SYSTEMS ANALYSIS, DESIGN, AND DEVELOPMENT CASE STUDY: SARAH'S SHORT CAKES – SALES ORDER SYSTEM

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INSTRUCTOR'S NOTE

CASE DESCRIPTION

The primary purpose of this case study is for Systems Analysis and Design, Systems Development, and Database courses. Students examine realistic dialog and Interview Notes, as well as existing documents. For Systems Analysis and Design courses, the students should be able to follow this realistic and fairly common case study of a small business and conduct the planning, analysis, and design phases of the System Development Life Cycle (SDLC), using either a traditional or object-oriented approach. Deliverables would include process and data diagrams and modeling, and user interface designs, and should require approximately 12-15 hours to complete, outside normal class time. In System Development courses, e.g., capstone courses for a computer information systems major, students can use this case study to not only analyze and design a solution, but actually develop the solution using various windows or web-based tools. The entire project should require approximately 20-25 hours to complete. For Database courses, this case could be used to illustrate database design techniques, resulting in the creation of appropriate data models and physical database designs. This should require approximately 10-12 hours to complete. The case study is of moderate difficulty – ranging from a three to five, and is designed for junior and senior level students, but could also be used for graduate courses.

CASE SYNOPSIS

Dr. Thomas Waggoner, an information systems professor at the local university, is at a small bakery waiting to pick up cupcakes for his daughter's birthday party. The lengthy and unorganized approach to waiting on customers presented Dr. Waggoner with an idea which he shared with the owner of the bakery. His students could design and build a system to help track sales orders, and hopefully help the business become more efficient. Sarah, the owner of the bakery, was very excited about the possibilities, and they decided to meet later in the week to discuss the details.

TEACHING NOTES

CASE PURPOSE/OBJECTIVES

The purpose of this case study is to provide an opportunity for information systems students to apply data modeling, process modeling, and user interface design skills to a semi-realistic scenario. Additionally, students in database courses can apply their knowledge and skills to design the class diagram/entity relationship diagram, as well as create a physical database based on the information requirements in this case. Furthermore, students in system

development/capstone courses can use this case as a comprehensive project, proceeding through the system development life cycle and develop a working system for Sarah's shortCakes. The interview notes and supporting documents help add a sense of reality.

METHODOLOGY

This case is based on the author's own consulting experiences and has been modified to be more applicable to a classroom setting. The names and specific details have been changed. This case study presents a small but realistic opportunity for students to analyze, design, and develop a sales order system for an organization which should be fairly familiar to them, as most students have visited a bakery and eaten a cupcake at least once! This case study has been used by the author in a systems analysis and design course with great interest and success and the author has incorporated suggestions from his students to enhance the case.

TEACHING SUGGESTIONS

This case is designed to be used as a major project in either a systems analysis and design course, a database course, or a systems development/capstone course. In my systems analysis and design courses, I generally have students work in teams of 3-4 to complete a project of this size. I introduce the project approximately halfway through the semester, after we have finished discussing the planning and analysis phases of the system development life cycle. The students are able to begin work on the planning (e.g., system proposal) and analysis requirements (e.g., process modeling, data modeling) while we begin discussing the design phase during class. As the students are completing the analysis work, they can then begin working on the design requirements (e.g., user interface design). The case is to be completed by the last week of the semester. The case is most appropriate at the undergraduate level, but could be used in graduate-level systems analysis and design, database, and system development courses.

To incorporate the practice of project management, particularly in a systems development/capstone course, an additional requirement could be added to develop a work breakdown structure, schedule, and budget using a tool such as Microsoft Project. The students should then keep track of their actual time worked and examine variances, illustrating the difficulty in developing time estimates on system development projects. A discussion of the variances could be included in the pre-implementation review (for systems analysis and design) or post-implementation review (for system development/capstone). The pre(post)-implementation review is an excellent tool to allow the students to reflect on their project, identifying what went well, and also what did not go well. The review often touches on topics such as tools used, scheduling issues, group dynamics, etc.

As the instructor for the course in which this case is used, you will need to have both good technical skills and project management ability. Most likely the different groups in your class will be working on a variety of case studies and projects, and you will need to help them stay focused, e.g., with milestone deadlines, as well as help solve their technical issues.

PROPOSED SOLUTION

The suggested solution in the appendix is based on an object-oriented approach and includes a class diagram and use case diagram, but the case can certainly be conducted using a

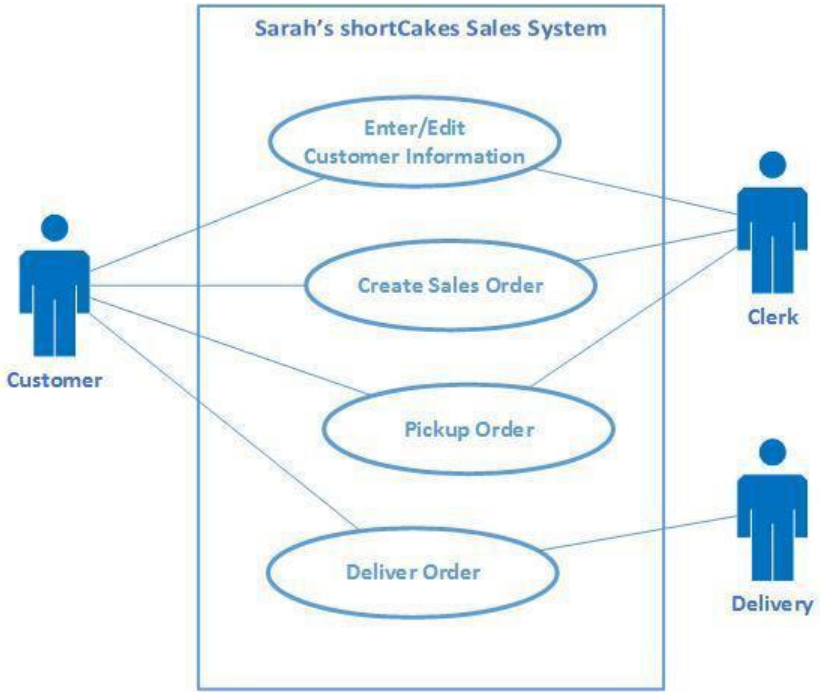
traditional approach, wherein the students would develop entity relationship diagrams and data flow diagrams. In addition, example user interface designs are provided below.

CONCLUSION

This case study offers students an opportunity to apply concepts and techniques learned in their systems analysis and design, database, and systems development classes. The case is realistic, reasonably-sized for a major project in a semester-long course, and the scenario should be one in which they are familiar.

APPENDIX

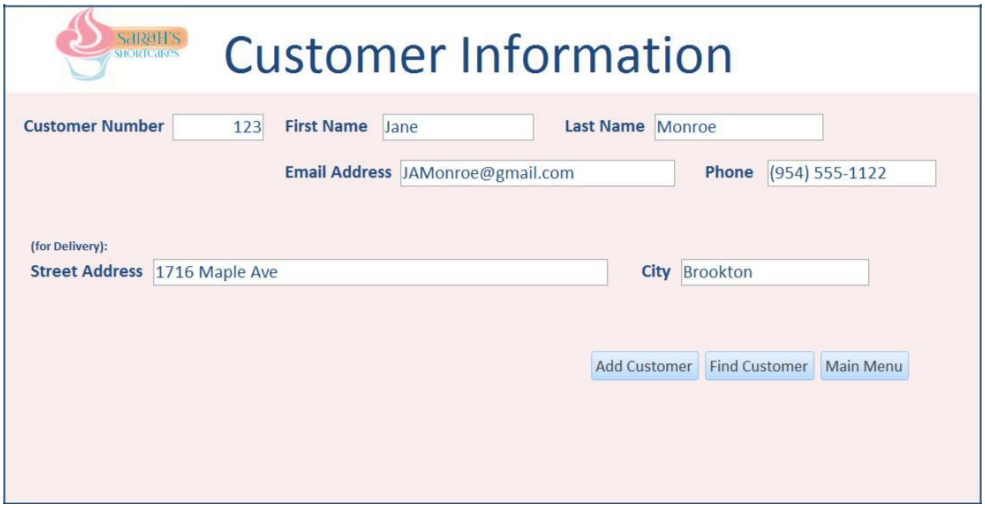
Use Case Diagram



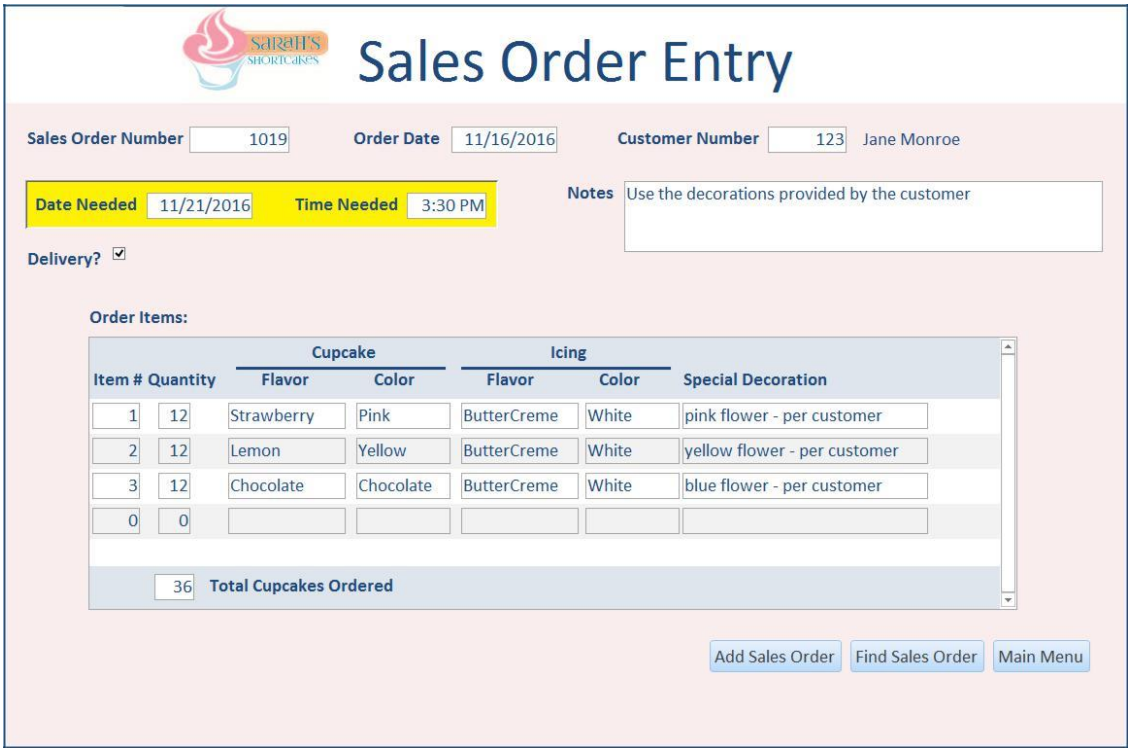
CLASS DIAGRAM

Example User Interface Designs

CUSTOMER INFORMATION DATA ENTRY FORM

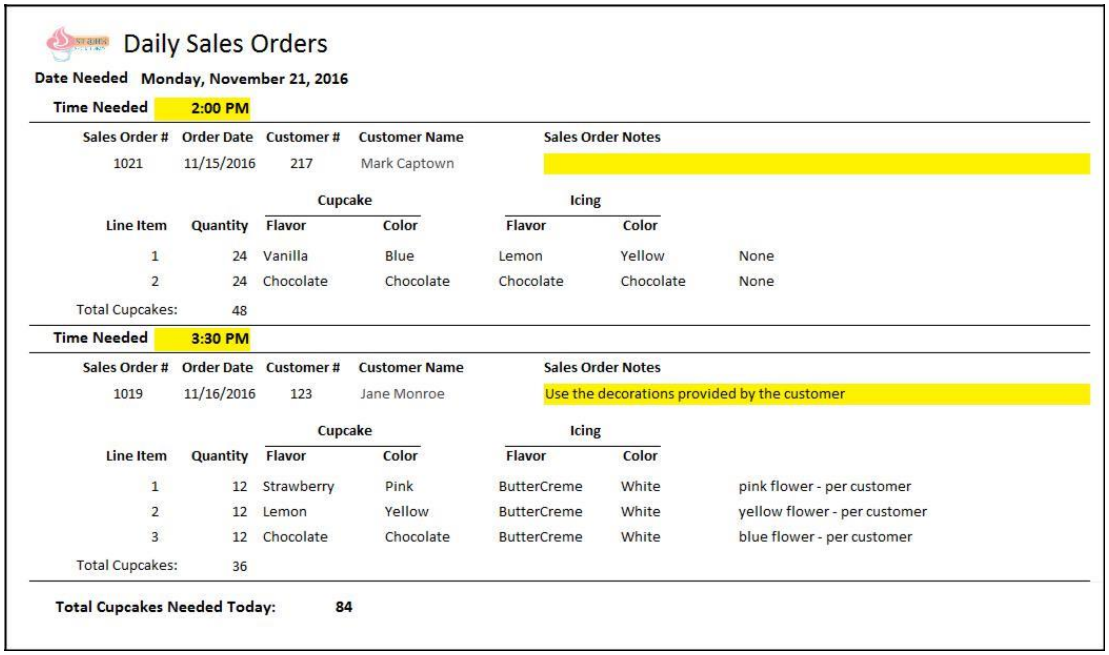


SALES ORDER ENTRY FORM



Example User Interface Designs

REPORT: DAILY SALES ORDERS



Daily Sales Orders

Date Needed Monday, November 21, 2016

Time Needed 2:00 PM

Sales Order #	Order Date	Customer #	Customer Name	Sales Order Notes
1021	11/15/2016	217	Mark Captown	

		Cupcake		Icing		
Line Item	Quantity	Flavor	Color	Flavor	Color	
1	24	Vanilla	Blue	Lemon	Yellow	None
2	24	Chocolate	Chocolate	Chocolate	Chocolate	None
Total Cupcakes:	48					

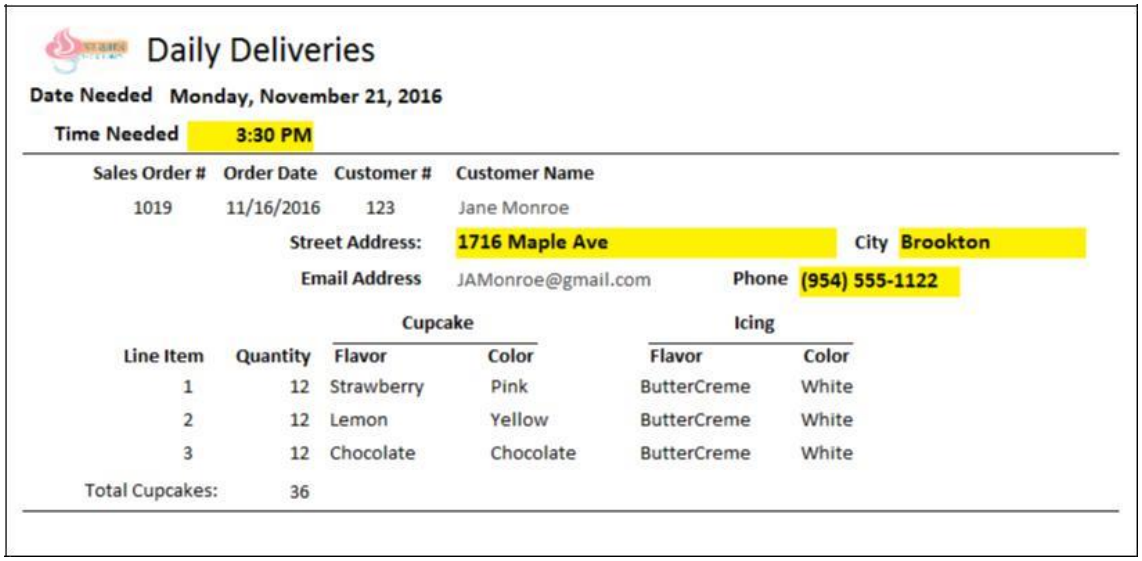
Time Needed 3:30 PM

Sales Order #	Order Date	Customer #	Customer Name	Sales Order Notes
1019	11/16/2016	123	Jane Monroe	Use the decorations provided by the customer

		Cupcake		Icing		
Line Item	Quantity	Flavor	Color	Flavor	Color	
1	12	Strawberry	Pink	ButterCreme	White	pink flower - per customer
2	12	Lemon	Yellow	ButterCreme	White	yellow flower - per customer
3	12	Chocolate	Chocolate	ButterCreme	White	blue flower - per customer
Total Cupcakes:	36					

Total Cupcakes Needed Today: 84

REPORT: DAILY DELIVERIES



Daily Deliveries

Date Needed Monday, November 21, 2016

Time Needed 3:30 PM

Sales Order #	Order Date	Customer #	Customer Name
1019	11/16/2016	123	Jane Monroe

Street Address: 1716 Maple Ave **City** Brookton

Email Address JAMonroe@gmail.com **Phone** (954) 555-1122

		Cupcake		Icing	
Line Item	Quantity	Flavor	Color	Flavor	Color
1	12	Strawberry	Pink	ButterCreme	White
2	12	Lemon	Yellow	ButterCreme	White
3	12	Chocolate	Chocolate	ButterCreme	White
Total Cupcakes:	36				