COMPARISONAL ANALYSIS OF APRIORI ALGORITHM AND ECLAT ALGORITHM FOR DETERMINING LENDING PATTERNS BOOK IN THE LIBRARY

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DOI: https://doi.org/10.37178/ca-c.23.1.091

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Abstract

The Library has a lot of loan transaction data Books, if the data is processed with a certain method, will be other useful information. This study aims to determine the pattern Borrowing books based on books that are often borrowed at the same time, to compile information on book recommendations and determine performance a priori algorithm and Eclat algorithm. The results of this study suggest a pattern that generated between the a priori algorithm and the Eclat algorithm has common elements just as much, namely up to 21 with 0.7% support and good book recommendations produced books on microeconomics, Islamic religious instruction, pancasila education and civics. The a priori algorithm's performance has time faster execution compared to the Eclat algorithm. Apriori algorithm takes 78 ms in the execution process, while the eclat. Algorithm The execution process takes 125 ms.

Keyword *: library, a priori, eclat, loan*

INTRODUCTION

Library has reference services and Loan service. Referral services are services included in Reading form is available. Collections that fall into the reference service category is a collection that should not be borrowed to take home. Multiple collectionsfall into reference categories: dictionaries, encyclopedias, journals, Magazines, newspapers, clippings, theses. The whole process of circulation is in library database. So that the library can of course always provide the best service by providing a collection of books that suit the needs of the academic community.By analyzing the pattern of borrowing books, so later provide useful information for executives as well as managementcan set guidelines related to the development of library.Several related studies have been carried out using the Eclat. algorithmfind the relationship between a book that is repeated many times with two pattern themes Books and products. from several periods

of research data, namely the book "Basics"Evaluation of Education "with the book" Introduction to Educational Evaluation "

Data mining is an iterative and interactive process to find patterns or new models that are valid (perfect), useful and understandable invery large database (massive database). Including data mining Search a large database for the trend or pattern you want to help with Make future decisions. These patterns are recognized bycertain tools that enable useful data analysis andreveal, which can then be examined more closely. Source text required for additional translation information More about this source text source text required for additional translation information.

STUDY LITERATURE

Apriori algorithm is a kind of association rule for dataMining. Rules expressing associations between attributes are often mentioned Affinity analysis or shopping cart analysis. Association or association analysis. Rule mining is a data mining technique used to find combination rules. Product of the stages of association analysis that has attracted the attention of many researchers To make an efficient algorithm is frequency pattern analysis high (frequent pattern mining). The meaning of an association can be seen with two benchmarks, namely: support and trust. Support (support value) is the percentage of combining these items in the temporary database trust (Security value) is the strength of the relationship between the elements in the association rules[1].

Eclat's algorithm performs frequent item set searches from a data set(Notes)[2]. Which common itemset has the most? appear frequently. The Eclat algorithm was developed by Zaki, Parthasarathy, Ogihara,& Li is an algorithm that performs the same item grouping activityinto a class (equivalence class) according to certain criteria. same classthe result of the set partition[3]. Equivalence class of algorithmEclat is built with prefix based classes. Eclat's algorithm has a processfaster because the data set is in a vertical format[4].

Notes According to [5], Eclat's algorithm will changeCreate a horizontal data record in the set item's vertical transaction ID list (tidlist).The tid list (TID) of the item set is obtained from a sequence of transaction data IDs which:item sets. It makes Eclat's algorithm different with other algorithms.

Sequential Pattern Mining Framework (SPMF) is a data tool Open source mining with program packages and source code written in Javanese language. SPMF contains more than 120 data mining algorithms which aims to perform association rule mining, item set mining, sequentially Rule Mining, Sequence Prediction, Periodic Pattern Mining, High Utility PatternMining, grouping and classification. For available source code, you can also integrated in Java software[6].

Data collection is carried out by considering the use of databased on the type of data and its source. Amount of book loan data In the library, it is necessary to know what the pattern of borrowing books library. From a series ofcredit transaction datarecorded 19,343 loan transactions in 2019. From several With big data like this, we can find new knowledge in it, how?existing book lending patterns. To find the pattern, wephase of knowledge data discovery or data mining. datawhat has been recorded so far is kept as a book loan from the university libraryWidyatama is Member ID, User, Loan Date, Return Date, ID Books and book titles.

METHOD RESEARCH

The research was done at the Library using Understand the problem at the research site in detail and provide it Solutions to these problems, then a literature study is carried out to order Collection of research-related information so that moreknow about the problem under investigation. After the data has been collected,Next, an analysis is carried out, the aim of which is to find out how to obtaina clear picture of the problem and analysis of the data needed on research.

Data selection is the process of selecting the data needed in the database this research. In this study the variable used is the name of the book borrowed from the library. Collected book datais data that borrows more than one so that it can be madethe association.

After the data transformation step are the stepsThe next step is the data mining process. The data mining process is here determine the association rules contained in the accident data withwith the Eclat algorithm. 7 data attributes are used inAccident data or Search the database first to get candidates Item set and TID list search. Below are the results of the data mining process usingAssociation rules with Eclat algorithm with data sets from item sets to 2Item set: a. Itemset The first is to scan the database to get Candidate item set and TID list search.

IMPLEMENTATION

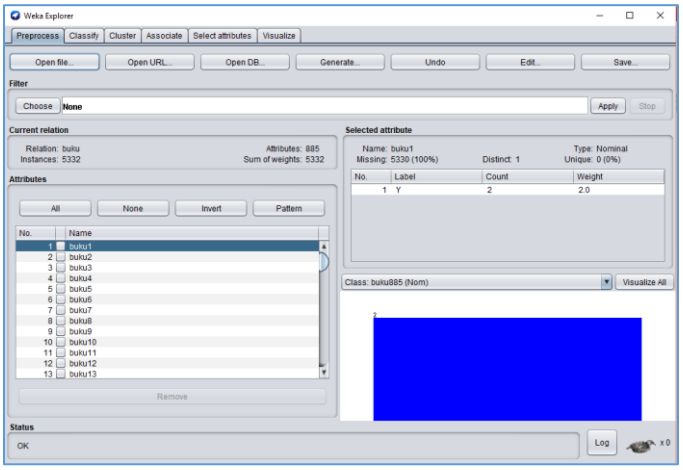

Figure 1 mining Apriori data

After changing the data format in arff form, continue with the data mining process using the SPMF tool. This tool has many algorithms that are in the data Mining is one of them for the association rule algorithm included in This research is Apriori and Eclat. Here we take part in the data mining process a priori algorithm.

Assistance taken of 0.7% because 2 item sets are produced at the same time. Mining process Data with a priori algorithm Click on Select Algorithm and then on Apriori. Select the input file, then select the Arff file you created earlier. Then create an output.txt for the output to save the results of the rules. Then we enter the minimum support of 0.7%. And check the text editor up Show data in output.txt.

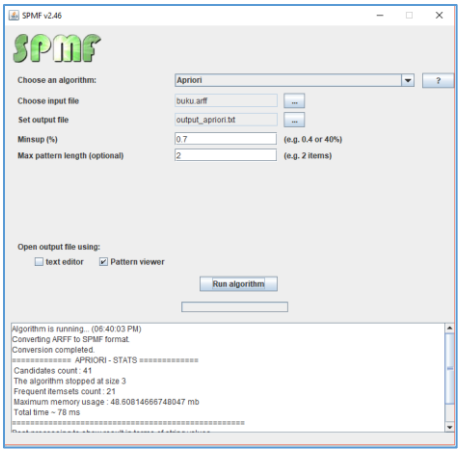

Figure 2. Calculation

Table 1

Result calculation with a priori

buk113=Y buku268=Y 29
buku113=Y buku375=Y 29
buku113=Y buku600=Y 29
buku113=Y buku601=Y 29
buku113=Y buku603=Y 29
buku268=Y buku375=Y 30
buku268=Y buku600=Y 30
buku268=Y buku601=Y 30
buku268=Y buku603=Y 30
buku375=Y buku600=Y 30
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buku375=Y buku603=Y 30
buku600=Y buku601=Y 30
buku600=Y buku603=Y 30
buku601=Y buku603=Y 30

- Buku113 = Y Buku268 = Y: When a student borrows a book for multivariate analysisand econometrics; Theory, concepts and applications with EVIEWS 8 make studentsborrow the macroeconomics book + CD at the same timethe occurrence of data up to 29 times.
- 2. Buku113 = Y Buku375 = Y: When a student borrows a book for multivariate analysisand econometrics; Theory, concepts and applications with EVIEWS 8 make students
- The Business Communication Book was also borrowed at the same time as it was created Data 29 times.
- 3. Buku113 = Y Buku600 = Y: When a student borrows a book for multivariate analysis and econometrics; Theory, concepts and applications with EVIEWS 8 make students also borrowed books on Islamic religious education; For universities in

  Time occurrence of data up to 29 times.

- 4. Buku113 = Y Buku601 = Y: When a student borrows a book for multivariate analysis and econometrics; Theory, concepts and applications with EVIEWS 8 make students at the same time borrowed the Citizenship Education Book the occurrence of data up to 29 times.
- 5. Buku113 = Y Buku603 = Y: When a student borrows a book for multivariate analysis and econometrics; Theory, concepts and applications with EVIEWS 8 make students

CONCLUSION

Based on the results of research and testing through comparison
a priori algorithm and eclat algorithm, it can be concluded as follows:

- Have a pattern generated between the a priori algorithm and the Eclat algorithm the same common item up to 21, by generating
- Recommended Books, namely Macroeconomics Book + CD, Educational Books Islam; For college, civic education book and Pancasila education books.
- A priori algorithm performance has a faster algorithm execution time éclat takes 78 ms, while the éclat algorithm takes 125ms execution time.

Based on the research conducted, the authors propose further research with a larger amount of data so that you receive a sample loan with a recommended book yield even more. When processing data according to the methodclassify so that the results obtained are more accurate. Also recommended for Library to put books Close.

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