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# Reinforcing Systems Analysis and Design Process Learning

James J. Pomykalski  
pomykalski@susqu.edu  
Accounting and Information Systems  
Susquehanna University  
Selinsgrove, PA 17870 USA

## Abstract

Reinforcing the value of using a consistent systems development process and developing key models in the design and development of an Information System—in this case a database—are key to a students' understanding of any systems development project. In this paper, the use of a case study is described involving a small consulting firm (Mallach, 2006) within an IS 2010.6 Systems Analysis & Design course. The case study points out what can go wrong when a "haphazard" development process, especially one without planning, is utilized to develop a database system. The evolution of the writing assignments associated with case study are also highlighted.

**Keywords:** Systems Analysis and Design, Development Process, IS 2010 Model Curriculum, Case study, Writing assignments

## 1. INTRODUCTION

Reinforcing the value of using a consistent systems development process and developing key models in the design and development of an Information System—in this case a database—are key to students' understanding of any systems development project. The instructor must find material that will engage and interest the student while also meeting the learning objectives set forth for the course. In this paper, the use of a case study involving a small consulting firm (Mallach, 2006), the Balmoral Group, Inc., is described. The Balmoral case—as it will be referred to throughout this paper—is utilized as a "hook" to enable the instructor to meet the objective of leading students to understand reasons for failures within development projects. In addition, students see the need for the application for a full consistent process and the importance of particular models within the development process.

According to Ives, Valacich, & Watson (2002) every business student should have an understanding of "How organizations develop, acquire and implement information systems" (Ives, Valacich, & Watson, 2002, p. 497). The

Balmoral case (Mallach, 2006) provides students a means by which to compare and contrast a "real-world" information system development project (in this case a database) and the theoretical or "textbook" method for the development of an information system. In addition, the case reinforces the need for and the proper use of specific models in the process of developing an information system detailed in the course.

In this paper, the focus is on the incorporation of a case study that introduces students to a database development effort that fails to meet the needs of the end users. The ad hoc, "haphazard" systems development steps taken in the case study are contrasted with course suggested methodology to get students to understand the value of the major development models. The author uses both pre- and post-case writing assignments to further the student learning experience. This paper is structured as follows.

In section two, the use of case studies as pedagogy is discussed, especially in IS courses. Section three briefly summarizes the essentials of the case that are pertinent to the course.

Section four discusses the primary models used in the Systems Analysis & Design course—IS 2010.6 from the 2010 Model Curriculum (Topi, et al., 2010)—that are key to the development of an effective database system. Section five discusses the progression of the course assignments. The case has been used since Fall 2008 and the number and nature of the assignments has evolved; currently there are three assignments used in conjunction with this case study. In section six, the outcomes that are desired in the final analysis are presented. Section seven summarizes the course impacts and highlights the distinguishing features of the Balmoral case (Mallach, 2006) to stress the importance of particular models in the development of an information system. This section also addresses some of the accrued benefits of including this case within the theory and practice course. Future work is also discussed in this section.

## 2. CASE STUDIES AND IS PEDAGOGY

"Case studies cut across a range of companies, industries, and situations, providing an exposure far greater than what students are likely to experience otherwise." (Corey, 1996, p. 1). The use of case studies in the pedagogy of many IS educators is important to help students learn and appreciate the realities of IS-related decision-making situations. Incorporation of a case study allows instructors to *guide* student learning rather than *enforce* learning (Myers & James, 1993).

In addition, "Cases can allow students to develop high-order reasoning skills, bring real world examples into the classroom, allow students to learn by doing, bring organizational impacts, social values, and ethical issues to the forefront of discussion, and include realistic content, objectives and knowledge transfer." (Hackney, 2003, p. 229). Finally, case studies can assist students to enhance their teamwork, problem solving, and oral and written communication skills that are highly valued by potential employers (Alsop, 2004; Cappel, 2001).

Case studies allow an instructor the opportunity to assist students in gaining critical skills (problem solving, communication, etc.) in a number of different ways through the preparation and presentation of the case study. Many authors present guidelines for effective case study usage in the classroom. These

guidelines state that the three most important things that both instructors and students can do is "Prepare, Prepare, Prepare". Assuming that the instructor has prepared the case study, including creating learning objectives, the students must also prepare.

Student preparation can vary widely, and guidelines for student preparation do exist (Corey, 1996; Edge, 1982; Ronstandt, 1993). The first activity the students must engage in is a close reading of the case; in fact many authors (Corey, 1996; Edge, 1982; Ronstandt, 1993) suggest first reading the case quickly and then rereading the case more carefully, with a focus on key questions. After this careful examination of the case, students should be able to identify the key issues in the case, the major players in the case, and a list of facts related to the key issues. In order to assess the preparation of the students for the case study work and discussion, faculty can prepare a writing assignment to guide the student learning. Writing assignments can be created both pre-case as well as a post-case to ensure the maximum learning has been derived from the case study.

Pre-case assignments can range from a simple list of "thought" questions to a formal written analysis of the case integrating course content and key issues raised in the case. Post-case assignments can also come in many forms but a formal analysis document is most often called for in order to develop the students' analytical thinking and problems solving skills (Corey, 1996). Formal analysis assignments need to include a good problem definition, a breakdown of the issues described in the case, analysis of the important issues, a marshaling of the relevant facts, and conclusions with formal recommendations (Corey, 1996). It is up to the individual instructor whether these assignments are graded or un-graded, however, formal feedback on these written assignments guide student understanding and enhance critical thinking skills (Bean, 2011).

In this paper, discussion of the Balmoral case introduces students to a database development effort that fails to meet the needs of the end users. The systems development steps taken in the case study are contrasted with course suggested methodology to get students to understand the value of the major development models. Currently, two pre-case and one final post-case writing assignment are utilized to further the student learning experience. In the

next section, the Balmoral case is summarized and the important aspects with regard to the Systems Analysis & Design process are highlighted.

### 3. BALMORAL CASE OVERVIEW

The Balmoral case “describes the development of a database system used to track and analyze press comments by experts on the information technology industry” (Mallach, 2006, p. 24). The Balmoral Group Inc. is a small consulting firm, specializing in clients in the Information and Communication Technology (ITC) field. The database “was developed in a haphazard fashion, without the benefit of professional developers, originally based on a loosely organized collection of data assembled by a staff member, with little visibility into its ultimate uses” (Mallach, 2006, p. 24). The non-systematic approach resulted in a system that was inefficiently developed and failed to meet the needs of the ultimate end users.

The initial creation of the “database system” was begun by the Balmoral CEO, Lawrence Ackerman. Ackerman had expertise in “conducting multi-client studies in which analysts told him what they needed in terms of support from [ITC] vendors, and rated vendors based on how well they provided this support” (Mallach, 2006, p. 25). He therefore “bypassed conventional methods for requirements determination, instead, he intuited system requirements from his [consulting] experience” (Mallach, 2006, p. 28). He began the database development by simply collecting analyst comments in an Excel spreadsheet, in addition, he sought comments from his colleagues as well (Mallach, 2006).

Ackerman skipped many of the major planning activities—establishing project scope, goals, schedule, and budget—that are necessary for successful systems development projects. Ackerman also failed to discuss the project with potential clients (ITC vendors) to assess their needs for such a tool.

Another serious flaw in the development of the database was in the organization and documentation of the system’s data. An entity-relationship diagram (ERD) was developed as part of the development of the database, however, the entity-relationship diagrams (actually three versions were created) were developed after the tables of the database were

created. None of these ERDs were used as an input to the design process but focused on documenting the table structure; leading to problems with normalization and missing entities.

The case discusses the development of three iterations of the database application in order to meet the needs of the user community (the ITC vendors). Enhancements, in data input forms and reporting, were made in subsequent versions as well as modifications due to user and staff feedback.

In the next section, the particular focus of the course is presented in order to understand how the Balmoral case is utilized as a key course learning components.

### 4. APPROACH IN SYSTEMS ANALYSIS & DESIGN COURSE

This section describes the elements of the Systems Analysis and Design course taught at Susquehanna University. The course relies heavily on the model-driven development and analysis approach described in Whitten & Bentley (2007). The methodology, and the course, focuses on the construction of purposeful models that document the development of the major system elements.

In particular, the case analysis focuses on five major Systems Analysis and Design models: the Systems Service Request (SSR), Statement of Work (SoW), functional requirements, entity-relationship diagram (ERD) and database application.

The development process starts with the creation of the systems service request; this model is described in both (Whitten & Bentley, 2007) and (Hoffer, George, & Valacich, 2014). The SSR is used to describe (from the perspective of the system user) the problem encountered, thus implicitly identifying the system user. The SSR is used to assess the project viability and operational feasibility throughout the systems development process.

The next major model is the Statement of Work (Whitten & Bentley, 2007; Hoffer, et al., 2014). The SoW provides a summary of the goals, objectives, deliverables, and schedule for the information systems development work. This model is completed at the end of the planning stage and serves as a set of agreed upon

expectations, between the system owners and the development team, as to what the system development will accomplish.

The functional requirements specify the particular tasks or activities that the information systems must perform. These requirements are at the heart of any systems development project. Formal, written requirements are created through multiple interactions between the systems analyst and the systems users.

The entity-relationship diagram (ERD) is a "detailed, logical representation of the data for an organization or for a business area" (Hoffer, et al., 2014, p. 262). The ERD is key to ensuring data contained in the information system, in this case a database, is correct and that correct relationships and cardinality have been established. The ERD is developed within the systems analysis stage and is used to design efficient tables within the database application.

The objects of a database application include the tables, queries, forms, and reports. The tables provide the foundation of the database by storing the necessary data. The queries are used to extract the data necessary to answer questions posed by the system users. The forms and reports serve as the elements of the user interface; the forms being used for data input and editing while the reports serve as a final output.

In the next section, we discuss the use of the Balmoral case in the Systems Analysis and Design course (IS 2010.6) through the two pre-case assignments and the final post-case analysis assignment.

## 5. ASSIGNMENT PROGRESSION

The Balmoral case (Mallach, 2006) has been used in the Systems Analysis and Design course since the Fall 2008 semester. While the expectation for the depth of the analysis has changed, the two primary goals for the use of the case have remained the same.

**GOAL 1:** To have students demonstrate an understanding the systems analysis and design process and the role of the primary models within this process.

**GOAL 2:** To have students understand the ramifications of bypassing and/or mis-using key

models within the systems analysis and design process; especially key planning models.

Currently, the course contains two pre-case and one post-case writing assignment. Appendix 1 shows the three assignments. The CS1 assignment was added in Spring 2013, the CS2 traces back to Fall 2009; both of these assignments serve as pre-case assignments. The CS3 deliverable was originally created in Fall 2008 and has gone through revisions based on student performance and understanding.

The CS1 assignment is the most recent addition—added in Spring 2013—and consists of a series of ten short answer questions designed to have answers extracted directly from the case. These concepts are fundamental to the understanding of the Balmoral case and the student's success in subsequent deliverables. The CS1 assignment acts as a basic fact-finding endeavor and forces students to examine the case through a low stakes, graded assignment (Bean, 2011).

The CS2 assignment was added in Fall 2009. Prior to Fall 2009, only one post-case assignment was required. This was ineffective because few students read the case until the final assignment was due (at the end of the semester).

The CS2 deliverable was created to "force" the students to prepare the case by reading and drawing on a basic understanding of the issues in the case. In the initial CS2 assignment, the students were asked to:

1. Identify key players in the case and their roles in the case,
2. Describe the use (mis-use) of the functional requirements, and
3. Simply, identify the use (or non-use) of key models described in section four..

The case was then referenced, when appropriate, at various times throughout the course to attempt to reinforce the material. At the end of the semester a final assignment similar to the one given in Fall 2008 was presented. This assignment did not change substantially from the Fall 2008 assignment.

In the Fall 2008 and Spring 2009 semesters, the case was simply introduced to students as a final

individual assignment; this assignment is seen in appendix 3. Students were expected to read the case at the beginning of the semester and the case was referred to during the semester, however, their graded assignment (Appendix 2) was given only at the end of semester. Since there was no early semester assignment given, there was no incentive for reading and preparing the case before the final assignment was due and therefore students work on this assignment was disappointing.

In the final assignment (CS3), the students were asked to focus their analysis on the models discussed in section four through one of two scenarios:

- i. In the first scenario, Balmoral Group did not use the particular model. Your discussion should focus on the outcomes of that decision. You should deduce as to how the outcome might have been different had they used the model (this is where the purpose of the model comes in).
- ii. In the second scenario, Balmoral Group used the model. The major question for this scenario is did they use the model properly. Your discussion should focus on how the model was used versus how the model should be used; the ramifications of the actual use should be discussed.

In this case, the two initial planning models, the systems service request and the statement of work, were not used and the functional requirements were under-developed; “[Ackerman] intuited system requirements from his experience...” (Mallach, 2006, p. 28). In addition, the ERD was developed to document the table design, not as an input to the design and development of the tables. See Appendix 2 for the initial case assignment.

A minor upgrade to the assignment directions was given in Fall 2010. A more extensive outline of the paper was given and this included clearer and more focused directions on what each section of the paper should include. In this new version the students were asked: (1) to state what they might do differently and (2) solicited a more thoughtful formulation of lessons learned.

## 6. DESIRED LEARNING OUTCOMES

The Balmoral case highlights three long standing issues in Systems Analysis and Design, namely user involvement, requirements determination (McLeod & MacDonell, 2011), and the development of data models like ERDs. Despite the changing nature of databases and design methods these issues are still at the forefront of modern Systems Analysis and Design efforts.

The Balmoral case illustrates the eventual development of a “functioning” database system using a development process that skips key steps. The primary motivation for using this case is to compare and contrast how theoretical database development (as shown in the course) can differ from “real-world” development. The “haphazard” method used in the Balmoral case serves to illustrate how inefficient development efforts can be if key steps are bypassed. In particular, the final assignment in the course focuses the students’ attention on the implications of not following the development process more closely.

The students are asked to state the implications of not using the system service request and the statement of work. These two planning models, as described and discussed extensively in class, form the basis for problem formulation, end user identification and engagement, goal and expectation setting, and schedule development. Balmoral Group, throughout the development of the database, lacked all of these things and it led to inefficient use of resources (staff time) and a dragged out development timeline (Mallach, 2006).

A similar discussion is expected in regard to the functional requirements. The development of a written set of functional requirements is a key element in any software development project. Since [Ackerman] “intuited system requirements from his experience...” (Mallach, 2006, p. 28) and never formally wrote the requirements down, no effort was made to see if these requirements captured the needs of the system user community. Without the interaction of the user community, a solid foundation for the development effort was missing and the project was likely to fall short of satisfying the system users.

While students know that Balmoral created the entity-relationship diagram from reading the case, many fail to understand why this model is

used improperly. After the development of the first version of the database, Balmoral implemented the ERD as an "after-the-fact description of the database" (Mallach, 2006, p. 28). The case outlines the issues in the development of the tables, but what students need to recognize is that many of these problems could and would have been avoided by creating the ERD as part of the development effort.

Lastly, students are asked to document the changes made from the original version of the database in the final two iterations. Many can identify the development of forms and reports based on the feedback given by select users and staff members.

## 7. CONCLUSIONS/FUTURE DEVELOPMENT

The Balmoral case (Mallach, 2006) has served as an effective learning tool for the understanding of the role played by the major models in the systems analysis and design process. The goals of the assignment have generally been met by the majority of students in the course and, in general, the students have given the case study assignment a solid evaluation. The problem is that many students still do not understand the significance of skipping major development steps.

However, as can be expected, there are still students who struggle with the case study deliverables and the course in general has been revised in order to increasing the overall learning. In addition, further work to integrate and incorporate the case into the daily course activities is necessary for this case to be deemed widely successful.

In the future, more discussion is planned around the models, their use, and the implications for their non-use in order to increase the critical thinking levels of the students and their understanding of the systems analysis and design process. The key issues of user involvement, requirements determination, and data modeling need to highlighted.

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## Appendix 1

### CS1: Case Study A Database Project in a Small Company (or How the Real World Doesn't Always Follow the Book)

**Due:** Tuesday, January 22, 2013 at 8PM. Reviews by Monday, January 21, 2013 at 5PM.

**Directions:**

1. Read the case study:

Mallach, Efrem (2006) "A Database Project in a Small Company (or How the Real World Doesn't Always Follow the Book)." Journal of Cases on Information Technology 8(3) pp.24-40 which is found on Blackboard.

2. Answer the questions below; most of these questions will only require a short answer (less than 50 words).

**Overview of Case Study:** The case study describes the attempted development of a database application by the Balmoral Consulting Company. As you will see through the semester the Balmoral personnel made many system development process errors in the creation of the database system which led to problems in the functionality and usability of the final system. This case study highlights the need for the use of a consistent and verifiable development process. The case study used in this assignment and referred to throughout the semester. A final comprehensive assignment using the case will conclude the course.

**Question 1:** Describe the purpose of the database system described in this case (p. 24)

**Question 2:** Describe an industry analyst (p. 24-27)

**Question 3:** Describe the specialty of the Balmoral Group, Inc. (p. 24-27)

**Question 4:** Describe the Balmoral Group's initial offerings (p. 24-27)

**Question 5:** Describe the earliest attempt at creating the elements for the database (p. 27-28)

**Question 6:** Describe the initial review of the database elements (p. 27-28)

**Question 7:** Describe the process Ackerman used for determining the system requirements (p. 27-28)

**Question 8:** Describe the origin of the database deficiencies (p. 30-31)

**Question 9:** Describe the initial client input (p. 30-31)

**Question 10:** Which of the four challenges/problems facing Balmoral in 2003 is most important and why? (p. 38)

**Grading:** Each of the above questions will be graded on a 0-3 scale.

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**CS2: Case Study**  
**A Database Project in a Small Company**  
**(or How the Real World Doesn't Always Follow the Book)**

**Due:** Tuesday, January 29, 2013 at 8PM. Reviews by Monday, January 28, 2013 at 5PM.

**Directions:**

3. Read the case study:

Mallach, Efreem (2006) "A Database Project in a Small Company (or How the Real World Doesn't Always Follow the Book)." Journal of Cases on Information Technology 8(3) pp.24-40. which is found on Blackboard.

4. Create the deliverable described below.

**Overview of Case Study:** The case study describes the attempted development of a database application by the Balmoral Consulting Company. As you will see through the semester the Balmoral personnel made many system development process errors in the creation of the database system which led to problems in the functionality and usability of the final system. This case study highlights the need for the use of a consistent and verifiable development process. The case study used in this assignment and referred to throughout the semester. A final comprehensive assignment using the case will conclude the course.

**Deliverable:** You are to create a narrative discussion that addresses each of the part listed below. The questions below are designed to guide your analysis of the case study that we will use his term. The questions are developed to ensure that you have a basic understanding of the case, and that you can map the particular models described in the Work Breakdown Structure to models mentioned in the case. Your deliverable must address the questions fully in order to gain full credit.

- Part 1. **The Who:** In 250 words or less, identify the project team. Describe the business stakeholders, systems analysts, project managers, and technical stakeholders, by name and/or position, involved in this development effort. Be specific by using names of individuals where available.
- Part 2. **The What:** Describe the primary purpose for the development of the database application; state what problem is being attempted to be solved. The functional requirements are developed to document all of the activities and functions of the Information System—in this case a database—must perform in order to be deemed acceptable to the end users. In 300 words or less, describe how the requirements of the database in the case study are discovered, defined, and developed.
- Part 3. **The Why:** Using the tutorial entitled "Choose between Access and Excel", this can be accessed from Blackboard, discuss (in 150 words or less) at least two reasons why Access would have been a better choice for the development of the initial application.
- Part 4. **The How:** Using the Work Breakdown Structure that was distributed in class, describe the models discussed in the case study. For each of the models that are discussed briefly describe the development and use of the model from the case. If the model is not discussed in the case, then you can list the model and state that it was not used by the technical stakeholders.

**Grading:** The grading rubric is given on the next page.



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**CS3: Case Study**  
**A Database Project in a Small Company**  
**(or How the Real World Doesn't Always Follow the Book)**

**Due:** Tuesday, April 16, 2013 NLT 8PM. Review by Monday, April 15<sup>th</sup> at 12PM.

**Directions:**

1. Re-read the case study: A Database Project in a Small Company (or How the Real World Doesn't Always Follow the Book) found on Blackboard. This is the same case study that you read for CS1 at the beginning of the semester.
2. Create the deliverable described below.

**Deliverable:** A written analysis that compares and contrasts the use of the models listed below as we discussed in class (theoretical) with the use of the models described in the case (practical). The models you are to concentrate on are:

- Systems Service Request
- Statement of Work
- Functional Requirements
- Entity-Relationship Diagram
- Database Application (Discussed as tables, forms, and reports)

In particular, you are to describe for each of these models listed above:

1. their use and purpose in the development of a database (as presented as part of the class),
2. how the model was used (or not used) in the development of the database application described in the case. The focus of your discussion should be twofold. First on the lack of use of the planning models (namely the SSR and the SoW) and the Functional Requirements. Second, on the creation of the multiple versions (prototypes) for the ERD and the multiple versions of the Balmoral database application.

The paper should be structured by model in the order in which they are used in the model-driven development process. In other words, discuss the SSR first, then the SoW, and so on. The bulk of your effort should be focused on the development of the ERD and the database application.

The conclusion of your paper should be in two parts:

1. a brief analysis of what you would have done differently in the development of the database in the case—this should not be that you would have hired an IT person or used the models, and
2. a description of a least three “*thoughtful*” lessons that you learned from analyzing the case.

You may use any outside resource(s) you find to help you answer these questions above. Please note that this does not mean you may plagiarize.

**Proposed Outline:** A suggested outline for your written analysis is presented below. Please note that this is a suggested outline and if you believe you have a better approach to present the analysis, by all means, use your approach.

2. Introduction
  - a. Describe the general process of Systems Analysis and Design and how the listed models fit into the Systems Analysis and Design process. You should not state the purpose of the models but only how they are used.
3. Discussion of the problem faced by the company (technical stakeholders) in the case. In other words, why is the system being built; what problem does it solve.

NOTE : The technical stakeholders in this case study are members of the Balmoral Group, Inc.

4. State the intended purpose and audience for the proposed system.
5. Discuss the approach taken to develop the system. You need to focus on the process of development and not the people
6. Discuss the use or lack of use of the Systems Analysis and Design listed models; all other models in the SDLC are irrelevant and extensive discussion of unlisted models will result in a point deduction for being verbose.
  - a. This section is the major part of your work and one of two scenarios are possible.
    - i. In the first scenario, Balmoral Group did not use the model. Your discussion should focus on the outcomes of that decision. You should deduce as to how the outcome might have been different had they used the model (this is where the purpose of the model comes in).
    - ii. In the second scenario, Balmoral Group used the model. The major question for this scenario is did they use the model properly. Your discussion should focus on how the model was used versus how the model should be used; the ramifications of the actual use should be discussed.
7. Discuss what you would have done differently.
8. Presentation of three "*thoughtful*" lessons learned

Please remember to use:

1. Citations for material that is not from the case itself (that is items from the book or class notes),
2. Headings for the various sections in order to make the paper better organized and readable.

Generally, this assignment will range from 2100-3000 words.

**Grading:** Before submitting your final work, please review the grading rubric below to ensure maximum adherence to grading criteria.

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## Appendix 2

### IA6: Case Study A Database Project in a Small Company (or How the Real World Doesn't Always Follow the Book)

**Due:** Monday, November 23, 2009.

**Directions:**

1. Re-read the case study: A Database Project in a Small Company (or How the Real World Doesn't Always Follow the Book) found on Blackboard. This is the same case study that you read for IA1.
2. Create the deliverable described below.

**Deliverable:** A written analysis that compares and contrasts the use of the models in the model-driven process we discussed in class (theoretical) with the use of the models described in the case (practical). The models you will concentrate on are:

- Systems Service Request
- Statement of Work
- Functional Requirements
- Entity-Relationship Diagram
- Evolutionary Prototypes
- Tables, Forms, and Reports

In particular, you are to describe for each of these models listed above:

1. discuss their use and purpose in the development of a database (as presented in class),
2. describe how the model was used (or not used) in the development of the database application described in the case. The focus of your discussion should be on the creation of the multiple versions (prototypes) for the ERD and the tables, forms, and reports.

The paper should be structured by model. In other words, discuss the SSR first, then the SoW, and so on. The bulk of your effort should be focused on the development of the ERD and the tables, forms, and reports.

The conclusion of your paper should be in two parts:

1. a brief analysis of what you would have done differently in the development of the database in the case, and
2. a description of a least three lessons learned from reading and analyzing the case.

You may use any outside resource(s) you find to help you answer these questions above. Please note that this does not mean you may plagiarize.

**Proposed Outline:** Your written analysis might want to follow the outline suggested below. Please note that this is a suggested outline and if you believe you have a better approach to present the analysis, by all means, use your approach.

1. Introduction

- a. Describe the general process of Systems Analysis and Design and how the listed models fit into the Systems Analysis and Design process. You should not state the purpose of the models but only how they are used.
2. Discussion of the problem faced by the company in the case.
  - a. Note: The main company in this case study is the Balmoral Group, Inc.
3. Discussion of the approach taken to develop the system
4. Discussion of the use, or lack of use, of the Systems Analysis and Design listed models; all other models in the SDLC are irrelevant a discussion of these models will result in a point deduction for not being concise.
  - a. This should be the major part of your work. You should discuss how Balmoral Group used each model (or how they did not use the model) and the ramifications of their use. If they did not use the model what were the outcomes of that decision and how the outcome might have been different had they used the model (this is where the purpose of the model comes in). If they did use the model, did they use it properly. Again this discussion should focus on how the outcome might have been different had they used the model properly.
5. Conclusions and Lessons Learned

Please remember to use citations for material that is not from the case itself (that is items from the book or class notes).

**Grading:**

Before submitting your final work, please review the grading rubric below to ensure maximum adherence to grading criteria.