



King Saud University
College of Computer and Information Sciences
Information Technology Department

Guide for preparing Project-2 documentation

Document prepared for

IT 497: Graduation projects- Part 2

Version: 3

Last update: November 2011

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1. Introduction

The student groups must perform a more comprehensive analysis, design and testing of the topic area and write a final report. This process is incremental and should be conducted in conjunction with the supervisor. The group must submit their final report during the final exam week. By the end of part-2 of the project, and prior to examination groups are required to submit the following:

- Project report (printed hardcopy) (5 copies)¹
- User Manual (5 copies)
- Project CD (5 copies) should be:
 - Properly labeled with project name, semester, year, supervisor, and students.
 - Contain a softcopy of your report and the user manual
 - Contain all software source code

¹Please note that the number of copies may change each semester. You should check with the Graduation Projects Coordinator about the number of copies required

- Contain a customer's release (executable)

After successful examination, you should submit the formal copy of your work to be kept in our department library for future reference. This copy should include:

- Project Report (printed fancy copy) (1 copy)
- User Manual (printed fancy copy)(1 copy)
- Project CD (1 copy) should be:
 - Properly labeled with project name, semester, year, supervisor, and students.
 - Contain a softcopy of your project report and user manual
 - Contain all software source code
 - Contain a customer's release (executable)
 - Included in a side pocket of the User Manual

2. Arrangement of Project-2 Report Contents

The project report should conform to the following outline unless modified by the graduate project evaluation committee. The sequence in which the project report material should be arranged and bound as follows:

1. Cover Page: Use the template of the Cover page of the project report provided in the project-2 guide.
2. Title Page and Student Declaration: Use the template of the Title page of the project report provided in the project-2 guide. Students should include their name, email, and KSU identification number.
3. Student declaration should be signed and included.
4. Acknowledgements
5. Abstract (in English): Abstract should be one page synopsis of the project report typed double line spacing, Font Style: Times New Roman and Font Size 14.
6. Abstract (in Arabic): Arabic version of the abstract typed double line spacing, Font Style: Traditional Arabic and Font Size 14.

7. Table of Contents: The table of contents should list all material following it as well as any material which precedes it. The title page will not find a place among the items listed in the Table of Contents One and a half spacing should be adopted for typing the matter under this head.
8. List of Tables: The list should use exactly the same captions as they appear above the tables in the text. One and a half spacing should be adopted for typing the matter under this head.
9. List of Figures: The list should use exactly the same captions as they appear below the figures in the text. One and a half spacing should be adopted for typing the matter under this head.
10. Chapters: The chapters are divided into 3 parts (i) Introductory chapter, (ii) Chapters developing the main theme of the project work (iii) and Conclusion. See next section for details.
11. References: See section 3.9 for details.
12. Appendices: Appendices are provided to give supplementary information. See section 3.11 for details.
13. Installation and simple user manual for the system (up to 6 pages)

3. **Chapter Details**

This section describes the main chapters of your report and the contents of each chapter. The main text will be divided into several chapters and each chapter may be further divided into several divisions and sub-divisions. Some important notes to consider:

- Section numbering should be provided for four levels, the fifth level should not be numbered.
- Tables and figures in a chapter should be placed in the immediate vicinity of the reference where they are cited.
- Footnotes should be used sparingly. They should be typed single space and placed

directly underneath in the very same page, which refers to the material they annotate.

1. **Chapter 1: Introduction**

An introduction (2 to 5 pages) should transfer your reader from the outside world into your project. You may include the project proposal you presented in the initial stages of your project, however, you need to include and modifications suggested by the committee. Remember to include the references and appendices in the last sections of the report.

2. **Chapter 2: Background and Motivation**

The background (up to 2 pages) chapter of your report should include a detailed description of necessary domain knowledge and theoretical background required for understanding the project.

3. **Chapter 3: Statement of the Problem**

Statement of the Problem includes purpose and significance of the study (up to 3 pages).

4. **Chapter 4: Literature Review**

A literature review (up to 8 pages) describes published information in a particular subject area. It should include a synthesis of similar or related work in your field of study (commercial/noncommercial). It should position your project in relation to other efforts. The literature review within the project report needs to be focused on providing explanation and justification for all aspects of the problem to be tackled and the approaches to be considered, and support for the work to be done in the project.

“A literature review usually has an organizational pattern and combines both summary and synthesis. A summary is a recap of the important information of the source, but a synthesis is a re-organization, or a reshuffling, of that information.” (Literature Reviews)

5. **Chapter 5: System Analysis and Design**

This chapter includes details of the analysis and design process. The first section of the chapter describes the analysis, and the second section describes the design.

The analysis (up to 20 pages) of your system may follow either the structured approach, or the object oriented approach. See Table 3.1 below for a description of minimal

components necessary for each approach.

Table 6.1: Analysis and Design Components

Structured Approach	Object Oriented Approach
• Use Case Diagram • Context level DFD • Level-0 DFD • Subsequent levels DFDs (maximum three levels) • ER Diagram if needed • DB Schema & Dictionary if Needed (Data Design) • Architectural Design • Structured English/Decision Tables/Decision Trees/Flowcharts (for major processes only) (Component Design) • Interface design (for major uses cases only)	• Use-case Diagram • Use-cases' descriptions (expanded for major use cases only) • Conceptual Diagram • SystemSequence Diagrams (SSDs) • Contracts • Collaboration Diagrams • Class Diagram • ER Diagram (if relational DB is required) • DB Schema & Dictionary if needed • Architectural Design • Pseudo code/Algorithms/Flowcharts (Component Design) • Interface design (for major uses cases)

1. System Analysis

The primary objective of the analysis task is “(1) to describe what the customer require, (2) to establish a basis for the creation of a software design, and (3) to define a set of requirements that can be validated once a software is built” (Pressman, 2001)

The final section of the chapter should include the *software requirements specification*(See appendix). This report is produced at the culmination of the requirements engineering and analysis task. See the template for the SRS document.

2. System Design

The software design chapter (up to 20 pages) should include the following(Sommerville, 2007):

- Architectural design
 - System organization
 - Modular decomposition /structure charts
- Data design
 - Database schema/external file structures/ internal data structures
- Component design
 - Pseudo code/ algorithms/ flowcharts
- Interface design
 - Screen layout/ error messages/ colors/

A detailed description of the design elements is provided in the following subsections.

1. **Architectural design**

In the architectural design section describe your system's organizational style showing the major subsystems and data repositories and their inter-connections. Supplement with text as needed. You might want to include a discussion of other architectural alternatives, and the rationale for selecting the architecture, including the critical issues and trade/offs that were considered.

You should then provide a high-level overview of how the functionality and responsibilities of the system were partitioned and then assigned to subsystems or components. Don't go into too much detail about the individual components themselves (there is a subsequent section for detailed component descriptions).

The main purpose here is to gain a general understanding of how and why the system was decomposed, and how the individual parts work together to provide the desired functionality. You may use design patterns, either in describing parts of the architecture, or for referring to elements of the architecture that employ them.

2. **Data Design**

Describe any data structures that are a major part of this system. This should include major data structures that are passed between components. List all functions and function

parameters shown in the structural decomposition diagrams. You should also include internal and external file structures in this section.

Database Description: Describe the database(s) which is/are part of the system. You should provide the database schema and all table details.

3. **Component Design**

This section should provide detailed descriptions of each component in the system. It provides the algorithmic detail required to manipulate the data and implement the processing algorithms allocated to each component. It can be represented using graphical or text-based notations.

4. **User Interface Design**

This section should describe the general functionality of the system from the user's perspective. It should provide:

- A detailed description of user interface including screen images (Representation of the interface from the user's point of view). All screen objects and actions should be identified.
- A description of interface design rules such as the conventions, standards, and style used for designing the user interface.
- A user navigation hierarchy diagram, which describes the navigation hierarchy and illustrates how a user moves through the user interface.
- Error messages and system responses

6. **Chapter 6: System Implementation and Integration**

The system implementation and integration chapter of your report should describe the hardware and software platforms used in the development and specific versions of tools such as compilers. There may be several sections and sub-sections here (very implementation dependent). Give non-obvious aspects of implementation and the system integration. The chapter should include a section for the implementation and a section for

the system integration.

Include code-fragments (well-commented), pseudo-code, local variable, and data type declarations. If you had difficulty in working out some detail, it is worth documenting it to save others from having to go through the same suffering.

Use Courier font for program names (e.g. `prog.java`), italics for variables and function names (e.g. *setCount*, *GetString()*, *cardStatus[]*).

Note that only core functions source code should be included in this chapter. Note that you should not simply list the source code. Each code-fragments should be commented enough to be understood by the reader.

For the system integration section, you should depict the process you performed to link the different system components to ensure that they interact correctly. Integration issues (for instance the use of different technologies may yield to some difficulties during the system integration phase) could be raised and explained how they have been resolved.

7. **Chapter 7: System Testing**

A primary objective of testing application systems is to assure that the system meets the full requirements, including quality requirements.

The secondary objective of testing application systems will be to identify and expose all issues and associated risks, communicate all known issues to the project team, and ensure

that all issues are addressed in an appropriate matter before release. This chapter should describe the test strategies and methodologies used to plan, organize, execute and manage the testing of your software project.

You should describe any tools you used for testing.

1. **Unit testing**

Identify the techniques which will be used to judge the comprehensiveness of the testing effort (for example, determining which statements have been executed at least once).

2. **Integration and regression testing**

Describe what is your understanding of System and Integration Testing for your project, and how was it be performed.

3. **Performance and stress testing**

Describe what is your understanding of Stress Testing for your project, and how you approached this test.

4. **User acceptance testing**

The purpose of acceptance testing is to confirm that the system is ready for operational use. During acceptance test, end-users (customers) of the system compare the system to its initial requirements. You should describe this process and may list people involved in testing, and the feedback you obtained from them whether positive or negative. Negative feedback informs you of system limitations which you may address in future versions of your system.

5. **Test cases**

Test cases are the formal implementation of a test case design. The goal of any given test case or set of test cases is to detect defects in the system being tested. A test case should

be documented in a manner that is useful for the current test cycle and any future test cycles. Test cases should include:

- **Test Case Name (ID):** It is unique name given to test case in order to be identified. The name or title should contain the essence of the test case, including the functional area and purpose of the test. Using a common naming convention that groups test cases encourages reuse and helps prevent duplicate test cases from occurring.
- **Test description:** The description should clearly state the sequence of events to be exercised by the test case. The test case description can apply to one or more test cases; it will often take more than one test case to fully test an area of the application.
- **Function to be tested:** The name of function to be tested.
- **Environment:** It tells in which environment you are testing.
- **Test Execution:** It is detailed description of every step of execution.
- **Expected Results:** The description of what you expect the function to do.
- **Actual Results**
 - pass / failed
 - If pass - What actually happens when you run the test.
 - If failed - put in description of what you've observed.

8. **Chapter 8: Conclusion**

The conclusion is a mirror image of your introduction. Just as the introduction transfers the readers from their world into your system, the conclusion should provide a bridge to help your readers make the transition back to their daily lives. Such a conclusion will help them see why the development effort is worthwhile and should matter to them.

The conclusion should provide a summarization of the software development, the importance of the developed technology, and the implications of this development on the world (local and global impact). Four sections should be included in the conclusion:

- Global and local impact
- Problems encountered during the software development
- Limitations of the system, as well as future directions (Future work)
- Project contribution to scientific knowledge

For more on strategies of writing an effective conclusion see (Conclusions)

9. **References**

Any references in the report you be included in this section. The references section may include a bibliography.

Always give complete citations for references cited in your report. A proper reference involves two components: the citation in the text and the complete bibliographic entry in the References section. Use the Institute of Electrical and Electronics Engineers (IEEE) style for referencing. For more information see

<http://wwwlib.murdoch.edu.au/find/citation/ieee.html>

10. **Appendices**

An appendix is included at the end of the report. Appendices include the material needed for the report but which is unnecessary to include in the text itself. The appendices must be referred to in the text and they must have all the necessary information needed for interpretation. Appendices are situated at the end of the report and numbered consecutively. The written form for reference to appendices within the text is: Appendix A, Appendix B, etc. In the References it is: APPENDIX A: Title, APPENDIX B: Title, etc.

Appendices, Tables and References appearing in appendices should be numbered and referred to at appropriate places just as in the case of chapters. The appendix should also include the **project plan** (Time and resource schedule using project management tool such as the Gantt chart covering requirements of capstone project and project2) and the distribution of work among team members.

4. **Style Conventions**

1. **Page dimension and specifications**

The dimension of the project report should be in A4 size. The project report should be bound using flexible cover of the thick white art paper. The cover should be **printed in black letters**.

2. **Paper**

Use standard plain A4 paper, (80-100 g). Do not print any background image such as logo, etc, on report paper. Do not use color except in colored graphics or images.

3. **Format**

The report should be typed. All text, Figures and Tables should appear on only one side of each sheet of paper. All pages other than the cover page should have page numbers. Acknowledgments, English Abstract, Arabic abstract, Table of Contents, List of Tables, and List of Figures pages should use roman numerals, “I, II, III, IV, etc”. Chapter pages numbers should be in Arabic numerals “1,2,3,etc”. The numbering should continue through the last page of the appendices.

The right-hand margin should be 1.5 cm and the upper and lower margins 2 - 2.5 cm. The left-hand margin must be 4 cm on each page of the document because of the binding. The margin instructions should be followed in the appendices as well.

The color of all report text should be in normal black. The font size in the text should be in 12, in subheadings 14 and in the main headings 18. The main headings are to be

written in capitals. All headings are to be in bold letters. Leave two empty lines under the main heading, one empty line under subheadings. The headings should not have more than three numbers. A line spacing of 1.5 should be used in the text. The font to be used is Times New Roman. Numbered lists and bulleted lists should have one line spacing. The page number is placed in the lower right corner.

The text should not be indented and both margins on the page should be justified. When a paragraph continues on the next page, at least two lines of the paragraph should be left on the upper or lower end of the page. The paragraphs are separated from each other and from the headings with one empty line. A new chapter is started on a new page. One empty line is needed to separate two paragraphs.

4. **Text**

The text of the report should be written in complete sentences. The style should be formal. Formal style means to avoid slang, cliches, abbreviations that are common in spoken English or advertising. It is convention that formal reports are written in the third person.

5. **Figures and Tables**

All Figures and Tables should have a **number** and a **caption**. If a figure or table is extracted from a source, the source should be cited in the references.

See Figure 1 and Table 1.



Figure 6.1: KSU LOGO

Table 6.2COMPANY SALES BY QUARTER

Quarter	Sales		
	Item A (SR)	Item B (SR)	Item C (SR)
First	4200	4200	700
Second	2400	2400	600
Third	3600	3500	3500
Fourth	600	600	4200

6. Headers and Footers

The header of the report content pages should include chapter name right justified. The footer should include page numbers right justified. Both header and footer should be Times New Roman font and size 9.

5. Fancy copy guidelines

The binding should be of good quality with a hard cover. Use a **burgundy** color buckram covering, with gold lettering (see sample in our department library). The project title, authors, supervisor, semester, and year should appear on the front cover. The project title, semester and year should appear on the spine.

6. References for this guide

Conclusions. (n.d.). *Conclusions*. Retrieved November 4, 2009, from The Writing Center, University of North Carolina at Chapel Hill:

<http://www.unc.edu/depts/wcweb/handouts/conclusions.html>

Literature Reviews. (n.d.). Retrieved November 4, 2009, from The Writing Center:

http://www.unc.edu/depts/wcweb/handouts/literature_review.html

Pressman, R. S. (2001). *Software Engineering: A Practitioner's Approach*. New York: McGraw-Hill Higher Education.

Rakhunov, M. (n.d.). *Test Case Design*. Retrieved November 10, 2009, from SQA Tester:

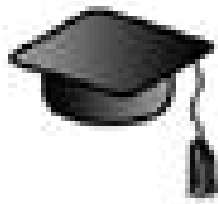
<http://www.sqatester.com/documentation/testcasedesign.htm>

Sommerville, I. (2007). *Software Engineering*. London: Addison Wesley.

Appendices



King Saud University
College of Computer and Information Sciences
Information Technology Department



<Project Title>

Prepared by

<Student1, ID>

<Student2, ID>

<Student3, ID>

<Student4, ID>

<Student5, ID>

Supervised by
<Supervisor's name>

Guide for Preparing Project-2 Documentation

Guide for Preparing Project-2 Documentation

<First/Second> Semester <Higri Academic year>
<Autumn/Spring><Gregorian Year>

*Project Submitted in Partial Fulfillment for the B.Sc. Degree in Information
Technology*



King Saud University
College of Computer and Information Sciences
Information Technology Department

<Project Title>

Prepared by

<Student1, ID>

<Student2, ID>

<Student3, ID>

<Student4, ID>

<Student5, ID>

Supervised by

<Supervisor's name>

<First/Second> Semester <Higri Academic year>

<Autumn/Spring><Gregorian Year>

*Project Submitted in Partial Fulfillment for the B.Sc. Degree in Information
Technology*

Student Declaration

Student acknowledges that she has read the above policy pertaining to plagiarism and understands that the penalty for such an act could result in disciplinary action.

Project Title: _____

Term of the Project: (1st Semester/2nd Semester) _____

Academic Year _____

	Student's Name	Student's Signature	Student's University ID Number	Date
1				
2				
3				
4				
5				