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 Project:CIS student organization. Dr. Waggoner brings his students to the shop when he picks up the order, and they start interviewing the owner about his requirements.

CASE

Dr. Thomas Waggoner's cell phone rang.

"Tom?" asked the caller, following Dr. Waggoner's greeting. "This is Ryan from Udesign Custom T-shirts. I just have a couple of questions about your order for the Project:CIS student organization."

"Hi, Ryan. Sure, what do you need?" responded Dr. Waggoner.

"First, did you say you wanted the Iris Blue or Ice Blue color for your t-shirts? Also, did you want the logo on the back or the front, and did you need 8 large t-shirts or 18?" asked Ryan.

"I thought you had written all those details down when I talked to you last week," answered Dr. Waggoner. "Let me see if I can find my notes. Did our order get misplaced?"

"Well, yes and no. To be honest, I didn't have anything to write with when I took your order, but I thought I could remember everything. I actually ended up forgetting about your order until this morning when I noticed the graphic file for your logo on my computer. I apologize, and I will put a rush on it, so you should have it by the end of the week."

"Ok, I guess it is a good thing you noticed the graphic file. We needed Iris Blue, the logo on the front, and there were 8 large, in addition to 6 medium, and 11 extra-large."

"Thanks!" said Ryan. "I need to figure out a better way to keep track of orders. Things are just so busy, and I can't find the time to get everything organized."

"Well, if you are able to get our t-shirts finished by the end of this week, I might be able to help you develop a more efficient way to keep track of your orders," offered Dr. Waggoner.

"That's a deal. What do you have in mind?" asked Ryan.

"I think some of the students in our Project:CIS organization should be able to develop an automated system which will help you with your customers and orders. I can ask them to meet with you when we pick up the t-shirts, so they can start to get an understanding of your business and the information you need to maintain."

"Sounds great – thanks, again!"

Dr. Waggoner met with the officers of Project:CIS later that week, and when they went to pick up their t-shirts, the students were ready to interview Ryan and start thinking of a system solution. After the meeting they compiled their notes and developed the following detailed requirements.

Udesign Custom T-Shirts: Detailed Requirements

When a customer wants to place a custom screen-printed t-shirt order, Udesign will take the customer's first and last name, phone number, and email address. For the purpose of this system, a unique customer number will also be needed. They will then start working with the customer to create a logo, or they can use a logo the customer has already designed. If Udesign creates the logo, they charge a design fee of $45.00. They will develop an initial sketch of a proposed logo, then make changes based on customer feedback. When the logo is approved by the customer, Udesign will start processing the t-shirt order. If the customer uses their own logo, they will provide a graphic file, usually in PDF or EPS format, and Udesign can then start processing the order. The system should be able to store the graphic file in the database.

The customer will indicate what type of t-shirt (short sleeve, long sleeve, three-quarter baseball style). They will also specify the color of t-shirt, the location of the logo (front, back, front pocket area). The logo can be in more than one position (e.g., large logo on back and small logo on the front pocket), and there may be one logo

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on the front and a different logo for the back. One logo printed on the t-shirt is included in the basic price. If two logos are requested, there is an additional $1.75 per shirt charge.

The customer will also specify the number of shirts needed of each size (Youth Small, Medium, Large; Adult Small, Medium, Large, Extra-Large, 2XL). The price of a youth t-shirt is $7.00, and the price of an adult t-shirt is $8.50. There needs to be a separate line-item representing each t-shirt size on each order (a one-to-many relationship).

The order will have an order number, order date, and order finish date. The total price of the order should be calculated and displayed on the sales order – a report which the system needs to generate for each order.

Appropriate and user-friendly data entry/edit user interfaces will need to be created. The system should generate a sales order for a specified order. An example of the current, paper-based sales order is provided in Appendix A. In addition, the system should provide a report of orders that need to be processed within a specified date range based on order finish date.

Dr. Waggoner explained to his analysis and design students what Udesign really needed was a database system which would maintain information about each custom order. The system should also generate daily reports on what orders need to be processed.

After gathering the detailed requirements for the system, Dr. Waggoner assigned the members of Project:CIS the requirements shown below. The students currently taking systems analysis and design began developing data and process models and designing the user interfaces. To aid the students in the development of users interfaces, U-Design's logo is included in Appendix B. As the semester progressed and the analysis and design phases were completed, Dr. Waggoner asked the Project:CIS students who were enrolled in the system development class to use the specifications and start creating the working system. By the end of the semester the system was completed and implemented, and Udesign Custom T-Shirts was able to keep track of their orders much more efficiently.

Requirements for Systems Analysis and Design:

1. Prepare a system proposal that includes an executive summary, the requirements of the system, and identification of your team members.
2. Develop appropriate process models (Use Case Descriptions/Diagram or Data Flow Diagrams – context level, level 0, level 1) per your professor's instructions.
3. Develop the appropriate data model (Class Diagram or Entity-Relationship Diagram) per your professor's instructions.
4. Develop preliminary screen and report designs for each user interface identified above.
5. Prepare a one-page "pre-implementation review" outlining lessons learned - what went right and what went wrong on this project.

Requirements for Systems Development:

1. Complete the above requirements, or refer to the packet of materials provided by your professor.
2. Using Microsoft Access, Visual Basic, or other appropriate development tool, develop a comprehensive, user-friendly, working system that will meet the requirements of Udesign Custom T-Shirts.
3. Prepare a user manual describing how to use the system.
4. Prepare a one-page "post-implementation review" outlining lessons learned – what went right and what went wrong on this project.

Video Resources Describing the Custom Screen Printing process:
https://www.youtube.com/watch?v=pOtL0E52qkI
https://www.youtube.com/watch?v=9z3zdV-z34g
https://www.youtube.com/watch?v=DVDEXMMa424

APPENDIX A

Sales Order

UDesign Custom T-Shirts					
Sales Order					
Sales Order #	2331	**SO Date**	09-23-XX	**Date Needed**	09-30-XX
Customer Name	Brian Whiteside		**Phone**	443-660-0006	
Email Address	bwhiteside@hmail.com		**Color**	Iris Blue	
Shirt Type	Short sleeve		**Logo**	(a) pocket, (b) back	
Quantity	**Size**	**Base Price**	**Extra Charge**	**Price Per Unit**	**Ext. Price**
3	YL	7.00	1.75	8.75	26.25
3	AS	8.50	1.75	10.25	30.75
7	AM	8.50	1.75	10.25	71.75
10	AL	8.50	1.75	10.25	102.50
8	AXL	8.50	1.75	10.25	82.00
Design Fee (if applicable)					
Design Fee (a) pocket logo				45.00	45.00
Design Fee (b) back logo				45.00	45.00
Total Cost					$403.25

APPENDIX B

Udesign Custom TShirts Logo