to create an account to save their customer information for future sales
- Allow users to browse and select products without requiring an account
- Utilize a secure method of data transmission to and from the DBMS

What the Database does not perform

- Store the time and date when stock was updated or changed
- Store the time of customer transactions
- Store private banking information and data
- Store product stock

What the Website does not perform

- Accessible without an internet connection
- Have a Content Management System within the website
- Be freely edited users

SYSTEM DESCRIPTION

SYSTEM CONTEXT

A variety of data and information are constantly entered by customers and transmitted through the Delicious Delicacies information system. Some of this data and information can include the following.

- Data entered into the website by users - Name, Address, Date of Birth, Phone Number and their chosen Payment Method, Selected Product
- Customer information stored within the Customer's table when a user create an account
- Data is shown within queries, forms and reports which can be used to find the most successful products and drive future business decisions

SYSTEM REQUIREMENTS

The Delicious Delicacies system must accomplish its main requirements which is to sell food products to customers in the public. It must confirm to certain software and hardware requirements such as running on a workstation or small server appliance which will perform both Database management and Web Server duties. Due to the nature of this system, a large server and high performant hardware is not required as only a small number of web pages will be served to a small customer base.

PARTICIPANT REQUIREMENTS

The Delicious Delicacies system participants consist primarily of the general customer who are purchasing products from the system. The requirements of such participants include

- The ability to select a range of products to purchase in a single order, and pay for them online using the business website using a range of payment methods including cash, Visa, Master Card etc.
- The ability to easily navigate through the website with a consistent and aesthetically pleasing design where users can see a clear sense of interactivity and responsiveness.

SYSTEM REQUIREMENTS

PHYSICAL

Before customers are able to access the online website they must first have an electronic device capable of browsing the internet.

In order to store the required web pages and database, a web server operated by Delicious Delicacies must be used to allow access to the website and database management system.

PERFORMANCE

To ensure the Delicious Delicacies system operates as intended it must meet key performance requirements specifically the accuracy and responsiveness and reliability.

- A responsive and interactive website is required so customers can quickly and effortlessly place an order and purchase it.
- Data and information entered within the website to be transmitted to the database must be accurate through the interactivity and responsiveness of the website.
- The website and database must be able to withstand high frequency of requests, such as orders or account creation. The website must be reliable to have a high uptime. In the case of downtime, there must be frequent backups to reduce the amount of downtime the website or database experiences.

SECURITY

To ensure the Delicious Delicacies system is secure various minimum security requirements are put in place to safeguard sensitive customer information.

- Prevent unauthorized access and or transmission of data to and from the database.
- Use encryption at all times, especially during the transmission of sensitive customer data and payment information.
- Require passwords for all customer accounts. Passwords must be of a certain length and complexity to lessen the chance of unauthorized access to insecure accounts.

DATA AND INFORMATION

The Delicious Delicacies database management system will filter and categorize all data coming from external requests from customers who are interfacing with the website. Data primary is sourced by customers accessing the website and includes:

- First Name
- Surname
- Date of Birth
- Address
- Payment Method
- Selected Product
- Phone Number

SYSTEM OPERATIONS

Customers order products through the website. They do not have access to the entire database, only products that are able to be purchased can be viewed on the website. Internal staff such as employees and management have access to the entirety of the system including access to edit the website and make modification to the database using the database management system for input of new product or routine maintenance.

TRADITIONAL SYSTEMS

A traditional approach was chosen while developing the Delicious Delicacies system. This approach was most suited to this type of system for a number of reasons including system size, purpose and content.

This system, being a relatively small one, best fits the traditional development methodology. The requirements of a small business fall under those of traditional methods, including planning, designing and budgeting of a small scale database management system and website. The website and database management system do not require as much planning or designing compared to larger systems and the transmission of data and information is also small. This system also does not dynamically update, change or scale. All of the reason stated above strongly correlate to a traditional system development approach.

Furthermore, the Delicious Delicacies system already exists in some form on the internet and does not require a full ground up development. Due to how common it is to find businesses running some form of database or website, it is very to find pre-developed, open source solutions which require small alterations to fit the exact specifications of the intended system. No part of the system requires reinventing or a specialized development strongly attributed to the traditional approach.

Although the traditional approach may be the most suitable for this system, it still has many desires especially in development. The very strict and ridged development characteristics mean that it is very difficult to make modifications to requirements or backtrack during development. If system requirements were to change or parts of development were incomplete or missing at any time during the development of the system it would cause a great deal of difficulty, time and resource to remediate.

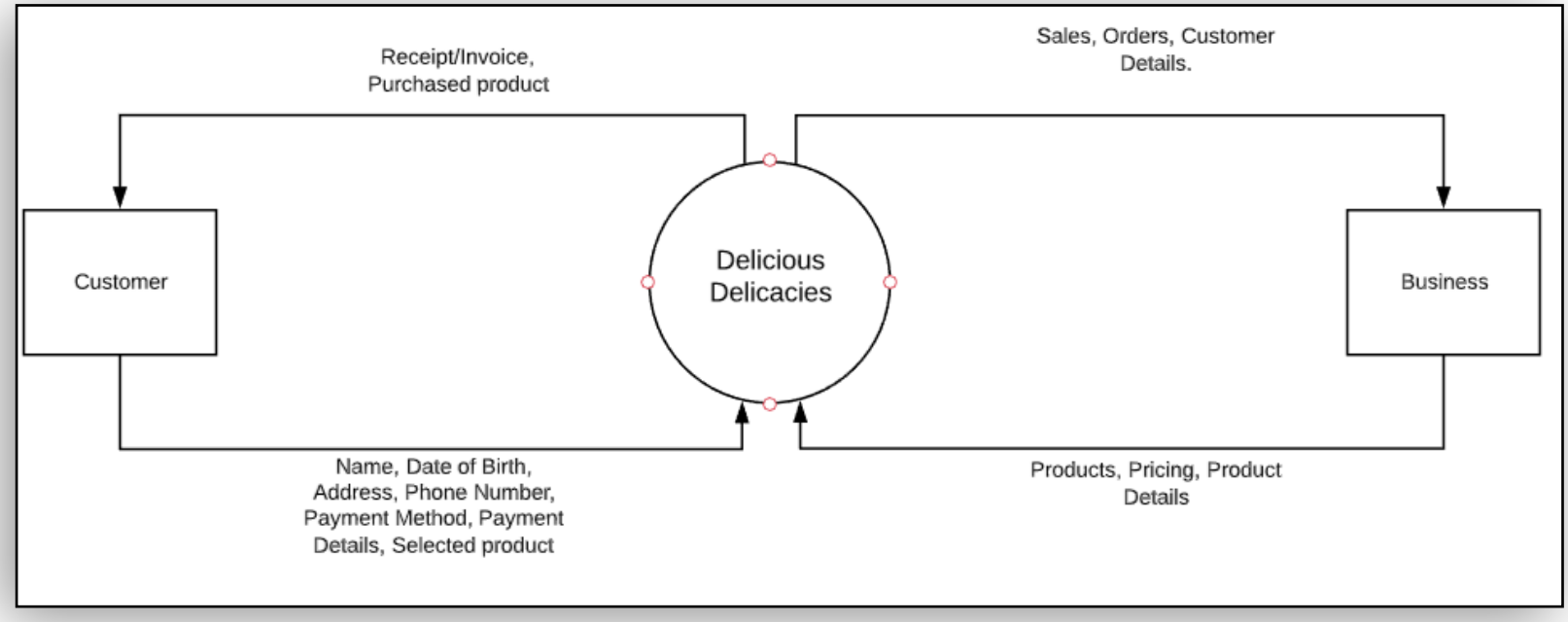
Overall, it is evident that the traditional approach for the Delicious Delicacies system is most suitable. Although its shortcomings, there are a host of reasons why the traditional approach is still most suited for this system, due to its nature, size and it not requiring special modifications. It would be the most effective approach in terms of cost and efficiency, therefore producing the highest quality system.

Planning the Solution

GANTT CHART

	Term 1	Holidays		Term 2		
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
1. Understanding The Problem						
1.1 Requirements Report						
2. Planning The Solution						
2.1 Gantt Chart						
2.3 Context Diagram						
3. Designing The Solution						
3.1 Data Dictionary						
3.2 Schematic Diagram						
4. Implementing The Solution						
4.1 Database						
4.2 Website						
5. Testing and Evaluating						
5.1 Testing Report						
5.2 Evaluation						
6. Maintenance						
6.1 Maintenance Plan						

CONTEXT DIAGRAM



Designing the Solution

DATA DICTIONARY

CUSTOMERS

FIELD NAME	TYPE	FORMAT	DESCRIPTION	EXAMPLE
ID	Auto Number	N/A	Unique customer ID	23
FirstName	Short Text	N/A	Customers first name	John
Surname	Short Text	N/A	Customers surname	Smith
DOB	Date	dd/MM/yyy	Customers date of birth	3/7/1984
Address	Short Text	N/A	Customer residence address	123 Walnut Avenue
PhoneNumber	Short Text	N/A	Customers phone number	491182947

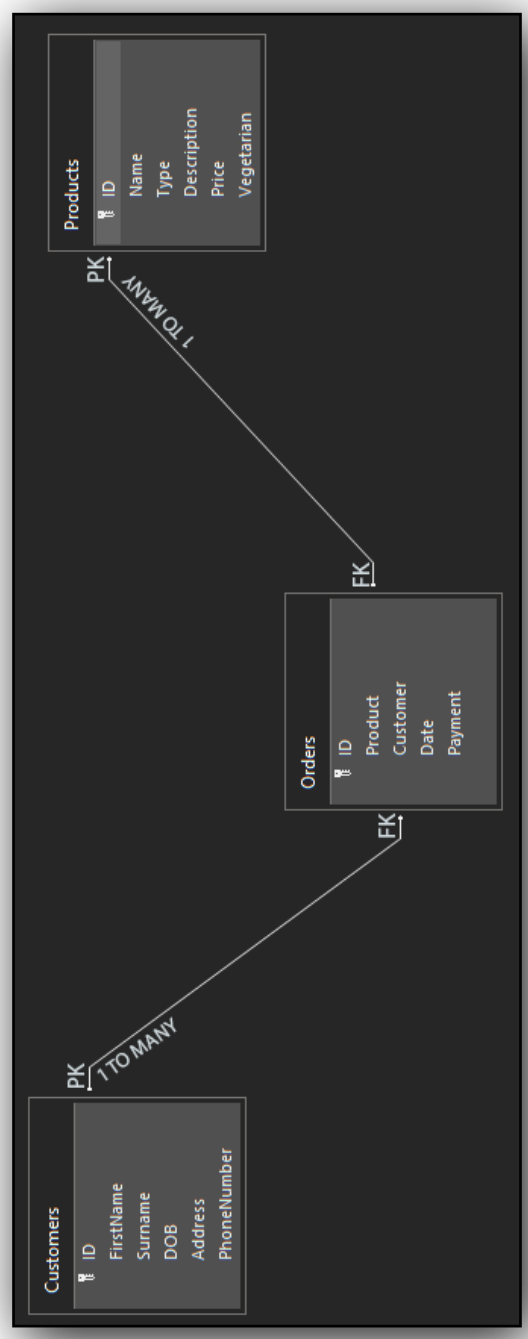
PRODUCTS

FIELD NAME	TYPE	FORMAT	DESCRIPTION	EXAMPLE
ID	Auto Number	N/A	Unique product ID	41
Name	Short Text	N/A	Name of product	Garlic Bread
Type	Short Text	N/A	Category of product	BREAD
Description	Short Text	N/A	Short description about product	3 Servings
Price	Currency	$##.##	Price of product	$18.00
Vegetarian	Boolean	True/False	Is the product vegetarian	FALSE

ORDERS

FIELD NAME	TYPE	FORMAT	DESCRIPTION	EXAMPLE
ID	Auto Number	N/A	Unique sales id	25
Product	Number	N/A	Product ID of purchased product	57
Customer	Number	N/A	Customers ID	23
Date	Date	dd/MM/yyyy	When the order was placed	4/6/2020
Payment	Short Text	$##.##	Customers method of payment	Master Card

SCHEMATIC DIAGRAM



Implementation

DATABASE AND WEBSITE

The database can be found on Github at the following address.

https://github.com/cooperbeltrami/ipt-task-3/blob/master/IPT%20Task%203%20-%20Database.accdb

The website can be found on Github at the following address.

https://github.com/cooperbeltrami/ipt-task-3/blob/master/IPT%20Task%203%20-%20Website.zip

The main repository for all the files associated with this assignment are located at the following address.

https://github.com/cooperbeltrami/ipt-task-3

Testing, Evaluating & Maintaining

TESTING & EVALUATION

TESTING REPORT

Throughout the development of this system, rigorous testing was performed to ensure quality was maintained. All components of the system were tested such as database queries, forms, reports and the website. All aspects of the database management system were tested to ensure data was accurate and was not malformed during data manipulation or changes to other areas of the database. All four queries were tested throughly to ensure the correct data was returned and in the format specified. All queries were tested using test data, testing the boundaries, inner and outer ranges of data. Queries where the user entered a search query all return the correct values and are ordered in the correct manner, either ascending or descending. The website was tested using various methods. One such method was testing the website on multiple devices and web browsers to test its compatibility and cross platform support. The website was also tested using various aspect ratios to test its scaling support. The inbuilt chromium developer tools to test the scaling and used Google Chrome, Microsoft Edge and Firefox to test the support of the website across multiple web browsers. During the testing of the website, there was no noticeable issues and seemed to cope well with all tests performed. The form was tested by entering test data, adding new records and navigating through existing records. This all worked as intended, data was entered into the correct fields and navigation between records was performed perfectly. Reports also were tested to ensure they worked as intended. They were tested simply by creating a new report based on a previously developed query and making sure the formatting and output of the report was correct. After testing it was confirmed that all reports were fully functioning. Overall, all areas of the system were tested and all functioned correctly, also meeting the specifications of the requirements report.

EVALUATION REPORT

The Delicious Delicacies system, consisting of a database and website were both able to meet all requirements specified within the requirements report. While this system has not been put into a production environment for actual use, I am still happy with the end result and the standard of work I have completed. Although meeting the initial requirements set out in the requirements report, this system has some fundamental flaws which are mostly correlated to the fact that this system has not been designed to be put into real world use. Due to the nature of this system, data and information must be accurate and kept up to date to ensure efficient and reliable use. Data such of that provided by the customer for create a new account of purchasing a product must be kept up to date to ensure a successful transaction or account creation is made. Pricing and descriptions of all products must also be updated to reflect any changes. Overall this system has met all initial requirements and operates as specified within the requirements report.

MAINTENANCE REPORT

To upkeep the current state of the website and ensure that the system runs smoothly and functions correctly, maintenance must be performed. Both hardware and software maintenance will be required to ensure that the system runs and meets all requirements stated within the requirements report. Hardware which runs the web server and or database must be performed regularly to ensure that there is limited to no downtime. Considering the small size of the business, it is unlikely for there to be a failover server in the event of a hardware fault. This means that the hardware of the system that will run the web server and database must be checked regularly and hardware components swapped out on a regular basis to help minimize a hardware fault to take these services down. If these services do not run, the business cannot perform any of its day to day tasks and will be costly and time consuming to fix, not taking into account the customers who could not be served and therefore affecting the profits of the business. Software is another large part of the Delicious Delicacies system and requires attention to maintain smooth business operations. Database server and management system software should be updated on a regular basis. Security patches must get installed on a regular basis to ensure private customer data is stored safely along with a host of other social and ethical issues that arise from having lacking security. Web server software should also be kept up to date to stop issues relating to security and to ensure the continued service of web pages. A regular check of backups for both the database and website should be performed to make sure in the event of a data corruption or server failure, there is a good copy of data which can be used to restore business operations, saving resources, time and money in the long run. Maintenance for this system is relatively simple compared to many other, and much larger systems but must still be performed to keep the system running as intended and prevent downtime, wasted time, resources and money.