Dissertation Writing Guidelines
Binus University Doctor of Computer Science [DCS] Program

Doctor of Computer Science [DCS]
Binus Graduate Program
Binus University
2023

TABLE OF CONTENTS

VISION DCS

Become one of the globally recognized research and development programs in Computer Science.

DCS MISSIONS

The mission of Doctor of Computer Science Program is to contribute to the global community through the provision of world-class education by :

1. *Improving the welfare of society through word-class high quality education in Information Technology and Information Systems to produce qualified, professional and competent graduates according to the current and future needs of the nation;*
2. *Creating outstanding leaders for the global community who participate in an important role in computer science and technology development that answers the needs of society;*
3. *Improving the quality of life of Indonesians and the international community through contributions in economic and industrial development with continuous innovation and improvement based on computer science;*
4. *Conducting professional services through introduction, diffusion, and dissemination of relevant knowledge with an emphasis on application of knowledge to the society;*
5. *Recognizing and rewarding the most creative and value-adding talents.*

DISSERTATION PROMOTORS AND EXAMINERS

The dissertation research promoter team was established through the Binus University Chancellor's Decree based on the results of the Academic Meeting. The Promoter Team consists of the Promoter Chair who is a Binus University Professor and 2 (two) Promoter Members (Co-Promotors) who come from Binus University or outside Binus University with doctoral education qualifications who have expertise in accordance with the dissertation topic in the Doctor of Computer Science program [DCS] Binus University.

The Examiner Team is determined by the DCS Program, consisting of 3 examiners from Binus University or outside Binus University with doctoral education qualifications and have expertise in accordance with the dissertation topic in Binus University's Doctor of Computer Science [DCS] program.

STAGES OF DISSERTATION WRITING ACTIVITIES

STEP	ACTIVITY	DIRECTOR	DEADLINE
1	Research Outline Presentation	- Promoter Team - Industry representative	Maximum 2 weeks after the appointment of the Promoter Team
	Proposal Exam preparation presentation	- Promoter Team	
2	Proposal Examination	- Promoter Team - Test Team	Maximum 1 year*
3	Research Results Seminar	- Promoter Team	
	Closed Exam preparation presentation	- Promoter Team	
4	Closed Exam	- Promoter Team - Test Team	
	Dissertation Dissemination	-	
	Presentation on preparation for Open Exams/Promotions	- Promoter Team	
5	Open Exams / Promotions	- Chairman / Secretary of the University Senate - Promoter Team - Test Team	At least 1 month after the Closed Session

* If up to the 3-year study period students have not PASSED the Proposal Examination, they will be declared FAILED from the DCS program.

SUPPORTING DOCUMENTS FOR THE DISSERTATION EXAMINATION

Proposal Examination

1. Seven (7) copies of the Dissertation Proposal Softcover that have been approved by the Promoter Team and known by the Program Head.
2. Dissertation Proposal Softcopy.
3. Softcopy and hardcopy of the Dissertation Proposal presentation.
4. Dissertation Proposal Test Approval Sheet (original).
5. Copy of Consultation Book.

Research Results Seminar

1. Four (4) Softcover Copies of Dissertation Research Results that have been approved by the Promoter Team and known by the Program Head.
2. Softcopy of Dissertation Research Results.
3. Softcopy and hardcopy presentation of Dissertation Research Results.
4. Dissertation Research Results Seminar Approval Sheet (original).
5. *Softcopy* Scopus indexed international journal.
6. Proof of acceptance of publication in Scopus indexed international journals.
7. Copy of Consultation Book.

Closed Exam

1. Seven (7) Softcover Copies of the Dissertation Manuscript which have been approved by the Promoter Team and known by the Program Head.
2. *Softcopy* Dissertation Manuscript.
3. *Softcopy* and hardcopy presentation of the Dissertation Manuscript.
4. Dissertation Manuscript Approval Sheet (original).
5. *Softcopy* Scopus indexed international journal.

6. Proof of acceptance of publication in Scopus indexed international journals.
7. Copy of Consultation Book.

Promotion Session

1. Twelve (12) Softcover Copies of the Dissertation Manuscript.
2. Three (3) copies of the Dissertation Poster.
3. *Softcopy* Dissertation Manuscript.
4. Copy of Consultation Book.
5. *Softcopy* and hardcopy of the dissertation presentation material.
6. *Softcopy* Dissertation Summary.
7. *Softcopy* Biography.
8. HAKI form that has been signed by the student (available at the DCS Secretariat).
9. 4 sheets of color photos size 4x6 and 2x3 each, men wearing suits, women wearing blazers.
10. Photocopy of ID card.

Graduation

1. Two (2) Hardcover Dissertation Manuscripts in Blue, Gold embossed letters.
2. At least one (1) Computer Science Cluster Textbook as part of the alumni engagement.

RESEARCH OUTLINE FRAMEWORK

- **TITLE**
- **PROMOTOR'S PROPOSAL**
- **TABLE OF CONTENTS**
- **LIST OF TABLES**
- **LIST OF FIGURES**
- **APPENDIX LIST**

CHAPTER I INTRODUCTION

      1.1 Research Background

      1.2 Problem Identification and Formulation

      1.3 Research purposes

      1.4 Benefits of research

CHAPTER II: LITERATURE REVIEW, FRAMEWORK FOR THINKING, AND HYPOTHESES

      2.1 Literature Review

      2.2 Thinking Framework

      2.3 Hypothesis Formulation

CHAPTER III : RESEARCH METHODS

      3.1 Proposed Framework

      3.2 Mathematical Modeling

      3.4 Input Process Output (IPO)

      3.5 Research Design

      3.6 Study of Model/Design and Test and Validation

BIBLIOGRAPHY
ATTACHMENT

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Dissertation Research Outline constitutes a Dissertation Proposal Draft and is used as a reference for determining the Promoter Team.

RESEARCH PROPOSAL FRAMEWORK

- **TITLE**
- **VALIDITY SHEET**
- **FOREWORD**
- **TABLE OF CONTENTS**
- **LIST OF TABLES**
- **LIST OF FIGURES**
- **APPENDIX LIST**

CHAPTER I: INTRODUCTION
- 1.1 Research Background
- 1.2 Problem Identification and Formulation
- 1.3 Research purposes
- 1.4 Benefits of research

CHAPTER II: LITERATURE REVIEW, FRAMEWORK FOR THINKING, AND HYPOTHESES
- 2.1 Literature Review
- 2.2 Thinking Framework
- 2.3 Hypothesis Formulation

CHAPTER III: RESEARCH METHODS
- 3.1 Proposed Framework
- 3.2 Mathematical Modeling
- 3.4 Input Process Output (IPO)
- 3.5 Research Design
- 3.6 Study of Model/Design and Test and Validation

BIBLIOGRAPHY
RESEARCH SCHEDULE
APPENDIX : DRAFT OF PROPOSED MODEL OR ALGORITHM DESIGN SCHEME

RESEARCH FRAMEWORK

- **TITLE**
- **VALIDITY SHEET**
- **FOREWORD**
- **TABLE OF CONTENTS**
- **LIST OF TABLES**
- **LIST OF FIGURES**
- **APPENDIX LIST**

CHAPTER I INTRODUCTION
   1.1 Research Background
   1.2 Problem Identification and Formulation
   1.3 Research Objectives
   1.4 Research Benefits

CHAPTER II: LITERATURE REVIEW, FRAMEWORK FOR THINKING, AND HYPOTHESES
   2.1 Literature Review
   2.2 Thinking Framework
   2.3 Hypothesis Formulation

CHAPTER III : RESEARCH METHODS
   3.1 Proposed Framework
   3.2 Mathematical Modeling
   3.4 Input Process Output (IPO)
   3.5 Research Design
   3.6 Study of Model/Design and Test and Validation

CHAPTER IV : RESEARCH RESULTS
   4.1 (According to Research Objectives 1)
   4.2 etc

BIBLIOGRAPHY
ATTACHMENT

FRAMEWORK FOR THE DISSERTATION MANUAL *

- **TITLE**
- **VALIDITY SHEET**
- **ABSTRACT**
- **FOREWORD**
- **TABLE OF CONTENTS**
- **LIST OF TABLES**
- **LIST OF FIGURES**
- **APPENDIX LIST**

CHAPTER I: INTRODUCTION

1.1	Research Background
1.2	Problem Identification and Formulation
1.3	Research purposes
1.4	Benefits of research

CHAPTER II: LITERATURE REVIEW, FRAMEWORK FOR THINKING, AND HYPOTHESES

2.1 Literature Review

2.2 Thinking Framework

2.3 Hypothesis Formulation

CHAPTER III : RESEARCH METHODS

3.1 Proposed Framework

3.2 Mathematical Modeling

3.4 Input Process Output (IPO)

3.5 Research Design

3.6 Study of Model/Design and Test and Validation

CHAPTER IV : RESEARCH RESULTS, DISCUSSION, AND RESEARCH IMPLICATIONS

4.1

4.4 etc

CHAPTER V: CONCLUSIONS AND SUGGESTIONS

BIBLIOGRAPHY
ATTACHMENT
BIOGRAPHY

* For Closed Examination

DISSERTATION FRAMEWORK**

- **TITLE**
- **VALIDITY SHEET**
- **STATEMENT SHEET**
- **ABSTRACT**
- **FOREWORD**
- **TABLE OF CONTENTS**
- **LIST OF TABLES**
- **LIST OF FIGURES**
- **APPENDIX LIST**

CHAPTER I INTRODUCTION

1.1 Research Background
1.2 Identification, and Problem Formulation
1.3 Research Objectives
1.4 Research Benefits

CHAPTER II: LITERATURE REVIEW, FRAMEWORK FOR THINKING, AND HYPOTHESES

2.1 Literature Review
2.2 Thinking Framework
2.3 Hypothesis Formulation

CHAPTER III : RESEARCH METHODS

3.1 Framework Used
3.2 Literature Survey
3.3 Sources and Methods of Determining Data
3.4 Mathematical Modeling
3.5 Research Design
3.6 Design Analysis and Test and Validation
3.7 Problem Solving Design

CHAPTER IV : RESEARCH RESULTS, DISCUSSION, AND RESEARCH IMPLICATIONS

4.1
4.4 etc

CHAPTER V: CONCLUSIONS AND SUGGESTIONS
        5.1 Conclusion
        5.2 Suggestions

BIBLIOGRAPHY
ATTACHMENT
BIOGRAPHY

** Hardcover (library documentation)

EXPLANATION

- **TITLE**
  Reflecting the contents of research that contains concepts or relationships between concepts that describe the symptoms/phenomena studied, research objectives, and research methods.

- **VALIDITY SHEET**
  Approval sign of the Promoter Team stating that the Dissertation is worthy of testing (Use the existing template).

- **STATEMENT SHEET**
  Contains a statement that the dissertation written is original and has never been submitted to obtain an academic degree at Binus University or other tertiary institutions, pure ideas, formulations and research by the author himself without the help of other parties except for the direction of the Promoter Team, there are no works or opinions that have been written or published by another person, unless in writing it is clearly stated as a reference in the manuscript with the author's name mentioned or listed in the bibliography.

- **ABSTRACT / ABSTRACT**
  Reflects the entire content of the dissertation by disclosing the essence of the research problem, the approach used or the framework, research methods, research findings, and conclusions. Made in two language versions (English and Indonesian).

- **FOREWORD**
  Presenting the essence of research problems, research findings, difficulties in conducting research and things that facilitate the implementation of research and dissertation writing, including expressing gratitude to various parties for the implementation of research and dissertation writing.

- **TABLE OF CONTENTS**
  The composition of the dissertation research content is in accordance with the dissertation research systematics.

- **LIST OF TABLES**

  The systematic arrangement of tables contained in dissertation research.

- **LIST OF FIGURES**

  The systematic arrangement of images contained in dissertation research.

- **APPENDIX LIST**

  Complementary informal research such as questionnaires or supporting data.

CHAPTER I INTRODUCTION

Describes the general research problem which is presented briefly and clearly which describes the dissertation research proposal which includes:

1.1 Research Background

Presenting and placing research in a scientific map that is of concern to researchers. Contains descriptions of:

- A statement about the symptoms/phenomena to be studied which can be raised from theoretical or practical problems.
- Arguments about the selection of research topics (showing problems as differences between existing concepts or theories).
- The situation behind the research or research problem, which describes the feasibility of a problem to be studied.
- Previous research related to the problem.
- The essence of the theoretical framework that becomes the problem is the integration of the theoretical background with the phenomenon of the problem, including proposing problem identification, problem selection, issues or research focus.
- Implications of the expected research results on theoretical and practical developments.

1.2 Problem Identification and Formulation

Identify and formulate research problems that:

- It is stated clearly, firmly, and concretely about the problem to be studied.
- Dealing with a theoretical or practical problem.
- Oriented to theory (theory is a body of knowledge)
- Stated in a question sentence (research question) which contains the formulation of the problem.

1.3 Research purposes

- Related to scientific development and practical use of the problem to be studied.
- Emphasizing on the results to be achieved (expected) from research related to the identification and formulation of the problem.

1.4 Benefits of research

Specify the use to be achieved from:

- Theoretical (scientific) aspects contains theoretical uses that can be achieved from the problem under study.
- Practical aspect (to implement): contains the benefits that can be achieved from the application of the knowledge generated in research.

CHAPTER II REVIEW OF LITERATURE, FRAMEWORK FOR THINKING, AND HYPOTHESES

State clearly and concisely about the results of research activities and explore concepts and theories obtained from the results of literature studies and online sources related to research problems.

2.1 Literature review

Discuss literature related to topics or research problems that are focused on previous research.
Literature reviews of each book/publication/research results deemed relevant are discussed critically by taking into account:

- Who has researched the topic or problem
- Where the research was conducted.
- What is the unit of the field of study.
- What is the approach and analysis.
- What is the conclusion.
- What are the criticisms of the study.
- Controversy, gaps, and inconsistencies in research findings.

2.2   Framework

The series of reasoning in a framework based on the definitions, concepts, variables, and indicators of all the variables studied.

- The discussion is presented in the form of a flowchart of thought (research paradigm).
- The approach used is viewed from a theoretical or practical aspect.

2.3 Hypothesis Formulation

Interim answers to research problems derived from the framework.

CHAPTER III RESEARCH METHOD

Define the approaches, methods, techniques, and strategies used to collect and analyze data that can answer or explain research problems.
Also explains the arguments regarding the selection of approaches or methods by taking into account the properties of the variables studied and the type of information needed, and describes the structure and research strategy

3.1 Framework Used

Determination of the methods used in research according to the type of research.

3.2 Mathematical Modeling

This section must explain in detail the derivation of formulas or mathematical modeling for the proposed research.

3.3 Input Process Output (IPO)

Explain how the Input Process Output (IPO) process.

3.4   Research design

Explain in detail the Research Design which can be in the form of research flow and also the algorithm used as well as the various tools and infrastructure used.

3.5   Model/Design Study and Test and Validation

In this section, the model or research design must be explained and discussed. Also explain how to carry out tests and validations on the feasibility of the model and design.

CHAPTER IV RESEARCH RESULTS, DISCUSSION AND RESEARCH IMPLICATIONS

Describe the characteristics of the object, unit of analysis and variables studied and explain and analyze data statistically, which covers:

4.1 Research Results

Contains a description of the results of data analysis that has been systematized which is directed to:

- Discuss what, how and why the problem occurred.
- Analyzing research results using a predetermined approach.
- Discuss the results of hypothesis testing and reveal findings that refer to research objectives, associated with existing theories.

4… Research Implications

4… Theoretical Implications
Explain how the research results have implications for existing theories.

4... Practical Implications/Applications

Describes the implications of concepts, models, and research results from a practical standpoint and uses in fields other than Computer Science.

CHAPTER V CONCLUSIONS AND RECOMMENDATIONS

State the researcher's understanding of the problem under study related to the dissertation.

5.1 Conclusion

Stating research findings as answers to research questions related to research objectives, both findings for scientific development and practical problem solving based on research results and discussion.

5.2 Suggestions

Statements regarding suggestions for the results of research conducted, including what needs to be further investigated for the development of knowledge from the field of study studied and practical suggestions based on findings from discussion of problem solving.

BIBLIOGRAPHY

List of all literature used in the text.

ATTACHMENT

Complementary information regarding research, such as the results of statistical processing, questionnaires, interview guidelines and photos, location maps, and the author's curriculum vitae.

WRITING TECHNIQUE

1. **Materials Used**

   a. 80-gram white HVS paper A4 size.
   b. Cover (outer shell) in the form of a softcover made of buffalo cardboard or light green linen (for the Proposal Examination, Results Seminar, Closed Examination, and Open Examination), brown hardcover cover for the Dissertation Manuscript
   c. Between the chapters are marked with light green paper doors lag, bearing the Binus University Graduate Program logo.

2. **Typing**

   a. Typing is right aligned and done on one side of the paper, not back and forth.
   b. margin limit :
      - Left : 4 cm from the edge of the paper
      - Top: 4 cm from the edge of the paper
      - Right : 3 cm from the edge of the paper
      - Bottom: 3 cm from the edge of the paper
   c. The typeface used in the contents of the manuscript is Times New Roman font 12.
   d. **Caption** typed at the bottom of the image using the font Time New Roman font 12 with the numbering following the chapter number sequentially from number one and in bold (eg Figure 1.1, Figure 1.2, etc.)
   e. **Description of Tables and Graphs** typed at the top of the table or graph using the font Time New Roman font 12 with the numbering following the chapter number sequentially from number one and in bold (eg Table 3.1, Table 3.1, etc.)
   f. Each header is typed on a new page in capital type Time New Roman font 12 and in bold (bold).
      What is meant by Heading is:

      - ENDORSEMENT
      - STATEMENT
      - ABSTRACT
      - ABSTRACT
      - FOREWORD
      - TABLE OF CONTENTS

- LIST OF FIGURES
- APPENDIX LIST
- CHAPTER I INTRODUCTION
- CHAPTER II REVIEW OF LITERATURE, FRAMEWORK FOR THINKING AND HYPOTHESES
- CHAPTER III RESEARCH METHOD
- CHAPTER IV RESEARCH RESULTS, DISCUSSION AND SOLUTION TO PROBLEM
- CHAPTER V CONCLUSIONS AND RECOMMENDATIONS
- BIBLIOGRAPHY
- ATTACHMENT
- CURRICULUM VITAE

g. **Space** (Spacing Between Lines)
  - Spacing between lines is two spaces
  - The distance between the chapter pointer (eg CHAPTER I) and the chapter header (eg INTRODUCTION) is two spaces.
  - The distance between the chapter header (chapter title) and the first text of the manuscript or between the chapter header and the sub-chapter header is four spaces.
  - The distance between the sub-chapter headers and the first line of the text of the manuscript is two spaces.
  - Each paragraph of the text of the contents of the manuscript is typed indented as far as five beats.
  - The distance between the last line of the text and the next sub-chapter heading is four spaces.
  - The spacing between text and tables, figures, and graphics is three spaces.
  - The new paragraph is typed indented as far as five beats from the left margin of the body text of the manuscript.
  - The spacing between paragraphs is two spaces.

3. Numbering Chapters, Sub-chapters, and Paragraphs

a. Chapter numbering uses capital Roman numerals in the middle of the page (eg CHAPTER I).
b. The numbering of sub chapters uses Arabic numerals typed on the left side (eg 2.1, 2.1, etc.).
c. The numbering of sub-chapter children is adjusted to the chapter number (eg 2.1.1, 2.1.2, etc.).

d. Non-sub-chapter numbering is done with Arabic numerals and parentheses, for example 1), 2), etc. and for non-sub-chapter children are (1), (2), etc.

4. Page Numbering

a. Home Section
- Numbering at the beginning of the dissertation, starting from the title page to the Appendix page, uses small Roman numerals (eg i, ii, etc.).
- Title page and Promoter Agreement page are not numbered sequentially, but are counted as page i and page ii (these page numbers are not typed).
- The Abstract page up to the Appendix page is numbered sequentially with small Roman numerals which is a continuation of the Title page and Promoter Agreement page.

b. Core Section Page
- Numbering from CHAPTER I (INTRODUCTION) to CHAPTER V (CONCLUSIONS AND SUGGESTIONS) uses Arabic numerals (1, 2 etc.) and is placed in the right margin with a distance of three spaces from the top margin (first line of text on the page) and the last digit of the number. straight page with text right margin.
- On each titled page, the page numbers starting from CHAPTER I (INTRODUCTION) to CHAPTER V (CONCLUSIONS AND SUGGESTIONS) are typed in the bottom margin exactly in the middle with a distance of three spaces from the bottom margin of the text.

c. Final page
- The numbering at the end of the dissertation, starting from the REFERENCES page to the LIFE HISTORY, uses Arabic numerals typed in the upper right margin with a distance of three spaces from the top edge (first line of text on the page) straight with the right margin of the text.
- The numbering on each titled page, starting from the REFERENCES page to the LIFE HISTORY, is typed in the bottom margin exactly in the middle with a distance of three spaces from the bottom margin of the text.

- The final page number is a continuation of the main section of the dissertation page number.

5. Abstracts and Abstracts

a. Abstract and abstract typing distance is one space.
b. The distance between the title ABSTRACT and ABSTRACT with the first text abstract and abstract is four spaces.
c. The ABSTRACT title and all abstract text are typed in italics, Times New Roman font 12.
d. The title of the ABSTRACT and the entire text of the abstract are typed in normal letters, type Times New Roman font 12.

6. Bibliography

Refer to the Harvard Referencing System (see attachment).

TITLE IN INDONESIAN LANGUAGE

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TITLE IN ENGLISH

(Times New Roman font, bold/bold, italic, font, 14)

By
Student name
Student ID Number

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OUTLINES
DISSERTATION RESEARCH

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DOCTOR OF COMPUTER SCIENCE
BINUS GRADUATE PROGRAM
BINUS UNIVERSITY
2023

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PROMOTOR TEAM PROPOSAL

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PROPOSAL
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PROPOSAL

DISSERTATION RESEARCH

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It was approved by the Promoter Team on ………

(*Last date agreed by all Promoters and Testers)*

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PROMOTER

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CO-PROMOTOR 1   **CO-PROMOTOR 2**

Knowing,

Prof. Dr. Ir. Ford Lumban Gaol, S.Si., M.Kom

Head of Department of Doctor of Computer Science [DCS]

(Times New Roman font, bold/bold, font, 10)

TITLE IN INDONESIAN LANGUAGE

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TITLE IN ENGLISH

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By
Student name
Student ID Number

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RESEARCH RESULT
DISSERTATION

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DOCTOR OF COMPUTER SCIENCE
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RESEARCH RESULT
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Material: A4 size white HVS paper 80 gram.
Example of RESEARCH ENDORSEMENT PAGE

TITLE IN INDONESIAN LANGUAGE
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TITLE IN ENGLISH
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By
Student name
Student ID Number
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RESEARCH RESULT
DISSERTATION
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It was approved by the Promoter Team on ………
(*Last date agreed by all Promoters and Testers***)**

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PROMOTER
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CO-PROMOTOR 1   **CO-PROMOTOR 2**

Knowing,

Prof. Dr. Ir. Ford Lumban Gaol, S.Si., M.Kom
Head of Department of Doctor of Computer Science [DCS]
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DISSERTATION MANUAL

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(*Last date agreed by all Promoters and Testers***)**

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CO-PROMOTOR 1   **CO-PROMOTOR 2**

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Prof. Dr. Ir. Ford Lumban Gaol, S.Si., M.Kom
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DISSERTATION

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DOCTOR OF COMPUTER SCIENCE
BINUS GRADUATE PROGRAM
BINUS UNIVERSITY
2023

(Times New Roman font, bold/bold, font, 14)

TITLE IN INDONESIAN LANGUAGE

(Times New Roman font, bold/bold, font, 14)

TITLE IN ENGLISH

(Times New Roman font, bold/bold, italic, font, 14)

PROMOTOR TEAM

(Times New Roman font, bold/bold, font, 12)

…………………………………..
…………………………………..
…………………………………..

By
Student name
Student ID Number

(Times New Roman font, bold/bold, font, 12)

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STUDENT NAME
STUDENT NIM

DISSERTATION TITLE

2022 BINUS UNIVERSITY DOCTORATE PROGRAM | Doctor of Computer Science

TITLE IN INDONESIAN LANGUAGE
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TITLE IN ENGLISH
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DISSERTATION
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It was approved by the Promoter Team on ………
(*Last date agreed by all Promoters and Testers***)**

…………………………
PROMOTER
(Times New Roman font, bold/bold, font, 12)

………………………… …………………………
CO-PROMOTOR 1 **CO-PROMOTOR 2**

Knowing,

Prof. Dr. Ir. Ford Lumban Gaol, S.Si., M.Kom
Head of Department of Doctor of Computer Science [DCS]
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