## UNIVERSITI TEKNOLOGI MARA

# BOOK RECOMMENDATION SYSTEM

NUR DALILA AFIFAH BINTI GHAZALI

**Bachelor of Computer Science (Hons.) Faculty of Computer and Mathematical Sciences** 

FEBRUARY 2021

#### ACKNOWLEDGMENT

Alhamdulillah, praises and thanks to Allah because of His Almighty and His utmost blessings, I was able to finish this project within the time duration given. Firstly, my special thanks goes to my supervisor, Prof. Madya Wan Dorishah Binti Wan Abdul Manan and Madam Norlina for all the guidance and advices that contribute in helping me to finish this project.

Special appreciation also goes to my beloved parents and siblings that always gives emotional support and being understanding through the completion of this project.

Last but not least, I would like to give my gratitude to my dearest classmates for sharing information and advices.

#### **ABSTRACT**

Recommender engines is one of the popular information filtering tools that had been used by various layers of society. The concept of the recommender engines is to give the most relevant answer needed by the user. Book recommender is one of the popular implementations of recommender or filtering method. This is because there are so many books data in the world make it impossible for people to find one books without filtering. The aim of this project is to implement a of book recommender system, using some features from the collaborative filtering and content-based filtering. For this project, the user-item rating methods and the item-item rating had been implemented on the system to generate the list of recommendation books to the user. By using the root mean square error to evaluate the algorithm, the result obtained shows that collaborative filtering mean error value is less than the content-based filtering. This prove that the collaborative filtering is better at recommendation than content-based filtering. In conclusion, this book recommender system can give a better recommendation of books by using the user-item technique.

### **TABLE OF CONTENTS**

| CONTENT                                   | PAGE |                |
|---|------|----------------|
| SUPERVISOR APPROVAL                       | ii   |                |
| STUDENT DECLARATION                       |      |                |
| ACKNOWLEDGEMENT                           | iv   |                |
| ABSTRACT                                  | v    |                |
| TABLE OF CONTENT LIST OF FIGURES          |      |                |
|   |      | LIST OF TABLES |
| LIST OF ABBREVIATIONS                     | xi   |                |
| CHAPTER ONE: INTRODUCTION                 |      |                |
| 1.1. Background of Study                  |      |                |
| 1.2. Problem Statement                    |      |                |
| 1.3. Objective                            | 3    |                |
| 1.4. Scope                                | 4    |                |
| 1.5. Significance                         | 4    |                |
| 1.6. Overview of Research Framework       |      |                |
| 1.7. Summary                              | 5    |                |
| CHAPTER TWO: LITERATURE REVIEW            |      |                |
| 2.1. Introduction                         |      |                |
| 2.2. Recommendation System                |      |                |
| 2.2.1 Definition                          | 6    |                |
| 2.2.2 Recommendation System Techniques    | 7    |                |
| 2.2.2.1 Collaborative Filtering Technique | 7    |                |
| 2.2.2.2 Content-Based Filtering Technique | 11   |                |
| 2.2.2.3 Hybrid Filtering Technique        | 12   |                |
| Vi  |      |                |
|   |      |                |

|                                 | 2.2.3 Advantages and Disadvantaged of Recommendation |  | System |
|---------------------------------|--|--|--------|
|                                 |  | Technique                                | 13     |
|                                 | 2.2.4  | The Use of Recommendation System         | 15     |
| 2.3. Book I                     | Recomn   | nendation                                | 16     |
| 2.3                             | .1 Re  | commendation in Getting Book             | 16     |
| 2.3                             | .2 Pro   | blem Faced by Book Recommendation System | 17     |
| 2.3                             | .3 The   | e Benefits of Book Recommendation System | 18     |
| 2.3                             | .4 Hy  | brid Recommender Approach                | 18     |
| 2.4. Simila                     | r Work   |  | 19     |
| 2.5. The In                     | nplication   | on of Literature Review                  | 25     |
| 2.6. Conclu                     | ısion  |  | 25     |
|                                 |  |  |        |
| CHAPTER T                       | HREE:  | METHODOLOGY                              |        |
|                                 |  |  |        |
| 3.1 Ove                         | rview o  | f Research Framework                     | 26     |
| 3.2 Preli                       | iminary  | Phase                                    | 30     |
| 3.2.1                           | Prelim   | inary Study                              | 30     |
| 3.2.2                           | Data c   | ollection                                | 30     |
| 3.3 Desi                        | gn and   | Implementation Phase                     | 32     |
| 3.3.1                           | Design   | n Phase                                  | 32     |
|                                 | 3.3.1.1  | System Architecture                      | 32     |
|                                 | 3.3.1.2  | 2 Flow Chart                             | 33     |
|                                 | 3.3.1.3  | 3 User Interfaces                        | 34     |
|                                 | 3.3.1.4  | Entity Relationship Diagram              | 36     |
|                                 | 3.3.1.5  | Pseudocode of Selected Algorithm         | 37     |
| 3.3.2                           | Imple  | mentation                                | 37     |
| 3.4 Eval                        | luation l  | Phase                                    | 38     |
| 3.5 Con                         | clusion  |  | 38     |
|                                 |  |  |        |
| CHAPTER FO                      | OUR: F   | RESULT AND FINDING                       |        |
|                                 |  |  |        |
| 4.1 Conceptual Framework        |  | 40                                       |        |
| 4.2 Program Codes for Algorithm |  | 43                                       |        |