VIETNAM GENERAL CONFEDERATION OF LABOR

**TON ĐUC THANG UNIVERSITY**

**FACULTY OF INFORMATION TECHNOLOGY**

****

**FINAL REPORT OF DESIGN AND ANALYSIS ALGORITHMS**

**A SURVEY OF ITEMSET MINING REPORT**

Instructor:**MASTER.NGUYỄN CHÍ THIỆN**

Student: **PHẠM PHƯỚC TẤN– 520H0418**

**NGUYỄN HOÀNG PHÚC KHANG– 520H0066**

**TRẦN LÊ GIA BẢO– 520H0516**

Class **: 20H50204**

Course  **: 24**

**HO CHÍ MINH CITY, 2022**

VIETNAM GENERAL CONFEDERATION OF LABOR

**TON ĐUC THANG UNIVERSITY**

**FACULTY OF INFORMATION TECHNOLOGY**

****

**FINAL REPORT OF DESIGN AND ANALYSIS ALGORITHMS**

**A SURVEY OF ITEMSET MINING REPORT**

Instructor: **MASTER.NGUYỄN CHÍ THIỆN**

Student: **PHẠM PHƯỚC TẤN– 520H0418**

**NGUYỄN HOÀNG PHÚC KHANG– 520H0066**

**TRẦN LÊ GIA BẢO– 520H0516**

Class **: 20H50204**

Course  **: 24**

**HO CHÍ MINH CITY, 2022**

ACKNOWLEDGEMENT

Thank you a lot teacher. We are grateful for teacher who name is Nguyễn Chí Thiện because he helped us to know more and answer questions about the final report for our final and we can complete that report as soon as possible.

MIDTERM ESSAY COMPLETED AT TON DUC THANG UNIVERSITY

I hereby declare that this is our report and is under the guidance of master Nguyễn Chí Thiện. The research contents and results in this topic are honest and have not been published in any form before. The data in the tables for analysis, comments and evaluation are collected by the author himself from different sources, clearly stated in the reference section.

In addition, the project also uses a number of comments, assessments as well as data of other authors, other agencies and organizations, with citations and source annotations.

**If I find any fraud I take full responsibility for the content of my report**. Ton Duc Thang University is not related to copyright and copyright violations caused by me during the implementation process (if any).

*Ho Chi Minh city, 03 December, 2022*

*Author*

*(sign and write full name)*

*Phạm Phước Tấn*

*Nguyễn Hoàng Phúc Khang*

*Trần Lê Gia Bảo*

TEACHER’S CONFIRMATION AND ASSESSMENT SECTION

**Confirmation section of the instructors**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Ho Chi Minh city, day month year

(sign and write full name)

**The evaluation part of the lecturer marks the report**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Ho Chi Minh city, day month year

(sign and write full name)

SUMMARY

In this report, we find out and present six algorithms as six chapters, respective in table five of A Survey of Itemset Mining topic.

First chapter, we introduce about itemset and frequent itemset mining.

Chapter 2 and 3, we present and show some definitions about Apriori algorithm in two database representation as horizontal and vertical(TID-lists) with breadth-first(candidate generation) search.

Chapter 4, we present and show definitions about Eclat algorithm in a database representation as vertical (TID-lists, diffsets) with depth-first(candidate generation) search.

Chapter 5, we present and show definitions about FP-Growth algorithm in a database representation as horizontial (prefix-tree) with depth-first (pattern growth) search.

Chapter 6, we present and show definitions about H-Mine algorithm in a database representation as horizontial (hyperlink structure) with depth-first (pattern growth) search.

Chapter 7, we present and show definitions about LCM algorithm in a database representation as horizontial (with transaction merging) with depth-first (pattern growth) search.

TABLE OF CONTENTS

[ACKNOWLEDGEMENT i](#_Toc3267)

[MIDTERM ESSAY COMPLETED AT TON DUC THANG UNIVERSITY ii](#_Toc13451)

[TEACHER’S CONFIRMATION AND ASSESSMENT SECTION iii](#_Toc13823)

[SUMMARY iv](#_Toc23851)

[TABLE OF CONTENTS 1](#_Toc25404)

[LIST OF DIAGRAMS, CHARTS AND TABLES 3](#_Toc9153)

[CHAPTER 1 6](#_Toc22969)

[Question : 6](#_Toc16937)

[Answers : 6](#_Toc22271)

[Privilege 1 : Add Patients 6](#_Toc9858)

[Privilege 2 : Manage Identifier Types 6](#_Toc25749)

[Privilege 3 : Manage Privileges 7](#_Toc24690)

[Privilege 4 : Manage Roles 8](#_Toc22221)

[EXERCISE 2 8](#_Toc20826)

[Question : 8](#_Toc13957)

[Answers : 9](#_Toc32641)

[Role 1 : System Developer 9](#_Toc5702)

[Role 2 : Provider 10](#_Toc11069)

[Role 3 : Privilege Level: Full 10](#_Toc5432)

[Role 4 : Application: Has Super User Privileges 10](#_Toc32407)

[EXERCISE 3 10](#_Toc9911)

[Question : 10](#_Toc13071)

[REFERENCE 12](#_Toc11152)

**LIST OF ABBREVIATIONS**

EHR: electronic health record

LIST OF DIAGRAMS, CHARTS AND TABLES

List of Figures

[Figure 1 : Register a patient 4](#_Toc28622)

[Figure 2 : Manage Patient Identifier Types 5](#_Toc32527)

[Figure 3 : Manage previleges 6](#_Toc18601)

[Figure 4 : Manage roles 6](#_Toc16027)

List of Table

[Table 1: define roles 12](#_Toc119762473)

[Table 2: Role inheritance 12](#_Toc119762474)

[Table 3: User roles 16](#_Toc119762475)

[Table 4: role hierarchy 23](#_Toc119762476)

CHAPTER 1 - FREQUENT ITEMSET MINING

* 1. Definition and Describe algorithm

CHAPTER 2 - APRIORI

1. Definition and Describe algorithm

Before finding out the Apriori algorithm so we will show a litle bit about itemset, frequent itemset mining.

An itemset is a set of items together. If any itemset has k-items it is called a k-itemset. An itemset consists of two or more items. An itemset that occurs frequently is called a frequent itemset. Thus frequent itemset mining is a data mining technique to identify the items that often occur together.

1. Formulate the problem

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

1. Present algorithms

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

1. Analyze asymtotic time and space complexity

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

1. Implement algorithms using a compiled programming language

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

1. Measure the running time, memory usage and draw their graphics

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

CHAPTER 3 - APRIORI-TID

1. Definition and Describe algorithm

Before finding out the Apriori algorithm so we will show a litle bit about itemset, frequent itemset mining.

An itemset is a set of items together. If any itemset has k-items it is called a k-itemset. An itemset consists of two or more items. An itemset that occurs frequently is called a frequent itemset. Thus frequent itemset mining is a data mining technique to identify the items that often occur together.

1. Formulate the problem

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

1. Present algorithms

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

1. Analyze asymtotic time and space complexity

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

1. Implement algorithms using a compiled programming language

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

1. Measure the running time, memory usage and draw their graphics

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

CHAPTER 4 - ECLAT

1. Definition and Describe algorithm

Before finding out the Apriori algorithm so we will show a litle bit about itemset, frequent itemset mining.

An itemset is a set of items together. If any itemset has k-items it is called a k-itemset. An itemset consists of two or more items. An itemset that occurs frequently is called a frequent itemset. Thus frequent itemset mining is a data mining technique to identify the items that often occur together.

1. Formulate the problem

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

1. Present algorithms

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

1. Analyze asymtotic time and space complexity

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

1. Implement algorithms using a compiled programming language

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

1. Measure the running time, memory usage and draw their graphics

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

CHAPTER 5 - FP-GROWTH

1. Definition and Describe algorithm

Before finding out the Apriori algorithm so we will show a litle bit about itemset, frequent itemset mining.

An itemset is a set of items together. If any itemset has k-items it is called a k-itemset. An itemset consists of two or more items. An itemset that occurs frequently is called a frequent itemset. Thus frequent itemset mining is a data mining technique to identify the items that often occur together.

1. Formulate the problem

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

1. Present algorithms

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

1. Analyze asymtotic time and space complexity

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

1. Implement algorithms using a compiled programming language

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

1. Measure the running time, memory usage and draw their graphics

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

CHAPTER 6 - H-MINE

1. Definition and Describe algorithm

Before finding out the Apriori algorithm so we will show a litle bit about itemset, frequent itemset mining.

An itemset is a set of items together. If any itemset has k-items it is called a k-itemset. An itemset consists of two or more items. An itemset that occurs frequently is called a frequent itemset. Thus frequent itemset mining is a data mining technique to identify the items that often occur together.

1. Formulate the problem

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

1. Present algorithms

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

1. Analyze asymtotic time and space complexity

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

1. Implement algorithms using a compiled programming language

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

1. Measure the running time, memory usage and draw their graphics

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

CHAPTER 7 - LCM

1. Definition and Describe algorithm

Before finding out the Apriori algorithm so we will show a litle bit about itemset, frequent itemset mining.

An itemset is a set of items together. If any itemset has k-items it is called a k-itemset. An itemset consists of two or more items. An itemset that occurs frequently is called a frequent itemset. Thus frequent itemset mining is a data mining technique to identify the items that often occur together.

1. Formulate the problem

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

1. Present algorithms

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

1. Analyze asymtotic time and space complexity

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

1. Implement algorithms using a compiled programming language

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

1. Measure the running time, memory usage and draw their graphics

Definition of Apriori:Apriori is an algorithm for discovering frequent itemsets in transaction databases.

REFERENCE

1. User Management and Access Control

<https://guide.openmrs.org/en/Administering%20OpenMRS/user-management-and-access-control.html>

1. Controlling User Access (Roles and Privileges)

<https://wiki.openmrs.org/pages/viewpage.action?pageId=3346872>

1. Administering Users

[https://wiki.openmrs.org/display/docs/Administering+Users#AdministeringUsers-AddingaUser](https://wiki.openmrs.org/display/docs/Administering+Users" \l "AdministeringUsers-AddingaUser)

1. Organizational Roles

<https://wiki.openmrs.org/display/docs/Organizational+Roles>

1. Hospital Management Hierarchy

<https://www.hierarchystructure.com/hospital-management-hierarchy/>

1. Hospital Organizational Chart

<https://www.edrawmax.com/article/hospital-organizational-chart.html>