A SYSTEM ANALYSIS, DESIGN, AND DEVELOPMENT CASE STUDY: UDESIGN CUSTOM T-SHIRTS ORDER ENTRY SYSTEM

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CASE DESCRIPTION

The primary purpose of this case study is for Systems Analysis and Design, Systems Development, and Database courses. The primary learning objective is for students to integrate the knowledge they have gathered from class discussions and readings, and apply the knowledge to the development of a computer information systems solution for a small business. 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 case study of a small, custom t-shirt business and conduct the planning, analysis, and design phases of the System Development Life Cycle (SDLC), using either a traditional or object-oriented approach. Generally, approximately 30 minutes of class time is spent introducing the case specifics. As time permits, 1-2 hours of additional class time is allotted for students to work in their teams. However, the students will have to commit to several hours of outside class time to complete the case. 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, receives a call regarding an order he had placed with a local custom t-shirt shop. In the course of the conversation, he determines that the t-shirt shop could greatly benefit by using a computerized system to track customer orders. He discusses the idea with the students in the Systems Club. Dr. Waggoner brings his students to the shop when he picks up the order, and they start interviewing the owner about his requirements.

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 customer and order entry system for Udesign Custom T-Shirts. The interview notes and supporting documents help add a sense of reality.

METHODOLOGY

This case is based on the author's own 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 realistic opportunity for students to analyze, design, and develop a customer and order entry system for a small custom t-shirt shop. The scenario should be fairly understandable to most students, as t-shirts are generally a staple among college students, and many have been part of organizations that have designed and had printed their own t-shirts. 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 the author's systems analysis and design courses, he generally has students work in teams of 3-4 to complete a project of this size. The author introduces the project approximately halfway through the semester, after the class has 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, an additional requirement, particularly in a systems development/capstone course, 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 technique 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 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

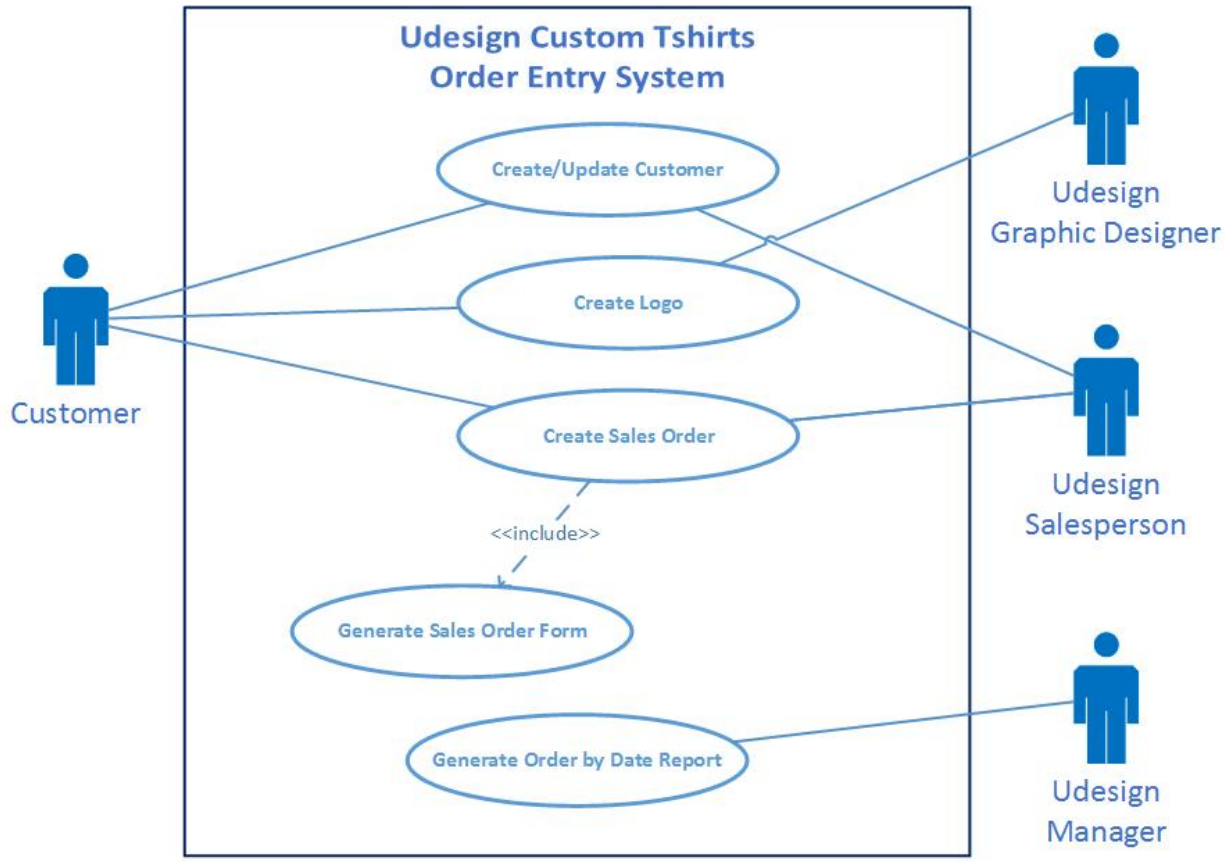
The suggested solution in the appendix is based on an object-oriented approach and includes a use case diagram (see Appendix A) and class diagram (see Appendix B), but the case can certainly be conducted using a traditional approach, wherein the students would develop entity relationship diagrams and data flow diagrams. In addition, example user interface designs are provided. Appendix C provides example data entry screens for Customer Data and Sales Order Entry. Appendices D and E provide example reports for Customer Sales Order and Daily Sales Orders to Complete, respectively.

CONCLUSION

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

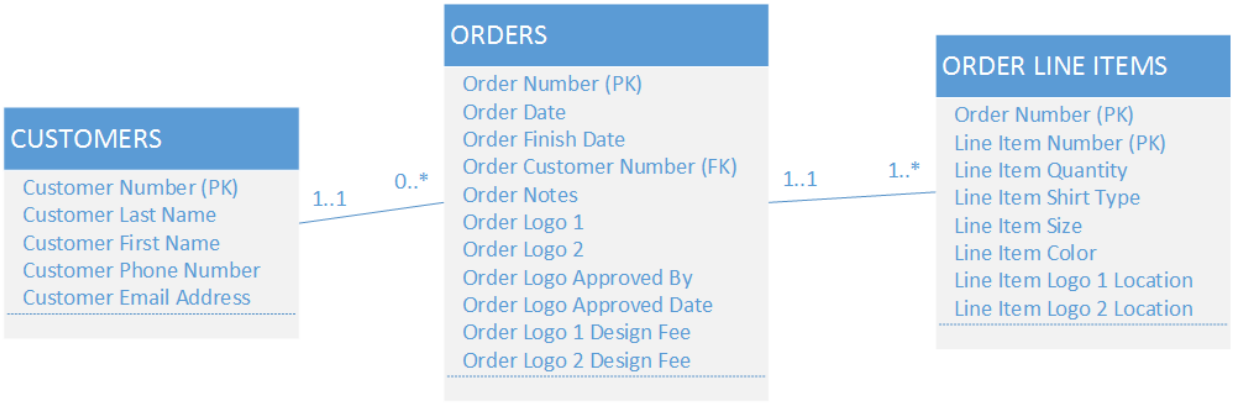
APPENDIX A

Use Case Diagram



APPENDIX B

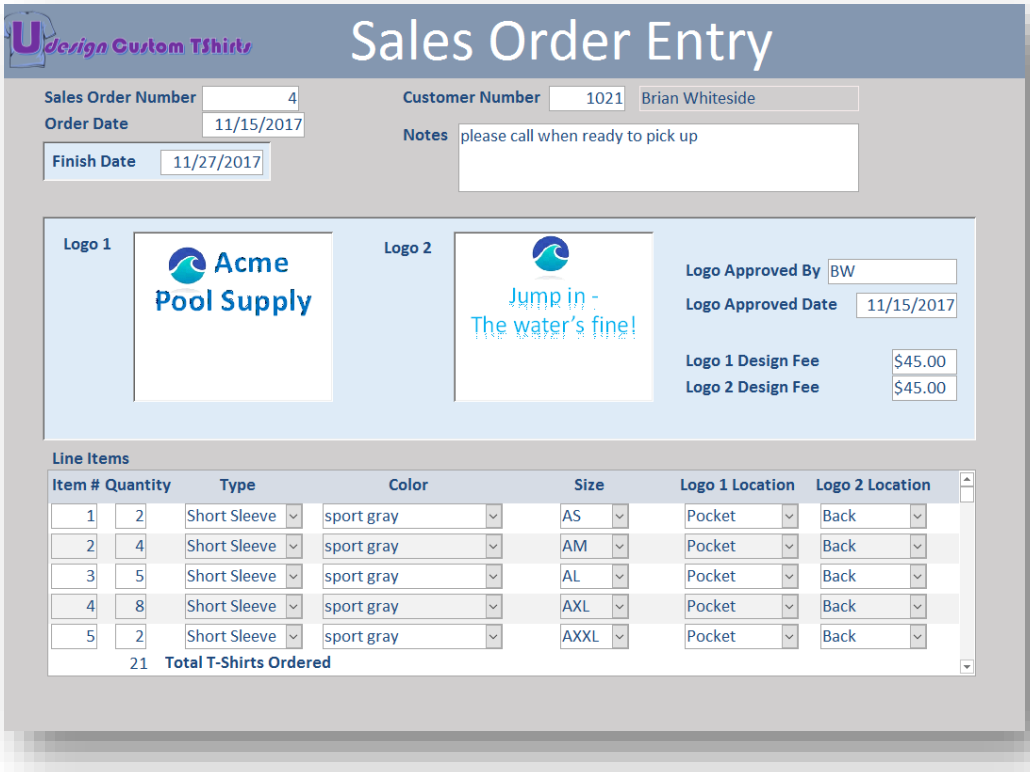
Class Diagram



APPENDIX C

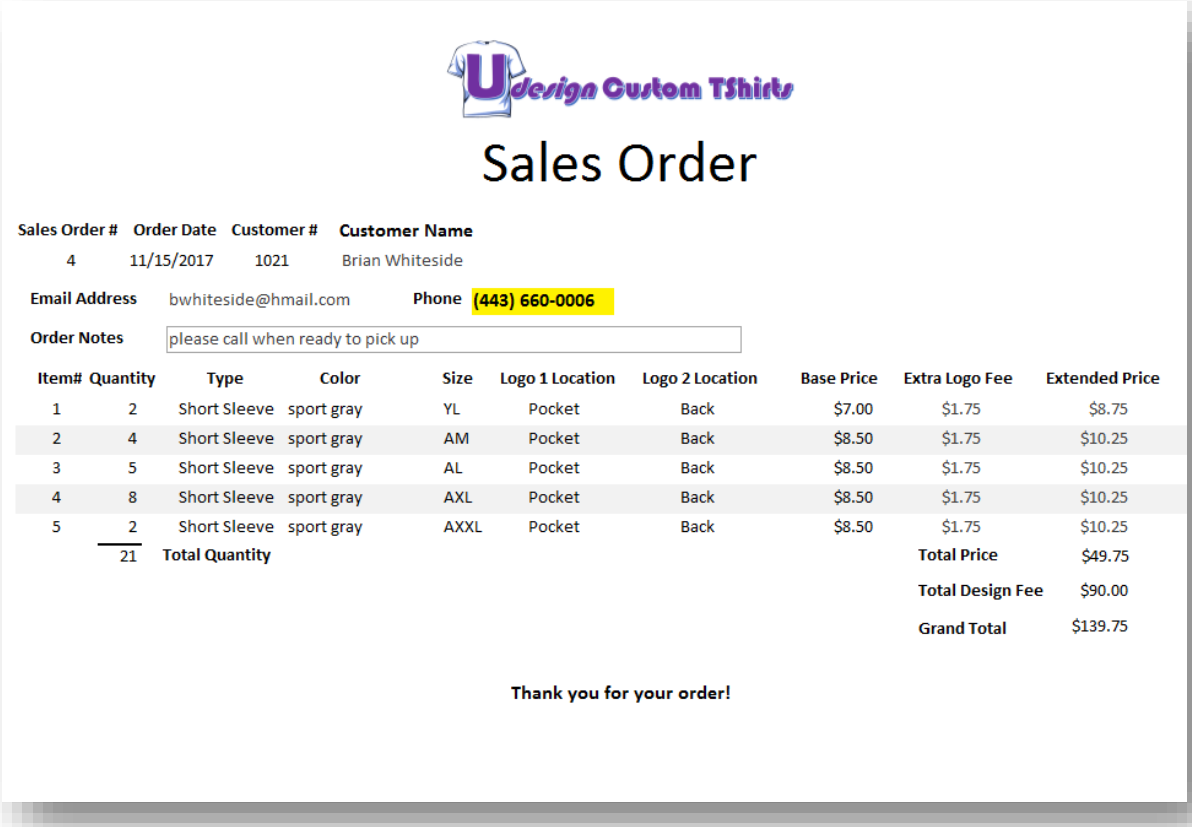
Customer Data Entry Screen (example)

Order Entry Screen (example)



APPENDIX D

Sales Order (example)



Udesign Custom TShirts

Sales Order

Sales Order #	Order Date	Customer #	Customer Name
4	11/15/2017	1021	Brian Whiteside

Email Address bwhiteside@hmail.com **Phone** (443) 660-0006

Order Notes please call when ready to pick up

Item#	Quantity	Type	Color	Size	Logo 1 Location	Logo 2 Location	Base Price	Extra Logo Fee	Extended Price
1	2	Short Sleeve	sport gray	YL	Pocket	Back	$7.00	$1.75	$8.75
2	4	Short Sleeve	sport gray	AM	Pocket	Back	$8.50	$1.75	$10.25
3	5	Short Sleeve	sport gray	AL	Pocket	Back	$8.50	$1.75	$10.25
4	8	Short Sleeve	sport gray	AXL	Pocket	Back	$8.50	$1.75	$10.25
5	2	Short Sleeve	sport gray	AXXL	Pocket	Back	$8.50	$1.75	$10.25
	21	Total Quantity						Total Price	$49.75
								Total Design Fee	$90.00
								Grand Total	$139.75

Thank you for your order!

APPENDIX E

Daily Sales Order Report (example)

Udesign Custom TShirts

Daily Orders to Complete

Monday, November 27, 2017

Sales Order #	Order Date	Customer #	Customer Name
4	11/15/2017	1021	Brian Whiteside

Email Address bwhiteside@hmail.com **Phone** (443) 660-0006

Order Notes please call when ready to pick up

Item#	Quantity	Type	Color	Size	Logo 1 Location	Logo 2 Location
1	2	Short Sleeve	sport gray	YL	Pocket	Back
2	4	Short Sleeve	sport gray	AM	Pocket	Back
3	5	Short Sleeve	sport gray	AL	Pocket	Back
4	8	Short Sleeve	sport gray	AXL	Pocket	Back
5	2	Short Sleeve	sport gray	AXXL	Pocket	Back
Total TShirts:	21					

Sales Order #	Order Date	Customer #	Customer Name
5	11/13/2017	2721	Jane Austen

Email Address JAAusten@bahoo.com **Phone** (644) 243-5551

Order Notes please sort by size

Item#	Quantity	Type	Color	Size	Logo 1 Location	Logo 2 Location
1	4	3/4 Sleeve	sunflower yellow	AS	Front	
2	6	3/4 Sleeve	sunflower yellow	AM	Front	
3	4	3/4 Sleeve	sunflower yellow	AL	Front	
Total TShirts:	14					