

# Proficiency Test In Using Mail Merge feature of Microsoft Office With Expert System Algorithms

Devi Setiyoningrum<sup>1</sup>, Anis Cherid<sup>2</sup>

Program Studi Informatika,  
Universitas Mercu Buana, Jl. Raya Meruya Selatan, Kembangan, Jakarta, DKI Jakarta

E-mail :<sup>1</sup>dsetiyoningrum@gmail.com ,<sup>2</sup>anis.cherid@mercubuana.ac.id

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## ABSTRACT

*Manufacture of bulk mail is a common thing to do, both in the rural environment, academic, organization, or in layman's instansi. Selama administrative activities related to the mass mailing is done by creating a letter to then reproduced and edited manually one by one on different parts, for example on the part of the name and address. In fact, Microsoft Office has provided tools mail merge to create mass mailings that can handle multiple recipients with just one surat. Salah one solution to overcome this problem, many outstanding tutorials, discuss thoroughly the mail merge, but there needs to be a media that serves to test the extent to which knowledge of a person in control of such knowledge.. Expert systems is a system that is trying to adopt human knowledge into a computer so that the computer can resolve the issue as was done by experts, and expert systems are well designed in order to solve a particular problem by mimicking the work of the experts. Therefore, the need for application of expert systems that function to test proficiency in using the mail merge feature. The system is built using forward chaining and PHP programming language. need for an expert system application that serves to test proficiency in using the mail merge feature. The system is built using forward chaining and PHP programming language. need for an expert system application that serves to test proficiency in using the mail merge feature. The system is built using forward chaining and PHP programming language.*

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## 1. Introduction

Mail merge is a mass mailing, which the letter whose content matching and sent to many people or different purposes. With mail merge, mail delivery to multiple destinations can be completed quickly and accurately [1]. Letters were made using a main document and data source [2].

Manufacture of bulk mail is a common thing to do, both in the rural environment, academic, organization, or agency. During the layman, administrative activities related to the mass mailing is done by creating a letter to then reproduced and edited manually one by one on different parts, for example on the part of the name and address. In fact, Microsoft Office has provided tools mail merge to create mass mailings that can handle multiple recipients with just one letter. One solution to overcome this problem, many outstanding tutorials, discuss thoroughly the mail merge, but there needs to be a media that serves to test the extent to which knowledge of a person in control of such knowledge.

Responding to today's technology era, education is required to be able to adapt and take advantage of information and communication technologies to facilitate and improve the quality of education, learning and assessment.

Exam is one way to evaluate the learning process. In the educational world test is intended to measure the level of achievement of a goal of teaching by students as learners, so that students can determine the level of ability in understanding the field of studies being pursued [3]. If the result is not maximized, then the learning process should be further enhanced.

According to [4] states that, Deuteronomy online (Online Test) is one method of assessment of



learning outcomes or measure the level of a person's ability to use a computer. Learning methods like this are very helpful to the process of assessment of learning outcomes, because such assessments are very accurate and meminimalisir human error, in contrast to replay manually using paper answer sheet.

Expert systems (expert systems) is a system that is trying to adopt human knowledge into a computer so that the computer can resolve the issue as was done by experts, and expert systems are well designed in order to solve a particular problem by mimicking the work of the experts [5] ,

Forms Expert System in general, will result in the diagnosis and solution of the symptoms that user input, but this study is an extension of previous research. Where the purpose of this study was to produce applications that utilize the proficiency test methods and algorithms decision tree expert system in presenting the questions and seek answers. So that an expert does not need to create a question bank manually, because a matter has been automatically generated by the system, based on rules set forth the knowledge of an expert in computers. Where in this system, the answer on this basis a decision tree, so that the system can know the correct answer, Expert system algorithm used is Chaining. Forward Chaining is a tracing process that starts by displaying a collection of data or facts that convincingly shown to conclusion akhir. Materi dalam bentuk soal debriefing, there are two types of matter, that is a matter of multiple choice and true-false questions. For multiple choice questions, the system will display the final destination of a procedural step, the last position of the steps taken, then the system will prompt steps before or after it. Then the system will display four possible answers, which consists of one correct answer and three answers detractors. So that the user is asked to choose one correct answer. As for the true-false questions, the system will display the sentence that contains the ultimate goal of a procedural step and the last position of the steps taken and steps before or after an appropriate or not appropriate. Then the system will display duapilihan are right and wrong answers, so that the user is prompted to answer whether the sentence is true or false.

In this expert system design, the author of a little more inspired and referencing of research - previous research. The research associated with this expert system design were:

Research conducted by [6] .Penelitian is done to to design a system that can be used to deal damage this printer. Sistem using forward chaining method.

Further research conducted by [7]. This study aims to create an expert system damage barbasis Mobile web which can allow a user to obtain information about the symptoms - symptoms of mobile phone hardware damage and possible solutions.

Later studies conducted by [8]. This study was conducted to design a desktop-based expert system that delivers solutions to detect and provide detailed information about Damages on color TV.

Subsequent research conducted by [9] .Penelitian is done to create an expert system that can diagnose the damage of laptop hardware and software using forward chaining algorithm.

Recent work by [10] This .Penelitian concerning the development of Android based systems that implement one method in an expert system inference engine that is built is forward chaining. Sistem detection expert system hardware damage to the computer or laptop that aims to help the novice user to know the location of the damage to the hardware on computers and laptops, as well as helping the user to the handling of such damages.

## 2. Research Methodology

### A. Types of research

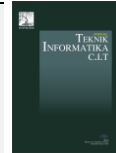
This research is the development of this type of research because the research is to develop a test application on the use Mail Merge capabilities, which measures the response data and compiled into an expert system to process them as the answer to the question of who is served.

### B. Method of collecting data

The process of data collection is done using the method of literature. Book study is an activity to collect information relevant to the topic or problem which is the object of research. Such information can be obtained from books, scientific papers, theses, dissertations, encyclopedias, the Internet, and other sources.

### C. stages Research

Stages in the research are the steps to resolve the issue in order to achieve tujuan. Tahapan of



the research can be seen in Figure 1.

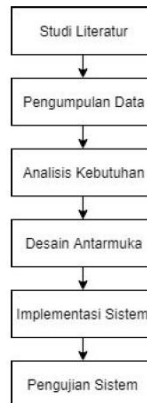


Fig 1, stages Research

### 3. Results and Discussion

#### 3.1. Concept

The making of this application aims to test the user's ability to use Mail Merge with Microsoft Excel data source using an expert system with forward chaining algorithms. At this point the author makes some criteria on the concept of the application to be made. As for some of the criteria that is expected in this application:

- 1) Can be run in browser PC.
- 2) Application has easy to use interface oleh user.
- 3) user can answer questions and see gambar soal.
- 4) This app requires an internet connection (offline).

#### 3.2. Design

Problem to be displayed need to be designed so that no one in designing a node in the decision tree. Stages in the manufacture of a matter done in several steps including:

- 1) Determining the shape of the final results will be made a matter of question
- 2) Determining the correct answer by pointing to the node before or node thereafter of questions
- 3) Determining the answers detractors by pointing to the nodes from different branches at random.

The design of knowledge representation system pakardiperlukan to model data from the acquisition of knowledge into a form that is easy to understand that the form of the model table conclusion, Table Step, Table Decision, Table Ruledan Decision Trees respectively shown in Table 1, Table 2, Table 3, Table 4 and Figure 2.

Table 1

TABLE CONCLUSION

Id_node	Conclusion
S1	Creating a Microsoft Excel data source
S2	Creating the main document
S3	Connecting the main document with the data source
S4	Insert fields from the data source
S5	Seeing the results of a mail merge while
S6	Mengabung mail merge into a new document

TABLE 2

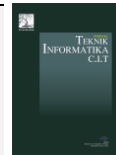
TABLE STEP

Id_node	Step
A1	Run the Microsoft Excel program
A2	Type the data source
A3	Rename "Sheet1" to "Data"
A4	Name the range of data sources
A5	Save the file in the folder data source data source
B1	Run the program Microsoft Word



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Id_node	Step
B2	Click the Mailings tab
B3	Click Start Mail Merge
B4	click Letters
B5	Type and format text letter as a document of the Parent
B6	Save the master document file
B7	Click the Select Recipients
B8	Click the Use an Existing List
B9	Select Microsoft Excel data source file
B10	click Open
B11	select the name of the data range
B12	Click OK (Select Table Dialog Box)
B13	CLICK dropdown button Insert Merge Field
B14	Sisipkan fields in each section
B15	Click the Preview button Results
B16	Click Finish & Merge
B17	Select Edit Individual Documents
B18	select All
B19	Click OK (Dialog Box Merge to New Document)
B20	Save the file new documents

**TABLE 3**  
DECISION TABLE

Id_node Step	Id_node Problem					
	S1	S2	S3	S4	S5	S6
A1	X					
A2	X					
A3	X					
A4	X					
A5	X					
B1		X	X	X	X	X
B2		X	X	X	X	X
B3		X				
B4		X				
B5		X				
B6		X				
B7			X			
B8			X			
B9			X			
B10			X			
B11			X			
B12			X			
B13				X		
B14				X		
B15					X	
B16						X
B17						X
B18						X
B19						X
B20						X

**TABLE 4**  
RULE TABLE

rule	If	Then
1	[A1] AND [A2] AND [A3] AND [A4] AND [A5]	[S1]
2	[B1] AND [B2] AND [B3] AND [B4] AND [B5] AND [B6]	[S2]
3	[B1] AND [B2] AND [B7] AND [B8] AND [B9] AND [B10] AND [B11] AND [B12]	[S3]
4	[B1] AND [B2] AND [B13] AND [B14]	[S4]
5	[B1] AND [B2] AND [B15]	[S5]
6	[B1] AND [B2] AND [B16] AND [B17] AND [B18] AND [B19] AND [B20]	[S6]

After giving the index is done, the next step is to design a tree keputusan. Bentuk of the decision tree set of steps that have been made earlier.

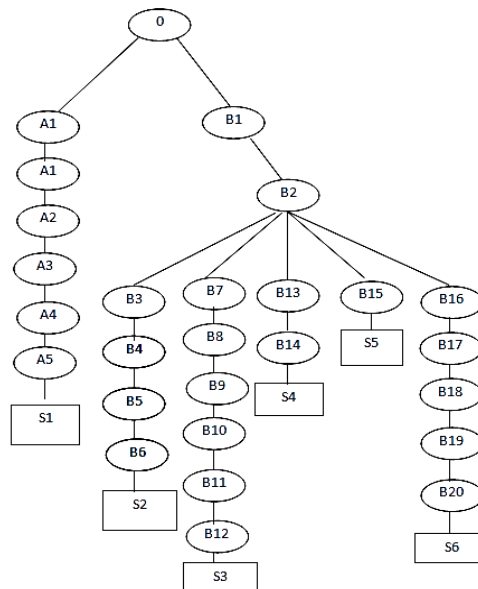
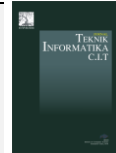


Fig 2. Decision Tree

After the decision tree has been made then the next stage is a way to show the problem. The algorithm for displaying problems with multiple types choice adalah:

- 1) Determining a conclusion node at random, to be used as the final goal step.
- 2) Menentukan sebuah node at random, to be used as the last position node steps taken towards such a conclusion node.
- 3) Randomly determine whether the problem is the node before or after
- 4) Determine the contents of the previous or next node as the correct answer
- 5) Randomly select the three nodes that are child of the parent node that is on another branch and displaying the third node in response to detractors

Algorithms answers:

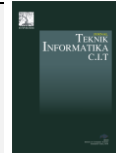
- 1) Node in the tree keputusan akan start from last position node steps taken.
- 2) Then sistem akan check the answers from the user, whether the end result of the initial - node node and the user's selection is completed or stopped in node conclusion into question or not. If the selected circuit node node stop at this conclusion, then the answer is correct, if not then the answer wrong.

While the algorithm to display the item with a true-false question types are:

- 1) Determining a conclusion node at random, to be used as the final goal step.
- 2) Menentukan sebuah node at random, to be used as the last position node steps taken towards such a conclusion node.
- 3) Randomly determine whether the problem is the node before or after
- 4) Randomly determine the contents of the node before or after the correct answer or answers detractors.

Algorithms answers:

- 1) Node in the decision tree will start from the last position node measures taken include [B4] that says, "Click Letters".
- 2) Then the system will check the contents of the node before or afterwards, if the outcome of the initial node and the node mentioned end or stop at the node conclusion into question or not. If the selected circuit node node stop at this conclusion, then the answer is correct, if not then the answer wrong.



## Example of Multiple Choice Questions

If you want to build your main document and the last step is Click Letters run the previous steps are ....

Answer choices:

- Click the Select button Receipient
- Click start mail merge
- Click the Preview button Result
- Click Finish & Merge

User choice answer: b. Click start mail merge

Explanation:

Correct answer is "b. Click the Start Mail Merge "as per the steps at the conclusion keduasebelum" Letters ", the previous step is a" click start mail merge ".

If the sample is made about the results of the manual process, the results of the algorithm of the matter is as follows:

- Determining a conclusion node at random, to be used as the final goal step. The selected node is: [S2] that says, "Make the main document"
- Determining a random node, to be used as the last position node steps taken towards such a conclusion node. The selected node is: [B4] that says, "Click Letters"
- Randomly determine whether the problem is the node before or afterwards. The selected node is: node before
- Determine the contents of the previous or next node as the correct answer  
The selected node is [B3] contents "Klikstart mail merge"  
Randomly select the three nodes that are child of the parent node that is on another branch and displaying the third node in response to detractors. The selected node is [B7], [B15], [B16] that says, "Click the Select button Receipient", "Click the Preview button Result" and "Click Finish & Merge".

Algorithms answers:

- Node in the decision tree will start from the last position node measures taken include [B4] that says, "Click Letters".
- Then sistemakan check the answers from the user, whether the end result of the initial - node node and the user's selection is completed or stopped in node conclusion into question or not. If the selected circuit node node stop at this conclusion, then the answer is correct, if not then the answer wrong.

Because the answer from a user is [B3] that says, "Click the Start Mail Merge" will be examined whether the final result of the node [B3] and [B4] completed or stopped [S2] or not. If the selected node circuit stops in [S2] then the correct answer if it does not then the answer salah.Karena node [B4] and [B3] will expire on [S2] then the answer that is true.

## Example of True-False Questions

If you want to build your main document and the last step is Click Letters run the previous step is Click start a mail merge.

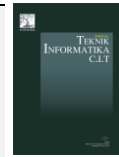
The above statement is true or false?

- Right
- false

User choice answer: a. Right

Explanation:

Answer correctly, that statement is worth "a. True "as per the steps at the conclusion keduasebelum" Letters ", the previous step is" Click the Start Mail Merge ".



While the algorithm to display the item with a true-false question types are:

- 1) Determining a conclusion node at random, to be used as the final goal step. The selected node is: [S2] that says, "Make the main document"
- 2) Determining a random node, to be used as the last position node steps taken towards such a conclusion node. The selected node is: [B4] that says, "Click Letters"
- 3) Randomly determine whether the problem is the node before or afterwards. The selected node is: node before
- 4) Randomly determine the contents of the node before or after the correct answer or answers detractors. The selected node is: the correct answer.

Algorithms answers:

- 1) Node in the decision tree will start from the last position node measures taken include [B4] that says, "Click Letters".
- 2) Then the system will check the contents of the node before or afterwards, if the outcome of the initial node and the node mentioned end or stop at the node conclusion into question or not. If the selected circuit node node stop at this conclusion, then the answer is correct, if not then the answer wrong.

Because the nodes mentioned are [B3] that says, "Click the Start Mail Merge" will be examined whether the final result of the node [B3] and [B4] completed or stopped [S2] or not. If the selected node circuit stops in [S2] then the correct answer if it does not then the answer salah. Karena nodes [B3] and [B4] will expire on [S2] then the answer that is true.

Through the above explanation has described the stages of manufacture of a matter, starting with determining the outcome of a matter until the determination algorithm design problems that are displayed on aplikasi. dibuktikan that by using a tree data structure as in the expert system, the matter can be made with more variable without having to create a variation of matter manually and save time in a matter of inputting into the application.

### 3.3. Display

#### a. Login

Is the form the access granted to the user to consult on issues faced damage to the laptop, after the first register to become a member. See Figure 3.

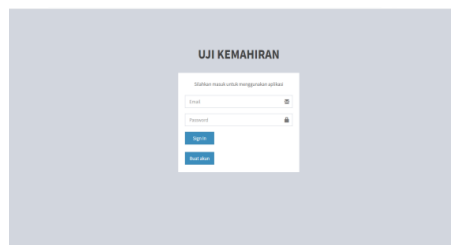


Fig 3. Display Log

#### b. Form Conclusions Data

Is a feature that contains the data the conclusion of an steps. See Figure 4.

No	Keterangan	Detail	Aksi
01	Mengisi data yang akan dimasukkan ke dalam dokumen baru		<a href="#">Detail</a> <a href="#">Aksi</a>
02	Mengisi data yang akan dimasukkan ke dalam dokumen baru		<a href="#">Detail</a> <a href="#">Aksi</a>
03	Mengisi data yang akan dimasukkan ke dalam dokumen baru		<a href="#">Detail</a> <a href="#">Aksi</a>
04	Mengisi data yang akan dimasukkan ke dalam dokumen baru		<a href="#">Detail</a> <a href="#">Aksi</a>
05	Mengisi data yang akan dimasukkan ke dalam dokumen baru		<a href="#">Detail</a> <a href="#">Aksi</a>
06	Mengisi data yang akan dimasukkan ke dalam dokumen baru		<a href="#">Detail</a> <a href="#">Aksi</a>
07	Mengisi data yang akan dimasukkan ke dalam dokumen baru		<a href="#">Detail</a> <a href="#">Aksi</a>
08	Mengisi data yang akan dimasukkan ke dalam dokumen baru		<a href="#">Detail</a> <a href="#">Aksi</a>
09	Mengisi data yang akan dimasukkan ke dalam dokumen baru		<a href="#">Detail</a> <a href="#">Aksi</a>
10	Mengisi data yang akan dimasukkan ke dalam dokumen baru		<a href="#">Detail</a> <a href="#">Aksi</a>

Fig 4. Data Conclusion

#### c. Form Data Questions

Form It contains data steps in the mail merge. For more details can be seen in gambar5.





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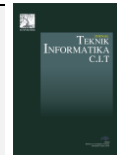


Fig 5. Data Questions

## d. Form Test

This form contains questions that must be done to see the user, from one user to another user, a different matter. Problem is composed of two types, namely the type of questions multiple choice and true-false type. Here are more details can be seen in Figure 6.

Fig 6. Fot M Test

## e. Form History

This form contains a history of the user conducting proficiency test. Here are more details can be seen in Figure 7.

Fig 7. History

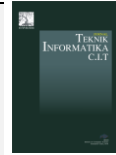
## 3.5. Examination

Tests were carried out to see if it functions as expected in aplikasisudah is to use any existing features in the website and create a scenario of usage or conditions on this website.

**Table 5.**  
Test result

Testing item	Description	Validation
User registration	Registering a new user	valid
Login	Accept input at login	valid
Test	Showing matter	valid
submit	save about	valid
process Assessment	Checking the user answers	valid
Report	Shows scores	valid
Adding users	Adding admin / new user	valid
Conclusions Data	Making changes to the data conclusions	valid
Data Questions	Making changes to the data questions	valid
test history	Displaying history test	valid
User management	Processing user data	valid
logout	Users can logout	valid





## 4. Conclusion

Based on the design of Proficiency in Test Applications Using Mail Merge feature of Microsoft Office With Expert System algorithm, it can be concluded as follows.

- 1) Based on the results of the design that have embraced the application of expert systems in the selection and answer questions.
- 2) Examples of material that will be poured in, and the answer was a simple matter because the material scope narrow Mail Merge.
- 3) Pouring the material in the decision tree is still in the basic stage.
- 4) This application automatically generates questions based on rules that are poured into a computer.
- 5) This application is designed to assist users in testing proficiency using the mail merge feature.

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