Memorandum

TO: Marti Baker, Owner/Pizza Parlor
FROM: Rikki Nelson, Nelson Developments
DATE: May 20, 2012
SUBJECT: Pizza Parlor Order Management System – System Design Document

Nelson Developments has prepared the attached System Design Document for the new Pizza Parlor Order Management System for your review. The System Design Document was prepared by the project team, comprised of:

Rikki Nelson – Team Leader/Documentation Coordinator

The System Design Document contains the following main sections:

- Architecture and Design Considerations
- Information/Data Model
- User Navigation Design
- Inputs
- Outputs
- Procedures
- Interface Design and Coding Standards

Please review the entire document, and indicate approval of this document by signature and date as indicated following the conclusion.

This memo also confirms the Pizza Parlor walkthrough scheduled for May 28, 2012 at 6:00 pm in the Snohomish Building Boardroom. Please feel free to contact Nelson Developments via phone or email if you have any questions or concerns before the walkthrough.

PIZZA PARLOR.COM

SYSTEM DESIGN DOCUMENT

Business Owner: **Marti Baker**

Nelson Developments Project Team:

Rikki Nelson

May 20, 2012

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Introduction

Nelson Developments follows the Systems Development Life Cycle (SDLC) model and has completed the Planning, Analysis and Design phases. The System Design Document is the primary deliverable of the Design phase and provides a comprehensive overview of all documented requirements for the system, including:

- Architecture and Design Considerations, including system architecture and design assumptions;
- Information/Data Model, including information requirements;
- User Navigation Design, including screen design and/or descriptions;
- Inputs and Outputs, including forms or reports that need to be redesigned for the new system;
- External and Internal Procedures, including activity flow, system usage, functions, procedures and/or queries;
- Interface Design and Coding Standards (External and Internal), including all system standards and guidelines;
- Additional documentation, such as: Entity Relationship Diagram, Metadata Dictionary, Function Hierarchy Diagram, Source Document Examples, Data Input Forms, Report Formats, Output Examples, Use Cases, Internal Procedures, Design Standards Document, Issues List, and Future List.

Architecture and Design Considerations

Architecture

Nelson Developments has determined that the PizzaParlor.com Order Management System will utilize the following architectural design:

- Client-Server Architecture
- Thin-Client Design
- Two-tier Design

Client-Server Architecture

Client-server architecture is a network system that divides processing between a central server and one or more clients. This serves PizzaParlor.com well because Pizza Parlor will maintain the database in the server at their physical location, where only authorized employees can access the administrative pages, and user interfaces will be accessed by customers via in-store client or website interface.

Thin-Client Design

A thin client will perform minimal processing and will rely on the server for input data validation. In order to minimize cost (lower initial and maintenance costs of client units) and maximize performance (faster speed because less network traffic required), the thin client is the most advantageous design for the small-business owner.

Two-Tier Design

The two-tier design places only the user interface on the clients, and both the database and application logic will run on the server. While in most cases this may not be as efficient performance as three-tier designs, but this small business can most likely do well with the two-tier design in order to reduce installation costs. Additionally, it would not be overly complex or expensive to expand the server to two machines later in order to upgrade to a three-tier design.

Assumptions

The following assumptions have been made about the development of the Pizza Parlor Website:

- The client, Marti Baker has purchased a web server, or has contracted with a web hosting service, to house the Website
- The client has purchased the rights to Microsoft Access, which is the specific Database program.
- The client has approved the required data to be stored within the database.
- The specifications of the system have been reviewed and approved by the client.
- The assumption of this design is based on two different types of client interfaces: in-store monitors accessing order placement interface of the database, and PizzaParlor.com website that uses a web page for ordering that interacts with the database.

Information/Data Model

The database will be created in Microsoft Access, and will be a relational database with entity tables.

An information/data model is an abstract yet formal representation of the information used by the system. The information is categorized into different entities. Each entity represents a distinct object, such as a person place or thing. Attributes are distinct characteristics of each entity. Entities and attributes in the Project Management Reporting System include:

- Admin (adminID, empFName, empLName, adminUserName, adminPassword)
- Customers (custID, custFName, custLName, custAddress, custUnitNum, custCity, custState, custZip, custPhoneNum, custEmail)
- Crusts (crustID, crustName, crustPrice)
- Orders (orderID, orderPrice, orderCompleted, *custID, crustID, sizeID, specialtyID*)
- Order_Toppings (*orderID, toppingID*)
- Sizes (sizeID, sizePizza, sizePrice)
- Specialties (specialtyID, specialtyName, specialtyPrice)
- Specialty_Toppings (*specialtyID, toppingID*)
- Toppings (toppingID, toppingName, toppingPrice)

These entities, attributes, and their relationships are explained and modeled in greater depth in Appendix A: Entity Relationship Diagram and Appendix B: Metadata Dictionary.

User Navigation Design

The PizzaParlor.com Order Management System has been designed with users' needs in mind. Nelson Developments has determined that user-friendly screens are an important requirement. To this end, screen design includes easy navigational switchboards (menus) to access all features designed in the system as applicable for Users (for ordering) and Employees (Admin). See Appendix C: Storyboard for a detailed visual reference.

The new order management system will include several menu and data entry screens as applicable to Customers and Employees:

Users (Customers)

Welcome

The first page to open for users, this page will mirror the website's homepage that welcomes the customer to Pizza Parlor, briefly describes the available options for ordering a pizza, and then allows for customer to continue to customer information page. Unlike the website, this page will not have links (or the fair usage statement).

Order Pizza

This page provides for selecting the customer as well as all of the selection choices to order a pizza. The user selects "Place Order" button to indicate the order is complete.

Order Confirmation

This page displays the summary of the order, with a price, and the delivery information. If the order needs further correction (whether Customer Information or Pizza Order), then the "Edit Order" button will take the customer back to the Order Pizza Page. The "Confirm Order" button will take the customer to the Thank You page.

Order Summary

This page states a thank you for the order and tells the customer that they will be receiving a confirmation email, in addition to displaying the order summary.

Admin (Employees)

Log-in

The first page to open for employees, this page requires a valid username and password in order to continue within the Admin menus.

Admin Menu

This page provides the choices for viewing Open Order Report, Completed Order (by selected date), or Customer Listing. Also there is a button for exiting (logging off) the Admin Menu (returns to Log-in page).

Reports Pages

These pages will be standard, housing the report as selected from Admin menu. There will be selections to Print or Save the report in addition to navigation back to admin menu.

Design Standards

The following standards shall be followed for user interface design:

Colors

Background colors:

- Headings: Maroon #330000
- Content: Golden #FFFF99

Font colors:

- Headings: Golden #FFFF99
- Content: Maroon #330000

Font styles:

- Headings: Papyrus
- Content: Times New Roman

Inputs

Users (Customers)

The customer has two main categories of information that they will be providing input for. The first is their customer information and the second is their specific selections for the current pizza order. While these are provided on a single page on the website, this system will divide the two into two subsequent pages as previously described. A screenshot of the website interface is provided for in Appendix D: Input Sources.

Admin (Employees)

There previously has been no administrative site; therefore, there are no pre-existing sources for the input data required for administrative functions. The design will be as simple and practical as possible, using buttons for action selections, drop down selection boxes to select from current records, and input text boxes for entering new or updated information.

Outputs

Users (Customers)

The customer receives output in two forms. The first is the confirmation (and thank you) page and the second is a confirmation email. The email will follow a standard email format of Email To Address, Subject (Thank You for Ordering from Pizza Parlor), and Message (which will include a summary of the pizza order, delivery address, and a thank you message). A screenshot of the original website confirmation page is provided for in Appendix E: Output Sources.

Admin (Employees)

There previously has been no administrative site; therefore, there are no pre-existing sources for the reports required from administrative functions. The design of the new reports will be as simple and practical as possible, using buttons for action selections, drop down selection boxes to select from current records, and simple table format for report presentation.

Procedures

External Procedures

When the database is opened, the GUI will default to the Customer's Welcome page (showing as the primary tab). The second navigation tab will be to go to the Admin Site.

Customer Pages

On the customer's Welcome Page, there will be descriptions of each available size, crust, specialty, and build-your-own ingredients. A "Begin Order" button will take the customer to the second screen, which is "Order Pizza".

On the Order Pizza Page, a drop down will allow selection of a current customer name or "new customer". If "new customer" is selected, an "add customer" screen pops up to allow for entry of customer data. Once the customer is added, they would select their name now showing in the drop down selection box. Radio buttons and check boxes will be used for selecting pizza choices, just as on the website. A "Fair Usage Statement" Button will bring up a pop-up message with Pizza Parlor's fair usage statement for the reader to view. The "Place Order" button initiates calculating Sub Total, Tax, and Total Price, and then takes the user to the Order Confirmation Page.

On the Order Confirmation Page, a summary of the pizza order is displayed and the customer is asked if the order is correct. If corrections need to be made, selecting the "Edit Order" button will take the user back to the Order Pizza Page. If the order is correct, selecting the "Confirm Order" button will initiate the sending of an email to the customer, and then take the user to the Order Summary Page. The Order Summary Page displays the order summary with the additional message of informing the customer that an email has been sent to them. Selecting the "Order Finished" button will go back to the Welcome Page, waiting on the next customer.

Admin Pages

On Admin Log-in Page, there are two inputs required for user name and password. The "Login" button initiates action to verify authorized access, and will either return to Log-in Page if access invalid or continue to Admin Menu Page if access was validated.

On the Admin Menu Page, there are simply three buttons to select the appropriate report: Open Orders, Orders by Date, and Customer Listing. A fourth button ("Logout") will exit the admin access and return to the Login Page.

The "Open Orders" report automatically indicates the open orders. On the results of the Open Order Report page, the employee can select the options to print, save, or update the report as well as close report to return to Admin Menu Page (each is a button). Selecting "Update Order" will only allow the employee to select the order, and then edit the order status as "Completed" (as all new orders default as "In Progress").

The Orders by Date Report first requires a selection of a date, which results in a simple table display of all orders made on that specified date. The Customer Listing Report will result in a simple table display of all customers in the database. The print, save, and close report options are available on both reports. There is no update option on either report (as customer information may be updated within the customer pages).

Internal Procedures

Queries will exist for listing customer data, listing orders (open and by date), calculating order price, inserting or updating customer data, and inserting new order records. The complete list of queries, along with SQL code as applicable, will be provided within the User Manual for the system (to be provided to the client at delivery of the completed system).

Interface Design and Coding Standards

External Standards

In addition to Design Standards presented in the aforementioned User Navigation Design section, the following guidelines will be adhered to for consistency:

Buttons:

- Used to make final selections (changes pages, selects option, etc.)

Drop-down Select Boxes:

- Used to select from existing records or list of valid inputs

Input Text Boxes:

- Used to enter text for new data (specifically customer information)

Radio Buttons:

- Used to select pizza size, pizza crust, and type of specialty/build-your-own

Check Boxes:

- Used to select toppings (if a build-your-own pizza)

Internal Standards

In addition to any code and design standards previously mentioned, the following guidelines will be followed:

Naming conventions:

- Naming will follow standard Camel Case format, with the exception of database table names.
- Variables and objects will use the 3-digit abbreviation for the type of variable or object in lower case letters, followed by the descriptive name of the variable or object with initial letters capitalized (per camel case).

Commenting:

- All coding will have frequent comments to document modules and actions.
- Commenting will be standard for the language it is written in

Conclusion

This project will provide the functionality dictated by the Functional Requirements and Technical Specifications Report previously agreed upon between Pizza Parlor and Nelson Developments. This document lays out the method and guidelines to be used in implementing the design into a physical system. The following summarize the design criteria:

- Architecture and Design: Client/Server, thin client, two-tiered design
- Information/Data Model: Microsoft Access, Relational (tables) database
- User Navigation Design: 4 User pages, 3 Admin pages
- Inputs: Similar to website design this is matching with
- Outputs: Confirmation screens, Emails, Report output options
- Procedures: User-friendly control flow, User Manual to be provided for details
- Design and Coding: Simplest of controls and standard conventions to be utilized

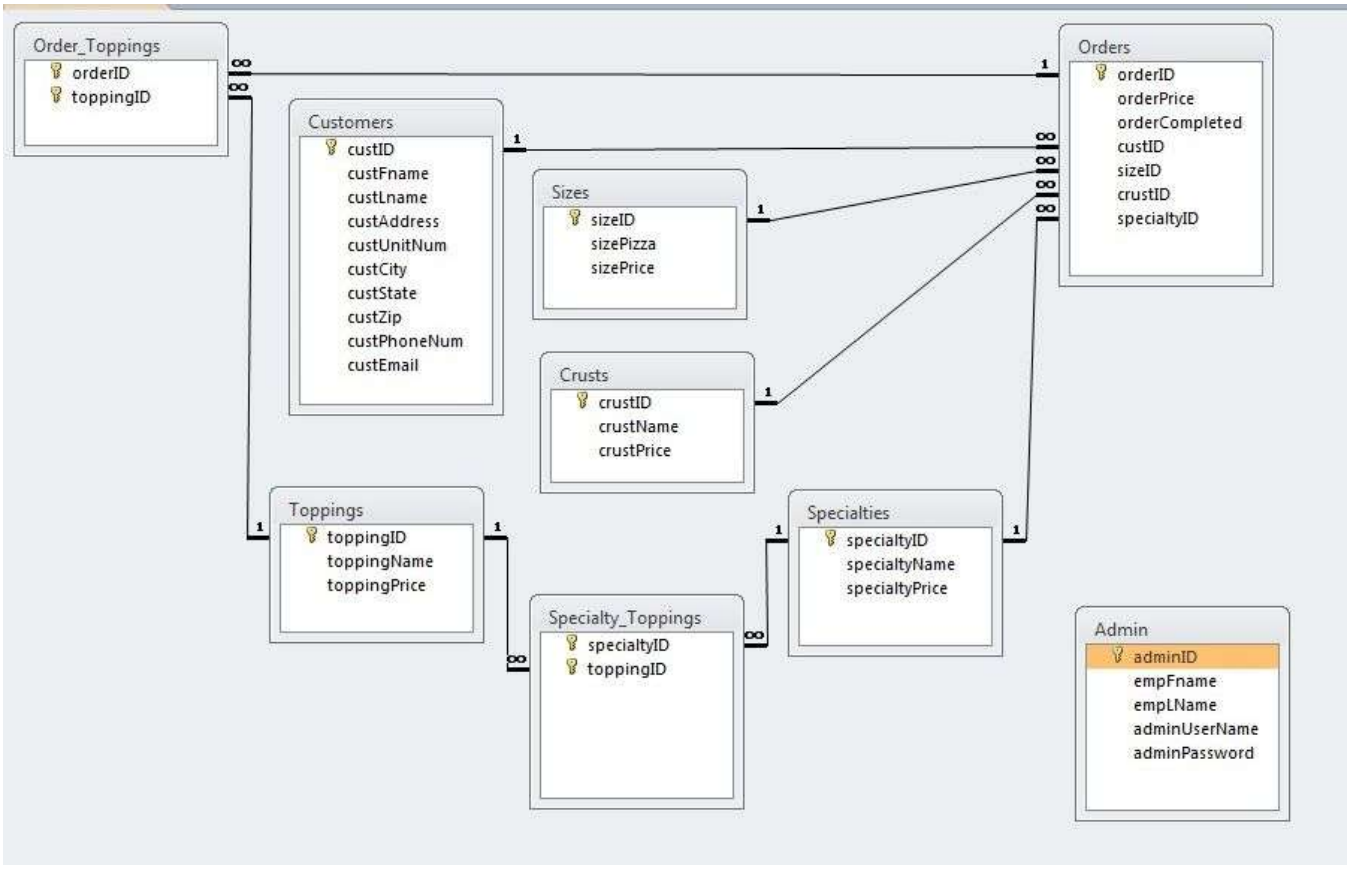
As indicated in the approved Project Plan, the site mock-up walk-thru is scheduled for 6:00 PM on Tuesday May 28, 2012 and the Functional Presentation is scheduled for 6:00 PM on Tuesday June 4, 2012.

Approval Signatures

Submitted By:		Approved By:	
_____		_____	
Project Team Leader	Date	Client/Owner	Date

Appendices

Appendix A: Entity Relationship Diagram

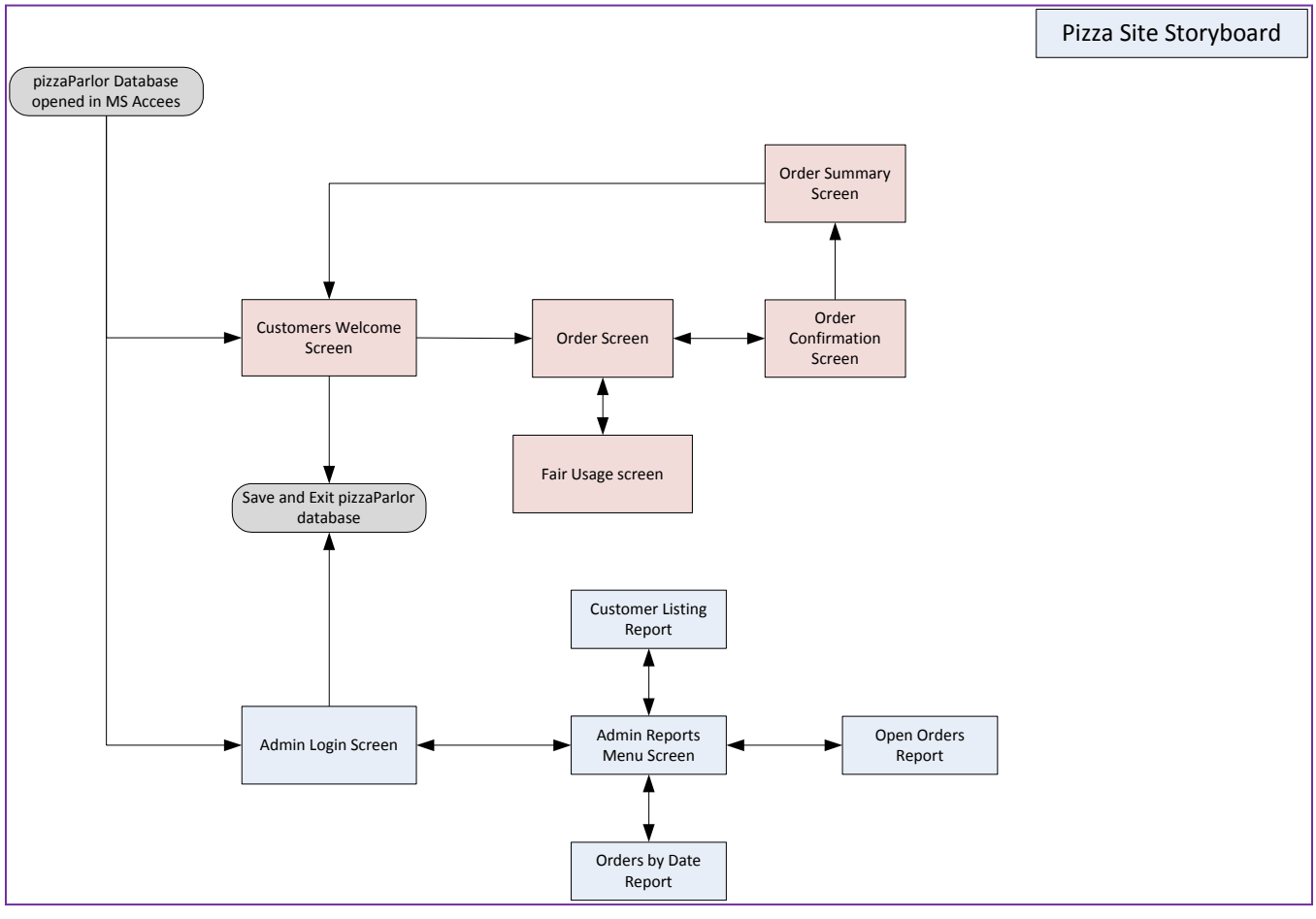


Appendix B: Meta Data Dictionary

Entity	Field	Data Type	Relationship
Admin	adminID	Auto Number	PK
	empFName	Var Char (15)	
	empLName	Var Char (20)	
	adminUserName	Var Char (20)	
	adminPassword	Var Char (20)	
Customers	custID	Auto Number	PK
	custFName	Var Char (15)	
	custLName	Var Char (20)	
	custAddress	Var Char (30)	
	custUnitNum	Var Char (8)	
	custCity	Var Char (20)	
	custState	Char (2)	
	custZip	Var Char (10)	
	custPhoneNum	Var Char (15)	
	custEmail	Var Char (20)	
Crusts	crustID	Auto Number	PK
	crustName	Var Char (10)	
	crustPrice	Currency (2 decimals)	
Orders	orderID	Auto Number	PK
	orderPrice	Currency (2 decimals)	
	orderCompleted	Var Char (15)	
	custID	Number (Integer)	FK – Customers
	sizeID	Number (Integer)	FK – Sizes
	crustID	Number (Integer)	FK - Crusts
	specialtyID	Number (Integer)	FK - Specialties
Order_Toppings	orderID	Number (Integer)	CPK; FK - Orders
	toppingID	Number (Integer)	CPK; FK - Toppings
Sizes	sizeID	Auto Number	PK
	sizePizza	Var Char (20)	
	sizePrice	Currency (2 decimals)	
Specialties	specialtyID	Auto Number	PK
	specialtyName	Var Char (20)	
	specialtyPrice	Currency (2 decimals)	

Entity	Field	Data Type	Relationship
Specialty_Toppings	specialtyID	Number (Integer)	CPK; FK - Specialties
	toppingID	Number (Integer)	CPK; FK - Toppings
Toppings	toppingID	Auto Number	PK
	toppingName	Var Char (20)	
	toppingPrice	Currency (2 decimals)	

Appendix C: Storyboard



Appendix D: Input Sources

Appendix E: Output Sources

Appendix F: Data Flow Diagrams

Data Flow Diagrams not provided with functional requirements for this project

Appendix I: Issues List

Date	Issue	Solution	Resolved

Appendix J: Future List

Date	Enhancement/Requirement	Proposed Actions for Future Releases	Acknowledged