



MSU-Iligan Institute of Technology
School of Computer Studies
DEPARTMENT OF COMPUTER SCIENCE
Undergraduate Program



THESIS PROJECT MANUAL OF STYLES

(Last Edited: March 15, 2009)

These guidelines were formulated with the objective of helping the students of the Department of Computer Science to deliver useful thesis projects on time.

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CSc 199 Thesis Coordinator

Adopted (with permission) from the Thesis Manual of Styles of the Software Technology Department, College of Computer Studies, De La Salle University-Manila.

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1 Thesis Proposal Outline and Contents

Title Page

If the title of the thesis is an acronym, provide a line description of the said acronym. This one-line description provides the reader a general idea of what the thesis is all about.

Example: ITS-C: Intelligent Tutoring System for C Programming

Abstract

From 150 to 200 words of short, direct and complete sentences, the abstract should be informative enough to serve as a substitute for reading the thesis itself. It states the rationale and the objectives of the research. Do not put citations or quotes in this section. Avoid beginning the abstract with “**This paper/document/thesis/study/project/...**”

The abstract should include at least five keywords that are relevant to the thesis project. For example:

Keywords: agent, collaboration, communication, multi-agent systems, and distributed artificial intelligence.

For possible keywords &/or classification recommended by the Association of Computing Machinery (ACM) and Institute of Electrical and Electronics Engineers (IEEE), please see the following sites, respectively:
<http://www.acm.org/class/>, <http://code.ucsd.edu/keywords.html>,
http://code.ucsd.edu/ieee_keywords.

Table of Contents

Observe the following format:

1.0.	Research Description	1-1
1.1.	Overview of the Current State of Technology	1-2
1.2.	Statement of the Problem	1-2
1.3.	Research Objectives	1-3
1.3.1.	General Objective	1-3
1.3.2.	Specific Objectives	1-3

Note that the page number notation is as follows:

<chapter/appendix> – <page number>

Thus the first page of Chapter 2 is **2-1**, while the first page of Appendix A is **A-1**.

1.0. Research Description

1.1. Overview of the Current State of Technology

This section gives the reader an overview of the specific technology or field in the international or local setting. The information regarding the technology or field should be contemporary and not based on outdated sources. Discussion must not be too technical or too detailed.

This section ends with a discussion on the problems faced by or that still exist in the specific technology or field (e.g., limitations of existing software or algorithms).

1.2. Statement of the Problem

This section contains the statement of the problem which summarizes the closing discussions in Section 1.1 of the Thesis Proposal. The problem statement would lead to the research objectives. If possible, limit this to one (1) sentence only.

1.3. Research Objectives

1.3.1. General Objective

This subsection states the overall goal that must be achieved to answer the problem.

1.3.2. Specific Objectives

This subsection is an elaboration of the general objective. It states the specific steps that must be undertaken to accomplish the general objective. These objectives must be specific, measurable, attainable, realistic, time-bounded. Each specific objective may start with “to design/survey/review/analyze...”

Studying a particular programming language or development tool (e.g., to study Windows/Object-Oriented/Graphics/C++ programming) to accomplish the general objective is inherent in all thesis and, therefore, must not be included here.

1.4. Scope and Limitations of the Research

This section discusses the boundaries (with respect to the objectives) of the research and the constraints within which the research will be developed.

1.5. Significance of the Research

This section explains why research must be done in this area. It rationalizes the objective of the research with that of the stated problem. Avoid including here sentences such as “This research will be beneficial to the proponents/department/college” as this is already an inherent requirement of all CS thesis projects. Focus on the research’s contribution to the Computer Science field.

2.0. Review of Related Literature

This chapter discusses the features, capabilities, and limitations of existing research, algorithms, or software that are relevant and related/similar to the thesis. The reviewed works and software must be arranged either in chronological order, or by area (from general to specific). Observe a consistent format when presenting each of the reviewed works. In this chapter, the **maximum number of pages is 10**.

3.0. Research Methodology

This chapter lists and discusses the specific steps and activities that will be performed by the proponents to accomplish the project. The discussion covers the activities from the proposal stage to the final stage.

Examples of activities include inquiry, survey, research, brainstorming, canvassing, consultation, review, interview, observe, experiment, design, test, document, etc. The methodology also includes the following information:

- Who is responsible for the task
- The resource person to be contacted
- What will be done
- When and how long will the activity be done
- Where will it be done
- Why should the activity be done

4.0. Calendar of Activities

This chapter contains the Gantt chart showing the schedule of activities outlined in Chapter 3 of the Thesis Proposal. The following table is an example of a Gantt chart:

ACTIVITY	JAN	FEB	MAR	APR	...
Data Gathering	****	**			
Software Requirements Analysis		****	****	****	
Initial Architectural Design				**	

Appendix A. Bibliography (see Chapter 4 of this manual)**Appendix B. Resource Persons**

For each resource person, specify the following items:

- <Full name and title, e.g., Dr. Juan de la Cruz>
- <Profession, e.g., faculty>
- <Department, e.g., College of Computer Studies>
- <Name of institution, e.g., De La Salle University>
- <E-mail address>

Appendix C. Personal Vitae

For each proponent, specify the following items:

- <Full name and title, e.g., Mr. Juan de la Cruz>
- <Residence address>
- <Contact numbers>
- <E-mail address>



2 Thesis Document Outline and Contents for Basic Research

Title Page

Adviser's Recommendation Sheet

Panel's Approval Sheet*

College Acceptance Sheet*

Acknowledgement*

Abstract

Table of Contents

List of Tables

List of Figures

1.0. Research Description

1.1. Overview of the Current State of Technology (Thesis Proposal 1.1)

1.2. Statement of the Problem (Thesis Proposal 1.2)

1.3. Research Objectives

1.3.1. General Objective (Thesis Proposal 1.3.1)

1.3.2. Specific Objectives (Thesis Proposal 1.3.2)

1.4. Scope and Limitations of the Research (Thesis Proposal 1.4)

1.5. Significance of the Research (Thesis Proposal 1.5)

1.6. Research Methodology

This is based on Chapter 3 of the Thesis Proposal, but is modified to reflect what was actually done while developing the project. It should be in the past tense.

2.0. Review of Related Literature

Part of the contents of this chapter is lifted from Chapter 2 of the Thesis Proposal. Additional materials gathered during the thesis stages must also be included. It is highly recommended that all existing systems being studied and reviewed are recent. This chapter should contain at most 10 pages.

3.0. Theoretical Framework

This chapter discusses relevant theories and concepts to be used in the course of designing or developing the thesis. Include only those concepts that you feel will be needed. **Do not copy the whole source material.** Use the topics stated in the Thesis Proposal Research Objectives as a guide in determining the contents of this chapter.

4.0. (The algorithm and its model)

5.0. Analysis

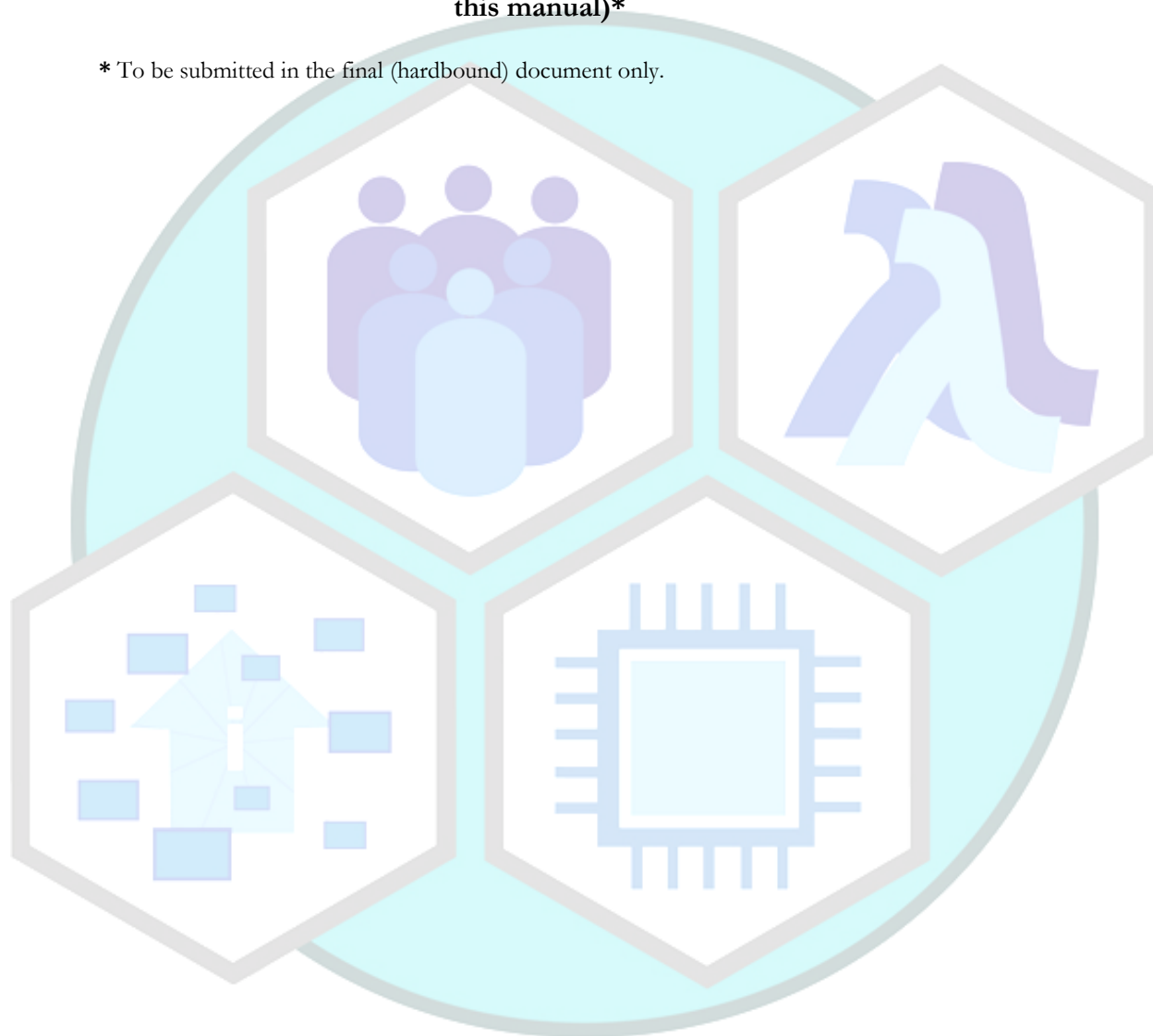
6.0. Conclusion and Recommendations

Appendix A	Bibliography (follow the format in the Thesis Proposal)
Appendix xxx	...
Appendix (xxx)+1	Resource Persons (follow the format in the Thesis Proposal)
Appendix (xxx)+2	Personal Vitae (follow the format in the Thesis Proposal)

TECHNICAL MANUAL (if there is a software support system, see Chapter 5 of this manual)*

USER'S MANUAL (if there is a software support system, see Chapter 6 of this manual)*

* To be submitted in the final (hardbound) document only.



3 Thesis Document Outline and Contents for Applied Research

Title Page

Adviser's Recommendation Sheet

Panel's Approval Sheet*

College Acceptance Sheet*

Acknowledgement*

Abstract

Table of Contents

List of Tables

List of Figures

1.0. Research Description

1.1. Overview of the Current State of Technology (Thesis Proposal 1.1)

1.2. Statement of the Problem (Thesis Proposal 1.2)

1.3. Research Objectives

1.3.1. General Objective (Thesis Proposal 1.3.1)

1.3.2. Specific Objectives (Thesis Proposal 1.3.2)

1.4. Scope and Limitations of the Research (Thesis Proposal 1.4)

1.5. Significance of the Research (Thesis Proposal 1.5)

1.6. Research Methodology

This is based on Chapter 3 of the Thesis Proposal, but is modified to reflect what was actually done while developing the project.

2.0. Review of Related Literature

Part of the contents of this chapter is lifted from Chapter 2 of the Thesis Proposal. Additional materials gathered during the thesis stages must also be included. This chapter should contain at most 10 pages.

3.0. Theoretical Framework

This chapter discusses relevant theories and concepts to be used in the course of designing or developing the thesis. Include only those concepts that you feel will be needed. **Do not copy the whole source material.** Use the topics stated in the Thesis Proposal Research Objectives as a guide in determining the contents of this chapter.

4.0. The <XYZ> System

This chapter gives the overall specifications and functional requirements of the software to be developed.

4.1. System Overview

This section gives an overall view of the main features and capabilities of the software.

4.2. System Objectives

This section states the specific requirements that must be met by the system.

4.3. System Scope and Limitations

This section discusses the scope and limitations (i.e., the level of capability or extent of power) of each major function listed in 4.2. This means that operations, which are beyond the identified limits, will simply be invalidated/ignored, and will not cause the system to malfunction, but instead cause the system to respond with error messages.

Justifications for the identified limitations and assumptions must be included here. Assumptions are the conditions that must be satisfied or things that must be existing/available/followed in order for the system to function properly. Ignoring such assumptions might result in system malfunction, which will not be the responsibility of the proponents.

4.4. Architectural Design

This section presents the initial internal design of the system, by discussing its major components and their interactions. These components include the software components (e.g., modules, database systems, etc.), as well as the hardware components (e.g., processors, devices, etc.). The components and their interactions are graphically represented using design tools, such as hierarchical charts, structure charts or object models. Data flow diagrams may also be included to show how information passes among processes. In addition, discussions on why certain alternative and trade-offs were chosen must be included (e.g., issues on software decomposition, cost of hardware).

4.5. System Functions

This section provides a listing of all the functions that must be performed or delivered by the system, and a description of each. Screen designs may be included, to help visualize the function being discussed. Usually, the functions are based on the menu and toolbar options. If a function generates reports, the report formats must be included in this section.

4.6. Physical Environment and Resources

This section discusses the hardware and software resources needed to implement and to execute the system. If the system has a special set of target users, this section also includes the user specification (e.g., educational level,

experience, and technical expertise). For certain uncommon resources, a discussion of why such resources are necessary must also be included.

5.0. Design and Implementation Issues

This chapter discusses the design and implementation of the major data structures and algorithms used in the software. It includes a discussion on the major issues and problems encountered, and the corresponding solutions and alternatives employed by the proponents. Parts of the design tools in the Technical Manual may be lifted as figures in this chapter.

6.0. Results and Observations

This chapter presents the analysis, interpretation and implications of the summarized test results, as well as observations on the limits of the system's capabilities. It also discusses the type(s) of testing performed on the system, the test data used, and the results of the tests.

The type(s) of tests performed varies depending on the system developed. For instance, a commissioned software would require a detailed acceptance test and system response time analysis, while a software implementing an algorithm would require an analysis of the performance of the algorithm on different machines or on different test data.

7.0. Conclusion and Recommendations

This chapter gives an assessment of what happened in this project. It presents explanations and justifications on how the objectives of the thesis were met, to what extent and why some objectives were not met.

This chapter also includes a discussion of possible improvements that can be made on the software, as well as future directions of the research topic in general. This serves as a springboard for projects that may be done by future thesis groups.

Appendix A	Bibliography (follow the format in the Thesis Proposal)
Appendix xxx	...
Appendix (xxx)+1	Resource Persons (follow the format in the Thesis Proposal)
Appendix (xxx)+2	Personal Vitae (follow the format in the Thesis Proposal)
TECHNICAL MANUAL	(see Chapter 5 of this manual)*
USER'S MANUAL	(see Chapter 6 of this manual)*

* To be submitted in the final (hardbound) document only.

4 Format for References, Citations, and Quotations

The following discussions are based from the American Psychological Association (APA) format.¹

4.1. Handling Quotations in your Text

When using APA format, the author-date method of citation is being followed. This means that the author's last name and the year of publication for the source should appear in the text, and a complete reference should appear in the reference list.

Examples:

Smith (1970) compared reaction times . . .
In a recent study of reaction times (Smith, 1970), . . .²
In 1970, Smith compared reaction times . . .

4.2. Short Quotations

To indicate short quotations (fewer than 40 words) in your text, enclose the quotation within double quotation marks. Provide the author, year, and specific page citation in the text, and include a complete reference in the reference list. Punctuation marks such as periods, commas, and semicolons should appear after the parenthetical citation. Question marks and exclamation points should appear within the quotation marks if they are a part of the quotation but after the parenthetical citation if they are a part of your text.

Examples:

She stated, "The placebo effect disappeared when behaviors were studied in this manner" (Miele, 1993, p. 276), but she did not clarify which behaviors were studied.³

According to Miele (1993), "the placebo effect disappeared when behaviors were studied in this manner" (p. 276).

Miele (1993) found that "the placebo effect disappeared" in this case (p. 276), but what will the next step in researching this issue be?

4.3. Long Quotations

Place quotations longer than 40 words in a freestanding block of typewritten lines, and omit quotation marks. Start the quotation on a new line, indented five spaces from the left margin. Type the entire quotation on the new margin, and indent the first line of any subsequent paragraph within the quotation five spaces from the new

¹ From the book entitled The Publication Manual of the American Psychological Association (4th Edition).

² Highly recommended to use.

³ Highly recommended to use.

margin. Maintain double-spacing throughout. If you choose to use single-spacing, then it has to be consistent all throughout the document/essay. The parenthetical citation should come after closing punctuation mark.

Example:

Miele's 1993 study found the following:

The placebo effect disappeared when behaviors were studied in this manner. Furthermore, the behaviors were never exhibited again, even when real drugs were administered. Earlier studies conducted by the same group of researchers at the hospital were clearly premature in attributing the results to a placebo effect. (p. 276)

4.4. Bibliography/Reference List

The reference list should appear at the end of your essay/document. It provides the information necessary for a reader to locate and retrieve any source you cite in the essay. Each source you cite in the essay must appear in your reference list; likewise, each entry in the reference list must be cited in your text.

Basic Rules

- Authors' names are inverted (last name first); give last name and initials for all authors of a particular work. Your reference list should be alphabetized by authors' last names. If you have more than one work by a particular author, order them by publication date, **newest to oldest** (thus a 1996 article would appear after a 1991 article). When an author appears as a sole author and as the first author of a group, list the one-author entries first. If no author is given for a particular source, alphabetize by the title of the piece and use a shortened version of the title for parenthetical citations.
- Use "&" instead of "and" when listing multiple authors of a single work.
- The first line of each entry in your reference list should be indented one-half inch from the left margin. Subsequent lines should be flush with the left margin.
- All references should be **double-spaced**.
- Capitalize only the first word of a title or subtitle of a work. Underline titles of books and journals.
- Note that the underlining in these entries often continues beneath commas and periods.
- Each entry is separated from the next by a double space (thus the entire reference list is double spaced, with no extra returns added).
- List all the references according to the authors (1st author) or title (if there is no authors mentioned) in alphabetical, ascending order. The reference list contains all the sources coming from books, articles, technical papers and journals. Sources coming from the WEB should be placed at the last section of the reference list.

4.5. Basic Forms for Sources in Print

4.5.1. An article in a periodical (such as a journal, newspaper, or magazine)

Author, A. A., Author, B. B., & Author, C. C. (Year of Publication, add month and of publication for daily, weekly, or monthly publications). Title of article. Title of periodical, Volume Number, pages.

N.B. You need list only the volume number if the periodical uses continuous pagination throughout a particular volume. If each issue begins with page 1, then you should list the issue number as well: Title of Periodical, Volume (Issue), and pages.

Examples:

Journal article, one author

Harlow, H. F. (1983). Fundamentals for preparing psychology journal articles. Journal of Comparative and Physiological Psychology, 55, 893-896.

Journal article, more than one author

Kernis, M. H., Cornell, D. P., Sun, C. R., Berry, A., & Harlow, T. (1993). There's more to self-esteem than whether it is high or low: The importance of stability of self-esteem. Journal of Personality and Social Psychology, 65, 1190-1204.

Conference proceedings

Orasan, C. & Krishnamurthy R. (2000). An Open Architecture for the Construction and Administration of Corpora. In: Proceedings of the Second International Conference on Language Resources and Evaluation (LREC-2000), pp. 22-29.

Work discussed in a secondary source

Coltheart, M., Curtis, B., Atkins, P., & Haller, M. (1993). Models of reading aloud: Dual-route and parallel-distributed-processing approaches. Psychological Review, 100, 589-608.

N.B. Give the secondary source in the references list; in the text, name the original work, and give a citation for the secondary source. For example, if Seidenberg and McClelland's work is cited in Coltheart et al. and you did not read the original work, list the Coltheart et al. reference in the References. In the text, use the following citation: Seidenberg and McClelland's study (as cited in Coltheart, Curtis, Atkins, & Haller, 1993)

Magazine article, one author

Henry, W. A., III. (1990, April 9). Making the grade in today's schools. Time, 135, 28-31.

4.5.2. A non periodical (such as a book, report, brochure, or audiovisual media)

Author, A. A. (Year of Publication). Title of work: Capital letter also for subtitle. Location: Publisher.

N.B. For "Location," you should always list the city, but you should also include the state if the city is unfamiliar or if the city could be confused with one in another state.

Examples:

Book

Calfee, R. C., & Valencia, R. R. (1991). APA guide to preparing manuscripts for journal publication. Washington, DC: American Psychological Association.

A government publication

National Institute of Mental Health. (1990). Clinical training in serious mental illness (DHHS Publication No. ADM 90-1679). Washington, DC: U.S. Government Printing Office.

A book or article with no author or editor named

Merriam-Webster's collegiate dictionary (10th ed.). (1993). Springfield, MA: Merriam-Webster.

New drug appears to sharply cut risk of death from heart failure. (1993, July 15). The Washington Post, p. A12.

N.B. For parenthetical citations of sources with no author named, use a shortened version of the title instead of an author's name. Use quotation marks and underlining as appropriate. For example, parenthetical citations of the two sources above would appear as follows: (Merriam-Webster's, 1993) and ("New Drug," 1993).

A translated work and/or a republished work

Laplace, P. S. (1951). A philosophical essay on probabilities (F. W. Truscott & F. L. Emory, Trans.). New York: Dover. (Original work published 1814)

A review of a book, film, television program, etc.

Baumeister, R. F. (1993). Exposing the self-knowledge myth [Review of the book The self-knower: A hero under control]. Contemporary Psychology, 38, 466-467.

An entry in an encyclopedia

Bergmann, P. G. (1993). Relativity. In The new encyclopedia britannica (Vol. 26, pp. 501-508). Chicago: Encyclopedia Britannica.

4.5.3. Part of a non-periodical (such as a book chapter or an article in a collection)

Author, A. A., & Author, B. B. (Year of Publication). Title of chapter. In A. Editor & B. Editor (Eds.), Title of book (pages of chapter). Location: Publisher.

N.B. When you list the pages of the chapter or essay in parentheses after the book title, use "pp." before the numbers: (pp. 1-21). This abbreviation,

however, does not appear before the page numbers in periodical references.

Example:

An article or chapter of a book

O'Neil, J. M., & Egan, J. (1992). Men's and women's gender role journeys: Metaphor for healing, transition, and transformation. In B. R. Wainrib (Ed.), Gender issues across the life cycle (pp. 107-123). New York: Springer.

4.6. Basic Forms for Electronic Sources

4.6.1. A web page

Author, A. A. (Date of Publication or Revision). Title of full work [online]. Available: full web address. (Date of access).

N.B. "Date of access" should indicate the date you visited the website. This is important because online information is frequently altered.

Example:

Daly, B. (1997). Writing argumentative essays. [online]. Available: <http://www.eslplanet.com/teachertools/argueweb/frntpage.htm>. (May 12, 1998).

4.6.2. An online journal or magazine

Author, A. A., & Author, B. B. (Date of Publication). Title of article. In Title of full work [online]. Available: full web address (Date of access).

Example:

An online journal article

Kenneth, I. (1995). A Buddhist response to the nature of human rights. [9 pars.] Journal of Buddhist Ethics [online serial], 2. Available: <http://www.cac.psu.edu/jbe/twocont.html>. (June 15, 1998)

4.6.3. Email

Because e-mail is a personal communication, not easily retrieved by the general public, no entry appears in your reference list. When you cite an email message in the body of your paper, acknowledge it in your parenthetical citation: The novelist has repeated this idea recently (Salman Rushdie, email to author, May 1, 1995).

Example:

The Publication Manual of the APA provides extensive examples covering a wide variety of potential sources. Below are some of the most commonly cited kinds of sources. If your

particular source is not listed below, use the basic forms (above) to determine the correct format, check the *Publication Manual*, or call or email the Writing Lab for help at (765) 494-3723 or owl@cc.purdue.edu. (Many of these examples are taken from the *Publication Manual*.)

4.7. A Note on Footnotes and Endnotes

Because long explanatory notes can be distracting to readers, most academic style guidelines (including MLA and APA) recommend limited use of footnotes/endnotes. An exception is Chicago-style documentation, which relies on notes for all citations as well as explanatory notes. But even in that case, extensive discursive notes are discouraged. Proper uses of notes include:

1. Evaluative bibliographic comments, for example:

¹ See Blackmur (1995), especially chapters three and four, for an insightful analysis of this trend.

² On the problems related to repressed memory recovery, see Wollens (1989) pp. 120-35; for a contrasting view, see Pyle (1992).

2. Occasional explanatory notes or other brief additional information that would seem digressive if included in the main text but might be interesting to readers, for example:

³ In a recent interview, she reiterated this point even more strongly: "I am an artist, not a politician!" (Weller, 1998, p. 124).

Footnotes in APA format are indicated by consecutive ***superscript Arabic numbers*** in the text. The notes themselves are listed by consecutive superscript Arabic numbers and appear double-spaced in regular paragraph format (a new paragraph for each note) on a separate page under the word *Footnotes* (centered, in plain text without quotation marks).

5 Technical Manual

For those using the object-oriented methodology, kindly use the following CLASS DICTIONARY FORMAT for your technical manual:

For each class that you have created:

<i>CLASS</i>	
<i>SUPERCLASS</i>	
<i>PROPERTIES</i>	1. <i><Property name> -- <purpose and constraint></i> 2. 3.
<i>METHODS</i>	1. <i><Method name> - <description, parameters, result type, and constraint></i> 2.

If you are creative enough, you may want to come up with your own table format. Just make sure that you have the minimum requirements outlined above for each class.

The design and implementation issues of your class' methods are discussed in the Design and Implementation chapter (which can include the pseudo-code). There is no pseudo-code needed in your Technical Manual, nor you are required to do IPO.

For each class in MFC or Windows environment that you have used, kindly explain them in your Theoretical Framework chapter.

6 User's Manual

All software systems are required by the department to have ONLINE HELP and a USER'S MANUAL.

Most of the contents of the User's Manual are based from Chapter 4 of the main thesis document (specifically on the system functions and features). The difference lies in the manner of presentation. Chapter 4 of the main thesis document is oriented towards highly technical systems designer, thus it gives an overview of the major modules of the system and their interactions.

On the other hand, the User's Manual is oriented towards end users, who might be naïve users. Therefore, it gives a detailed step-by-step instruction on how to use each function and feature of the system.

The suggested outline of the User's Manual is as follows:

Title Page (see Section xxx, but add the line **USER'S MANUAL** below the thesis title)

Table of Contents

1.0. INTRODUCTION

This chapter gives an overview of the system. It includes the following sections:

1.1. SYSTEM REQUIREMENTS

This section lists the minimum hardware and software requirements needed to properly execute the system.

1.2. INSTALLATION

This section contains instructions on how to install the system, and the list necessary files and their respective directories.

1.3. CONVENTION

This section presents the convention used in the manual, e.g., text in boldface for emphasis on important concepts, text in italics are inputs from the users, etc.

2.0. GETTING STARTED

This chapter starts with instructions on how to run the system, and the initial screen that will be displayed. It then explains the major components of the system, e.g., tool bars, menu options, status bar, etc.

3.0. <MODULE / FEATURE 1>

Succeeding chapters, from 3.0 to $N-1$, focus on the major modules or features of the system. Each chapter contains detailed instructions on how to use the particular modules, the available features and limitations of the module.

:

:
N.0. Messages

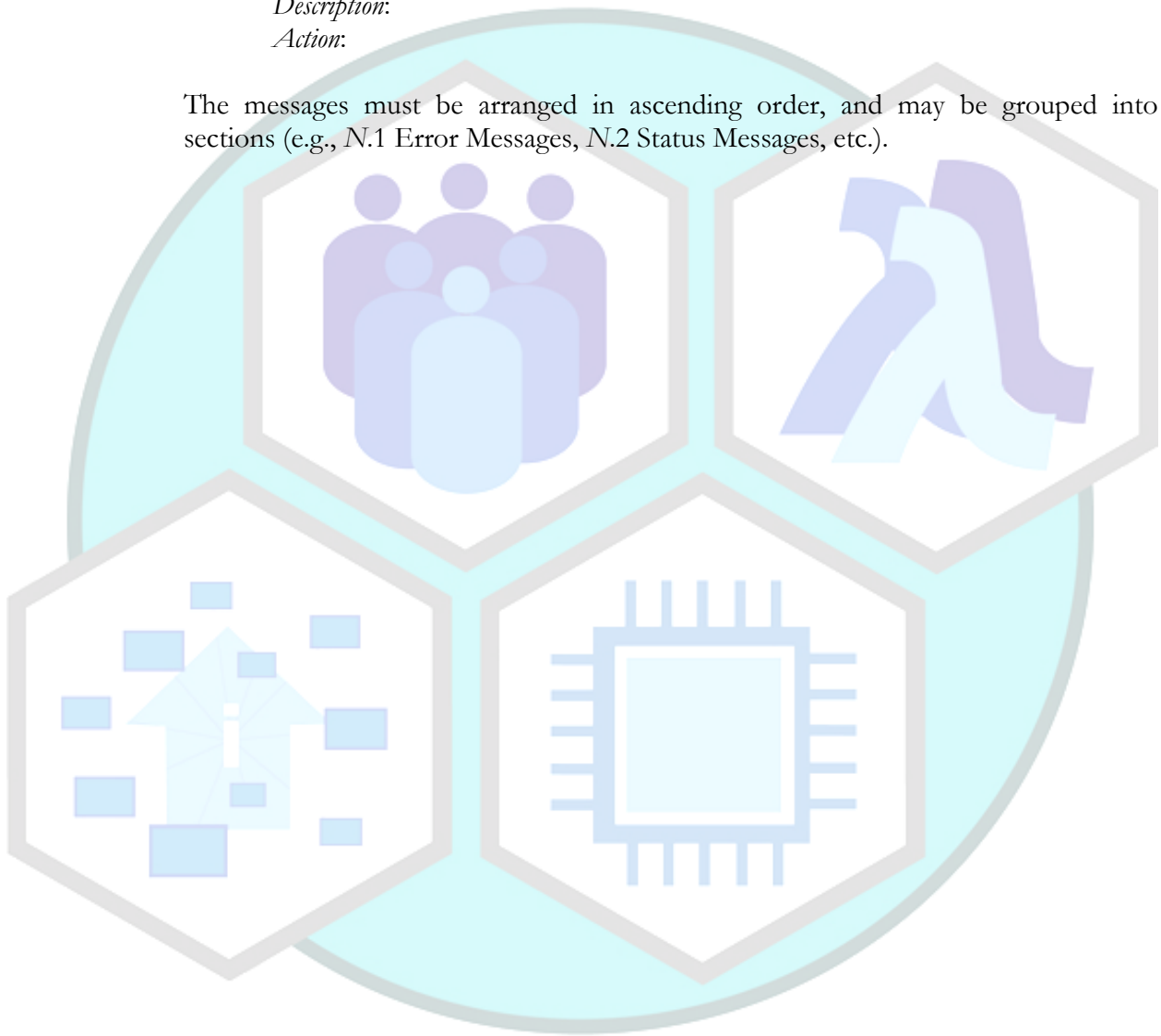
This chapter lists all system messages – error message, status message, information, and instruction message – that the user may encounter while using the system. For each message, include a brief description and the possible courses of action that the user may take in response to the message. Below is a sample format:

<Message Text>

Description:

Action:

The messages must be arranged in ascending order, and may be grouped into sections (e.g., N.1 Error Messages, N.2 Status Messages, etc.).



7 Conference Paper

Follow ACM style for MS Word at: <http://www.acm.org/sigs/publications/proceedings-templates>



8 Forms

8.1. Title Page

<Title of Thesis>

A Thesis [Proposal]
Presented to
the Faculty of the School of Computer Studies
MSU-Iligan Institute of Technology

In Partial Fulfillment
of the Requirements for the Degree of
Bachelor of Science in Computer Science

by
<lastname, firstname, middle initial of proponent 1>
<lastname, firstname, middle initial of proponent 2>
<lastname, firstname, middle initial of proponent 3>
<lastname, firstname, middle initial of proponent 4>

<adviser's signature>
<adviser's name>
Faculty Adviser

<date of submission>

8.2. Adviser's Recommendation Sheet

The thesis entitled

<title of thesis>

developed by:

<lastname, firstname, middle initial of proponent 1>

<lastname, firstname, middle initial of proponent 2>

<lastname, firstname, middle initial of proponent 3>

<lastname, firstname, middle initial of proponent 4>

and submitted in partial fulfillment of the requirements of the Bachelor of Science in Computer Science degree, has been examined and recommended for acceptance and approval.

_____, Adviser

_____, Date

8.3. Panel's Approval Sheet [To be included in the Final Document Only]

The thesis entitled

<title of thesis>

after having been reviewed, is hereby approved by the following members of the thesis committee:

<name of lead panelist>
Lead Panelist

Date

<name of panelist>
Panelist

Date

<name of panelist>
Panelist

Date

8.4. College Acceptance Sheet [To be included in the Final Document Only]

The thesis entitled

<title of thesis>

after having been recommended and reviewed, is hereby approved by the Computer Science Department, School of Computer Studies, MSU-Iligan Institute of Technology:

<name of chairperson>

Chairperson
Computer Science Department

<name of dean>

Dean
School of Computer Studies

Date

Date

9 Additional Guidelines on Document Writing

The following discussions are based from the American Psychological Association (APA) format.⁴

9.1. Developing an Outline

An outline is:

- A logical, general description
- A schematic summary
- An organizational pattern
- A visual and conceptual design of your writing

An outline reflects logical thinking and clear classification.

Purpose

Generally:

- Aids in the process of writing

Specifically:

- Helps you organize your ideas
- Presents your material in a logical form
- Shows the relationships among ideas in your writing
- Constructs an ordered overview of your writing
- Defines boundaries and groups

Process

Before you begin:

- Determine the **purpose** of your paper.
- Determine the **audience** you are writing for.
- Develop the **thesis** of your paper.

Then:

- **Brainstorm:** List all the ideas that you want to include in your paper.
- **Organize:** Group related ideas together.
- **Order:** Arrange material in subsections from general to specific or from abstract to concrete.
- **Label:** Create main and subtopic headings, and write coordinate levels in parallel form.

⁴ From the book entitled The Publication Manual of the American Psychological Association (4th Edition).

Theory

An outline has a balanced structure based on the following principles:

- Parallelism
- Coordination
- Subordination
- Division

Parallelism

Whenever possible, in writing an outline, **coordinate heads** should be expressed in parallel form. That is, nouns should be made parallel with nouns, verb forms with verb forms, adjectives with adjectives, and so on (Example: Nouns: computers, programs, users; Verbs: to compute, to program, to use; Adjectives: home computers, new programs, experienced users). Although parallel structure is desired, logical and clear writing should not be sacrificed simply to maintain parallelism. (For example, there are times when nouns and gerunds at the same level of an outline are acceptable.) Reasonableness and flexibility of form is preferred to rigidity.

Coordination

In outlining, those items which are of equal significance have comparable numeral or letter designations: an *A* is equal to a *B*, a *1* to a *2*, an *a* to a *b*, etc. Coordinates should be seen as "having the same value." Coordination is a principle that enables a writer to maintain a coherent and consistent document.

Example:

Correct coordination

- A. Word processing programs
- B. Database programs
- C. Spreadsheet programs

Faulty coordination

- A. Word processing programs
- B. Microsoft Word
- C. Page Maker

Explanation: Word is a type of word processing program and should be treated as a subdivision. Page Maker is a type of desktop publishing program. One way to correct coordination would be:

- A. Types of programs
 - 1. Word processing
 - 2. Desktop publishing
- B. Evaluation of programs
 - 1. Word processing
 - a. Word

- b. Word Perfect
- 2. Desktop Publishing
 - a. Page Maker
 - b. Quark Express

Subordination

In order to indicate levels of significance, an outline uses major and minor headings. Thus in ordering ideas, you should organize it from general to specific or from abstract to concrete- the more general or abstract the term, the higher the level or rank in the outline. This principle allows your material to be ordered in terms of logic and requires a clear articulation of the relationship between component parts used in the outline. Subdivisions of each higher division should always have the same relationship to the whole.

Example:

Correct subordination

- A. Word processing programs
 - 1. Microsoft Word
 - 2. Word Perfect
- B. Desktop publishing programs
 - 1. PageMaker
 - 2. Quark Express

Faulty subordination

- A. Word processing programs
 - 1. Word
 - 2. Useful
 - 3. Obsolete

Explanation: There is an *A* without a *B*. Also 1, 2, and 3 are not equal; *Word* is a type of word processing program, and *useful* and *obsolete* are qualities. One way to correct this faulty subordination is:

- A. Word
 - 1. Positive features
 - 2. Negative features
- B. Word Perfect
 - 1. Positive features
 - 2. Negative features

Division

To divide you always need at least two parts; therefore, there can never be an *A* without a *B*, a *1* without a *2*, an *a* without a *b*, etc. Usually there is more than one way to divide parts; however, when dividing use only one basis of division at each rank, and make the basis of division as sharp as possible.

Correct division

- A. Personal computers: hardware
 - 1. Types
 - 2. Cost
 - 3. Maintenance
- B. Personal computers: software

Faulty division

- A. Computers
 - 1. Mainframe
 - 2. Micro
 - a. Floppy disk
 - b. Hard disk
- B. Computer uses
 - 1. Institutional
 - 2. Personal

Form

The most important rule for outlining form is to be consistent!

An outline can use **topic** or **sentence** structure.

A **topic** outline uses words or phrases for all entries; uses no punctuation after entries.

Advantages: presents a brief overview of work; is generally easier and faster to write than a sentence outline.

A **sentence** outline uses complete sentences for all entries; uses correct punctuation.

Advantages: presents a more detailed overview of work including possible topic sentences; is easier and faster for writing the final paper.

An outline can use *Roman numerals/Letters or Decimal form*.

Roman Numeral

- I.
 - A.
 - 1.
 - 2.
 - a.
 - b.
 - B.

Decimal

1.0.

1.1.

1.2.

1.2.1.

1.2.2.

1.2.2.1.

1.2.2.2.

9.2. Quoting, Paraphrasing, and Summarizing

This section is intended to help you become more comfortable with the uses of and distinctions among quotations, paraphrases, and summaries. The first part of the handout compares and contrasts the terms, while the second part offers a short excerpt that you can use to practice these skills.

9.2.1. What are the differences among quoting, paraphrasing, and summarizing?

These three ways of incorporating other writers' work into your own writing differ according to the closeness of your writing to the source writing. Obviously, a quotation must be identical to the original, using a narrow segment of the source. Paraphrased material is usually shorter than the original passage, taking a somewhat broader segment of the source and condensing it slightly. Summaries are significantly shorter than the original and take a broad overview of the source material.

- Quotations must match the source document word for word and must be attributed to the original author.
- Paraphrasing involves putting a passage from source material into your own words. A paraphrase must also be attributed to the original source.
- Summarizing involves putting the main idea(s) into your own words, including only the main point(s). Once again, it is necessary to attribute summarized ideas to the original source.

9.2.2. Why use quotations, paraphrases, and summaries?

Quotations, paraphrases, and summaries serve many purposes. They are used to:

- provide support for claims or add credibility to your writing
- refer to work that leads up to the work you are now doing
- give examples of several points of view on a subject
- call attention to a position that you wish to agree or disagree with
- highlight a particularly striking phrase, sentence, or passage by

- quoting the original
- distance yourself from the original by quoting it in order to cue readers that the words are not your own
- expand the breadth or depth of your writing

Writers frequently intertwine summaries, paraphrases, and quotations. As part of a summary of an article, a chapter, or a book, a writer might include paraphrases of various key points blended with quotations of striking or suggestive phrases as in the following example:

In his famous and influential work On the Interpretation of Dreams, Sigmund Freud argues that dreams are the "royal road to the unconscious" (page), expressing in coded imagery the dreamer's unfulfilled wishes through a process known as the "dream work" (page). According to Freud, actual but unacceptable desires are censored internally and subjected to coding through layers of condensation and displacement before emerging in a kind of rebus puzzle in the dream itself (pages).

9.2.3. How to use quotations, paraphrases, and summaries

Practice summarizing the following essay, using paraphrases and quotations as you go. A good way to start is to read the entire text, noting the key points and main ideas. Then, summarize in your own words what the single main idea of the essay is. Next, paraphrase important supporting points that come up in the essay. Also consider any words, phrases, or brief passages that you believe should be quoted directly. There are several ways to integrate quotations into your text. Often, a short quotation works well when integrated into a sentence. Longer quotations can stand-alone. Remember that quoting should be done only sparingly; be sure that you have a good reason to include a direct quotation when you decide to do so.

9.3. Paraphrase: Write it in Your Own Words

Learn to borrow from a source without plagiarizing. A **paraphrase** is...

- your own rendition of essential information and ideas expressed by someone else, presented in a new form.
- one legitimate way (when accompanied by accurate documentation) to borrow from a source.
- a more detailed restatement than a summary, which focuses concisely on a single main idea.

Paraphrasing is a valuable skill because...

- it is better than quoting information from an undistinguished passage.
- it helps you control the temptation to quote too much.
- the mental process required for successful paraphrasing helps you to grasp the full meaning of the original.

6 Steps to Effective Paraphrasing

1. Reread the original passage until you understand its full meaning.
2. Set the original aside, write your paraphrase on a note card.
3. Jot down a few words below your paraphrase to remind you later how you envision using this material. At the top of the note card, write a key word or phrase to indicate the subject of your paraphrase.
4. Check your rendition with the original to make sure that your version accurately expresses all the essential information in a new form.
5. Use quotation marks to identify any unique term or phraseology you have borrowed exactly from the source.
6. Record the source (including the page) on your note card so that you can credit it easily if you decide to incorporate the material into your paper.

Some examples to compare:

The original passage:

Students frequently overuse direct quotation in taking notes, and as a result they overuse quotations in the final [research] paper. Probably only about 10% of your final manuscript should appear as directly quoted matter. Therefore, you should strive to limit the amount of exact transcribing of source materials while taking notes. Lester, James D. Writing Research Papers. 2nd ed. (1976): 46-47.

A legitimate paraphrase:

In research papers students often quote excessively, failing to keep quoted material down to a desirable level. Since the problem usually originates during note taking, it is essential to minimize the material recorded verbatim.

An acceptable summary:

Students should take just a few notes in direct quotation from sources to help minimize the amount of quoted material in a research paper.

A plagiarized version:

Students often use too many direct quotations when they take notes, resulting in too many of them in the final research paper. In fact, probably only about 10% of the final copy should consist of directly quoted material. So it is important to limit the amount of source material copied while taking notes.

9.4. Avoiding Plagiarism

Academic writing in any institutions is filled with rules that writers often don't know how to follow. A working knowledge of these rules, however, is critically important; inadvertent mistakes can lead to charges of **plagiarism**, or the unacknowledged use of somebody else's words or ideas. A charge of plagiarism can have severe consequences, including expulsion from the university. This handout, which does not reflect any official university policy, is designed to help writers develop strategies for knowing how to avoid accidental plagiarism.

The Contradictions of American Academic Writing

<i>Show you have done your research</i>	--But--	<i>Write something new and original</i>
<i>Appeal to experts and authorities</i>	--But--	<i>Improve upon, or disagree with experts and authorities</i>
<i>Improve your English by mimicking what you hear and read</i>	--But--	<i>Use your own words, your own voice</i>
<i>Give credit where credit is due</i>	--But--	<i>Make your own significant contribution</i>

Since teachers and administrators may not distinguish between deliberate and accidental plagiarism, the heart of avoiding plagiarism is to make sure you give credit where it is due. This may be credit for something somebody said, wrote, emailed, drew, or implied.

Choosing When to Give Credit

Need to Document	No Need to Document
<ul style="list-style-type: none"> • When you are using or referring to somebody else's words or ideas from a magazine, book, newspaper, song, TV program, movie, Web page, computer program, letter, advertisement, or any other medium • When you use information gained through interviewing another person • When you copy the exact words or a "unique phrase" from somewhere • When you reprint any diagrams, illustrations, charts, and pictures • When you use ideas that others have given you in conversations or over email 	<ul style="list-style-type: none"> • When you are writing your own experiences, your own observations, your own insights, your own thoughts, your own conclusions about a subject • When you are using "common knowledge" — folklore, common sense observations, shared information within your field of study or cultural group • When you are compiling generally accepted facts • When you are writing up your own experimental results

Making Sure You Are Safe

	Action during the writing process	Appearance on the finished product
When researching, note-taking, and interviewing	<ul style="list-style-type: none"> Mark <i>everything</i> that is someone else's words with a big Q (for quote) or with big quotation marks Indicate in your notes which ideas are taken from sources (S) and which are your own insights (ME) Record all of the relevant documentation information in your notes 	<p>Proofread and check with your notes (or photocopies of sources) to make sure that anything taken from your notes is acknowledged in some combination of the ways listed below:</p> <ul style="list-style-type: none"> In-text citation Footnotes Bibliography Quotation marks Indirect quotations
When paraphrasing and summarizing	<ul style="list-style-type: none"> First, write your paraphrase and summary without looking at the original text, so you rely only on your memory. Next, check your version with the original for content, accuracy, and mistakenly borrowed phrases 	<p>Begin your summary with a statement giving credit to the source: <i>According to Jonathan Kozol, ...</i> Put any unique words or phrases that you cannot change, or do not want to change, in quotation marks: ... <i>"savage inequalities" exist throughout our educational system (Kozol).</i></p>
When quoting directly	<ul style="list-style-type: none"> Keep the person's name near the quote in your notes, and in your paper Select those direct quotes that make the most impact in your paper — too many direct quotes may lessen your credibility and interfere with your style 	<p>Mention the person's name either at the beginning of the quote, in the middle, or at the end. Put quotation marks around the text that you are quoting. Indicate added phrases in brackets ([]) and omitted text with ellipses (...)</p>

When quoting indirectly	<ul style="list-style-type: none"> • Keep the person's name near the text in your notes, and in your paper • Rewrite the key ideas using different words and sentence structures than the original text 	Mention the person's name either at the beginning of the information, or in the middle, or at that end. Double check to make sure that your words and sentence structures are different than the original text
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Deciding if Something is "Common Knowledge"

A material is probably common knowledge if

- You find the same information undocumented in at least 5 other sources
- You think it is information that your readers will already know
- You think a person could easily find the information with general reference sources.

9.5. Writing Research Papers: A Step-by-Step Procedure⁵

The Preliminaries

1. Choose a topic
2. Begin preliminary reading
3. Restrict the subject
4. Develop a preliminary thesis statement

Gathering Data

1. Compile the working bibliography
2. Prepare the bibliography on cards in correct form (3" x 5" cards)
3. Begin extensive work in the library reference room; be sure to check:
 - a) general bibliographies
 - b) trade bibliographies
 - c) indexes (books and collections, literature in periodicals, newspaper indexes, pamphlet indexes)
 - d) library electronic catalogue

Taking Notes

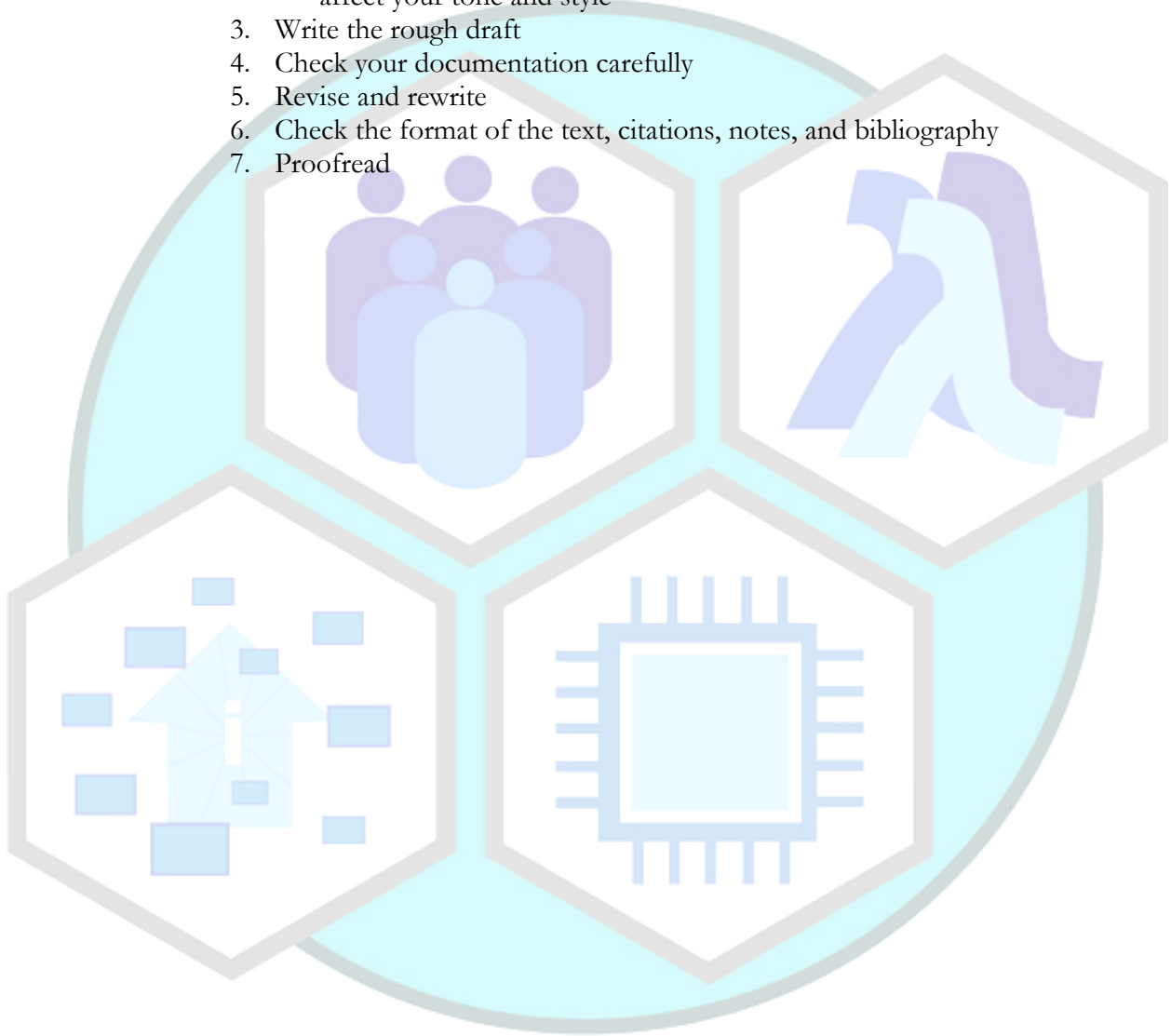
1. Develop a preliminary outline
2. Evaluate your source material; which is primary material and which is secondary material?
3. Begin note-taking on cards (4" x 6" cards)

⁵ Most of this format is based on the process described by James D. Lester in *Writing Research Papers: A Complete Guide*, 2nd ed. (1971; rpt. Glenview, Illinois: Scott, Foresman, 1976).

4. Avoid plagiarism

Writing the Paper

1. Develop the final outline; test your outline
2. Prepare to write:
 - a) put your note cards in the order that your outline is in
 - b) consider your (real and imagined) readers and how their expectations may affect your tone and style
3. Write the rough draft
4. Check your documentation carefully
5. Revise and rewrite
6. Check the format of the text, citations, notes, and bibliography
7. Proofread



10 Final Deliverables

If a thesis group received a verdict of PASS WITH MINOR REVISIONS, this does not guarantee the group that they have passed the thesis. **They are required to accomplish all the revisions given by the panelists.** Furthermore, **the group has to submit all the requirements imposed by the thesis coordinator.** If any of the requirements is not received by the thesis coordinator with the condition that the software is running perfectly will automatically receive an IN PROGRESS mark for CSc 199.

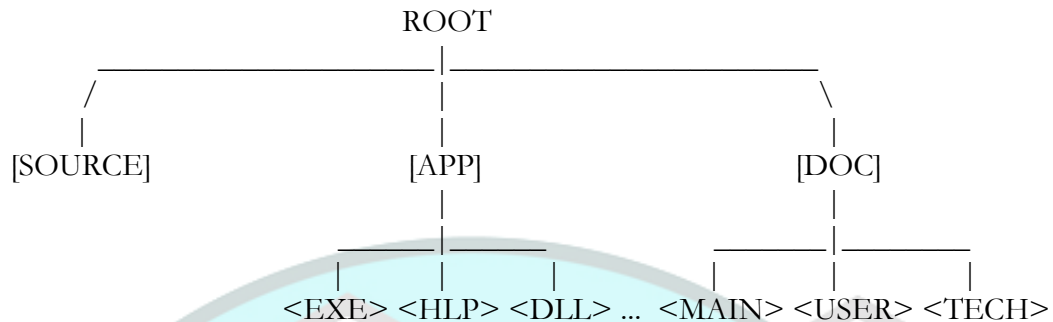
The following are the guidelines and requirements for CSc 199 final deliverables⁶:

All thesis groups must submit the following:

- Three (3) hardbound (**GREEN** color) copies (department, college, and library) of the *Thesis Documentation*, *Technical Manual*, and *User's Manual*. These copies **must be original**.
- The main document must be printed on thesis paper, using 12-size font, single-spaced.
- Include in the main thesis document the *Adviser's Recommendation Sheet*, *Panel's Approval Sheet*, and the *College Acceptance Sheet*.
- Appendices, Technical Manual, and User's Manual can be printed on letter-sized (8" x 11") bond paper.
- The source codes need **not** be printed.
- Documents (main, technical and user's) can be bound as one or separate volume(s).
- The front cover of all volumes should follow the same format as the thesis title page.
- The side cover of all volumes should contain the thesis title, term and year of completion.
- Two (2) properly labeled CD-copies of the source codes, thesis documentation (including technical and user's manuals), defense presentation and the executable files.
 - The labels on each of the CD must contain the following information:
 - a. Thesis title
 - b. Term and School year of completion
 - c. Content (e.g., document disk, source code, library, executable files, etc.)

⁶ A grade of **PASS** for CSc 199 will only be given upon receipt of **all** the above requirements.

- The CD(s) must be subdivided into the following directory structure:



where:

[SOURCE] contains the source code (*.CPP, *.H, *.JAVA, *.JSP, *.FRM, *.BAS, *.HTM, *.VBS, etc.)

[DOC] contains the thesis documentation and is subdivided into main document (<main>), user's manual (<user>), technical manual (<tech>), and use the Portable Document Format (<.pdf>) for all thesis documents.

[EXE] contains the executable file (*.EXE) and its necessary components, including **DLL** (*.DLL), help files (*.HLP), data files (*.DAT, *.TXT), components, activex, etc needed to execute your software. Include also a sample file.

- Both CDs must also contain the following files at the root directory:
 - SETUP.EXE. This executable file will install the executable file and other necessary components (e.g., data files, system files, help files, DLL files) needed to run your software.
 - FILES.LST. This text file contains the list of files found on each of the CDs, as well as a brief description of each file.
 - READ.ME. This text file contains instructions on how to install the executable files, the system requirements, your main user name and password, personal vitae of all proponents, and any last minute information.
 - INDEX.HTM. This html file contains the following:

Heading: Computer Science Department
Undergraduate Thesis Program

Thesis Title

Optional picture file(s)

Thesis Proponents and Thesis Adviser

Thesis Abstract

Document Outline (i.e., Table of Contents to the following --)

- Research Overview
- System Overview
- Major Modules and System Features