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Design And Implementation Of E-Voting For Presidential Elections Of Student Executive Board In Universitas Respati Indonesia

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ABSTRACT

Elections in Indonesia are still using manual method with conventional voting system, as well as in the general election of President of BEM in Universitas Respati Indonesia. Found several weaknesses in conventional systems such as requiring more time from data collection until the vote count is finished and there are still erorrs in voters' data calculation. Therefore, the authors are interested in creating an electoral system by utilizing information technology, namely electronic voting. The methodology used is the system development life cycle waterfall model and data flow diagram to determine the flow of data as well as PHP and HTML as a programming language. The final results were achieved in the form of e-voting election of the President of the Student Executive Board web based. With the application of e-voting is expected to improve the electoral process and the President of the Student Executive Board also developed the use of information technology at the Universitas Respati Indonesia.
Keywords: Election, BEM Universitas Respati Indonesia, SDLC, e-Voting, Web.

1. NTRODUCTION

The elections are part of a democratic process. According to Abraham Lincoln historian argues that democracy is government of the people, by the people and for the people. The democratic system has been widely applied in the countries of the world including one in our beloved country Indonesia. Likewise with the elections in the university environment, especially in Indonesia Respati University, who discussed the elections for the Student Organization structure is President of Student Executive Board, and still use manual with conventional voting system,

Implementation of the general election candidates for President of the Student Executive Board of the University of Indonesia Respati not much different from the elections at the national level, they both still use manual with conventional voting system. Some of the drawbacks of conventional voting system are as follows:

a. The electoral process is still done manually with conventional voting system so it takes a long time from the data collection process voter, voting, until the counting is completed.
b. Still there is a calculation error of the data of voters with ballots during elections recapitulation.
c. Seen many more ballot papers because many students who are not present in the classroom during the voting process.
d. There ballots were declared invalid because it does not conform to a predetermined.
e. Found some scribbles and drawings that contain elements of ethnic religious and racial insults at the candidate in the ballot paper.

f. As well as a sheer lack of storage place ballots and ballot boxes.

The purpose of the design of this application is to design an e-voting system using web based programming languages PHP and MySQL that can be implemented to replace conventional systems general election candidates for President of the Student Executive Board Respati University of Indonesia so far. While the benefits of e-voting systems are as follows:

a. Can accelerate the process of general election candidates for President of the Student Executive Board of the University of Respati Indonesia and also can directly know his voice count results.
b. Can be accessed anywhere with an online system.
c. Decreasing the number of invalid votes because it is not in accordance with applicable regulations.
d. Reducing the use of paper so that it can save purchase budget papers also help the program go green.
e. No more scribbles and pictures menjelek - mocking the candidate for President of the Student Executive Board.
f. Reduced human intervention that could affect the outcome of the vote.
g. The growing use of information technology on campus beloved Respati University of Indonesia.

2. RESEARCH METHODS

The design of e-voting application, created gradually by using the model of the System Development Life Cyle (SDLC) waterfall, which is a model of software development process with stages that will include the planning, analysis, design, coding, testing, and maintenance. The stages are as follows:

Planning, planning in building this application is how to create applications that can help the electoral process to be more effective and efficient.

Analysis,needs analysis required to build this application is to collect the software that will be used as notepad ++, mysql, xampp, and others.

Design,design the application is easy to use and also has a user interface display worth visiting.

Coding,coding stage here is to change the design which has been designed into a form that can be read by machines with programming languages like html, php, javascript, and others with the help of a text editor.

Test, applications that have been so had tested any of its functions in order to know the problem and also according to the needs required.

Maintenance, the final stage in the treatment method used is the application to run properly and it involves the application development process in order to become better suit your needs.

Besides SDLC approach to the process of coding the program, using the methodology of the research approach using Rapid Application Development (RAD). Rapid application development is a programming system that lets programmers create programs quickly. In general, rapid application development system provides a number of tools to create a graphical user interface Graphical User Interface (GUI) that typically requires effort and a long time to make. There are three methodologies in system development with rapid application development, namely:

a. Phased Development.
b. Prototyping.
c. Throw-Away Prototyping.

Rapid application prototyping and development using more structured techniques to determine user needs and design of information systems. Needs analysis process consists of planning on how the application will be made, as well as the software and hardware needed. While the process of data collection is done is direct observation (observation) and questionnaire development.

3. RESULTS AND DISCUSSION

Application design electronic voting (e-voting), will be described with flowmap modeling diagrams and data flow diagram, which is a logical explanation of the steps or algorithms of the e-voting applications were made. Adapaunflowmap flow of e-voting are as follows:

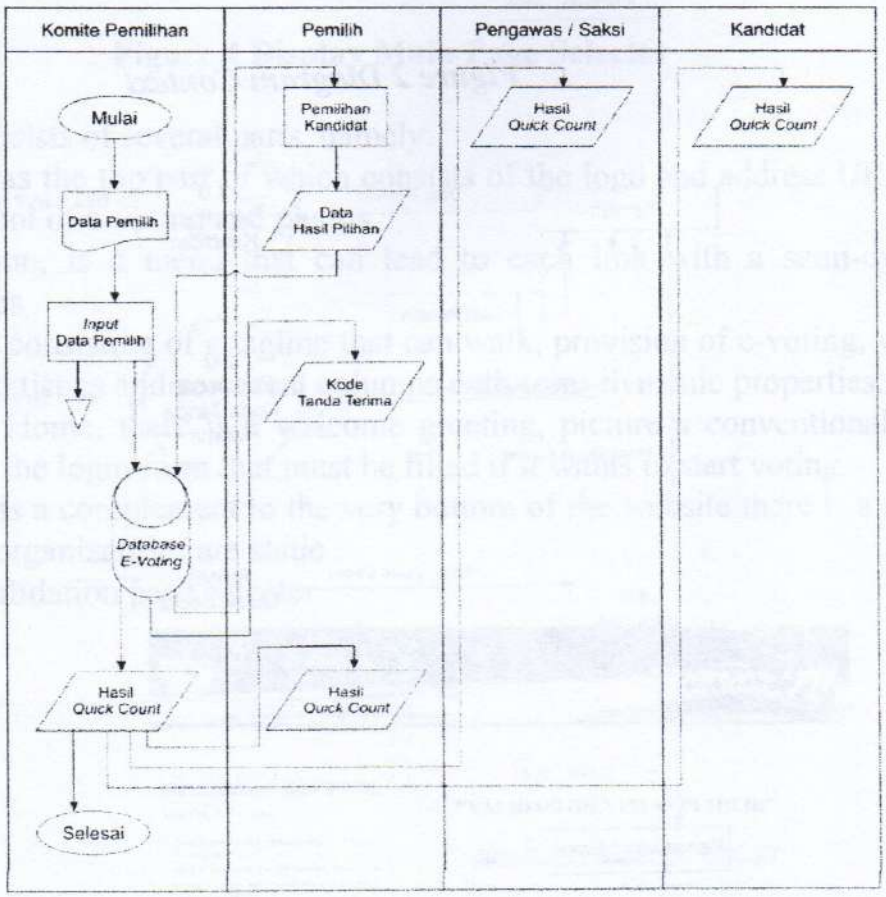

Figure 1 Flowmap e-voting

Seen in the picture above that, the flow of e-voting system starting from the electoral committees by first inserting data into a database which then can voters to vote. Voting results will be entered into a database that will be processed directly by the system so that a quick count results that the results can be seen by all the elements.

In addition in the form of flowmap, also compiled data flow diagram, which describe a system as a network of processes and functions are connected to each other by connecting the so-called data flow. Data flow diagram used in e-voting systems is that the context diagram and diagram zero.

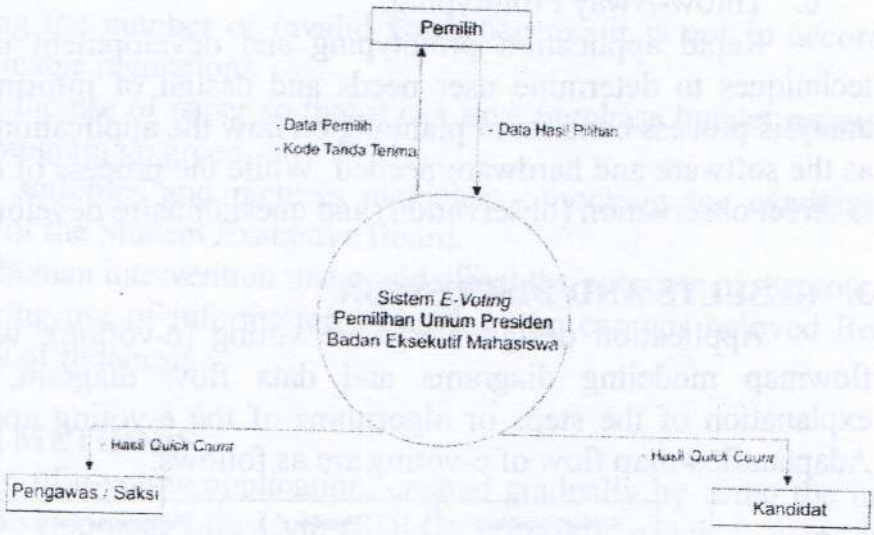

Figure 2 Diagram Context

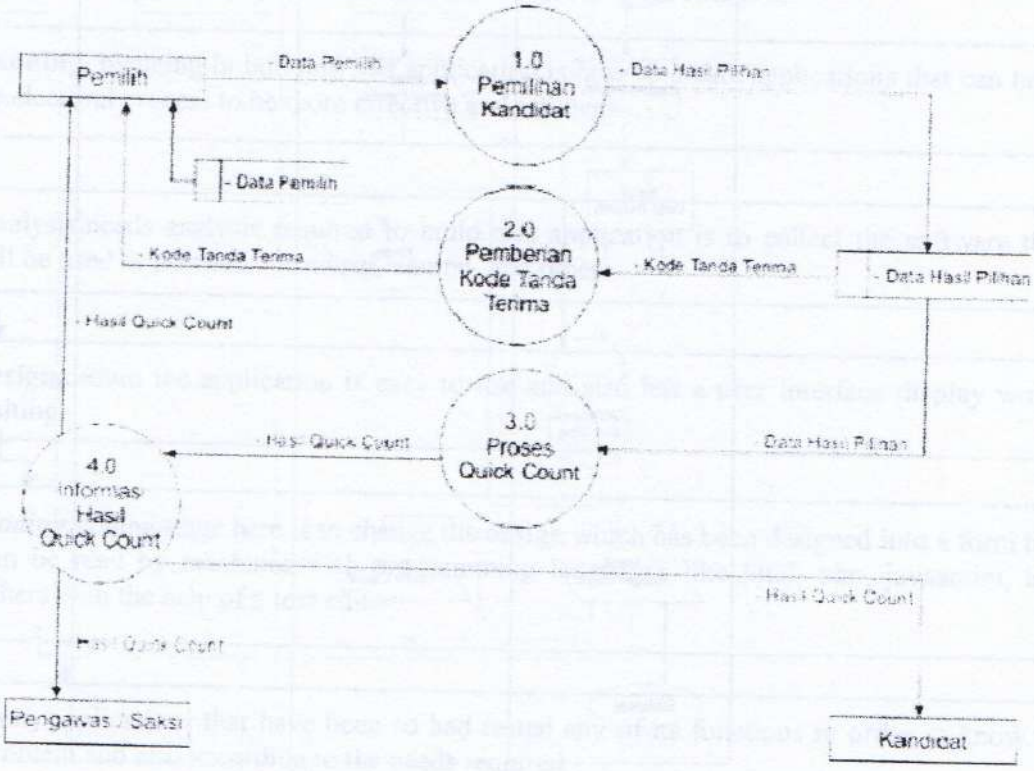

Figure 3 Diagram NOL

Physical design of the user interface displays multiple pages of e-voting is finished and ready for use. Results from the implementation are presented in the form of a screenshot is an image some web pages that are already contained in the web hosting.

a. Display the main page of the voters.

Figure 4 Display Main Page Selector

Main page consists of several parts, namely:

1) Header, as the top part of which consists of the logo and address URINDO, the symbol of e-voting and photos.
2) Navigation, is a menu that can lead to each link with a semi-dynamic properties
3) Sidebar, consisting of a tagline that can walk, provision of e-voting, website visitor statistics and comment columns with semi-dynamic properties.
4) Display Home, there is a welcome greeting, picture a conventional ballot box and the login form that must be filled if it wants to start voting.
5) Footer, as a complement to the very bottom of the website there is a logo of student organizations are static.

b. Display validation page selector

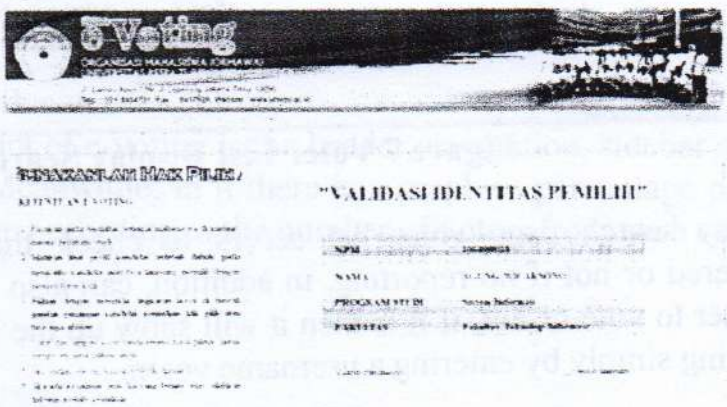

Figure 5 Display Page Validation Voters

Identity validation page will appear after the user (voters) login found on the home page. In addition, there are two pieces of the submit button is the button change the password to change the password (password) for voters, and also about choosing a button to go directly to the room voting for voters who want to directly determine his choice.

c. pageviews added voter list

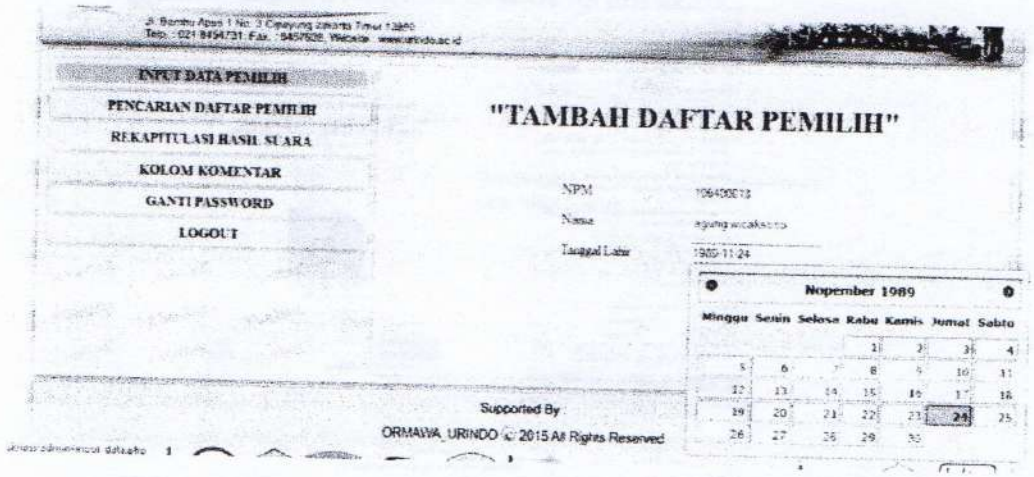

Figure 6 Add Page Views Voter List

Weather data input selector serves to add to the list for voters who have the right to vote. The data must be entered including the NPM (Student Identification Number) which will be the username, then the name of the voter and the voter's date of birth to be used as a temporary password for the voter. When finished entering data admin will need to press the save button so that the data that has been filled directly into a database program.

d. Display search page voter list

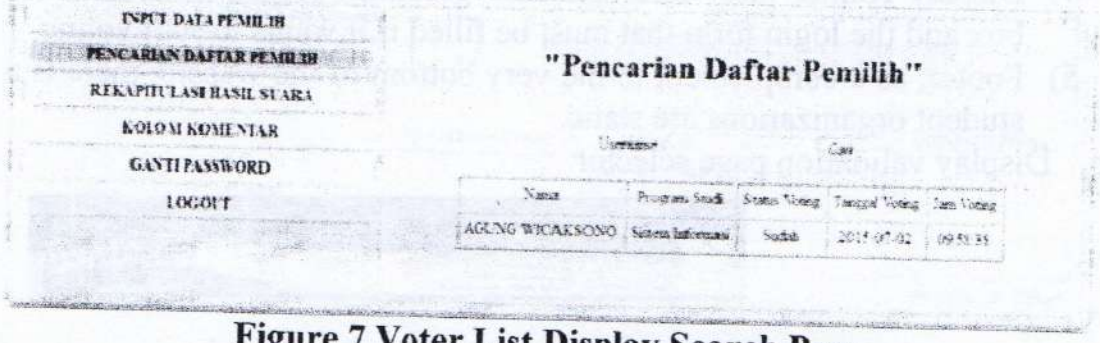

Figure 7 Voter List Display Search Page

Display search page voter list serves to check the voters who are already registered or not if no reporting. in addition, can also see the status of the voters whether to vote or not, if it is then it will show up the details of the date and time of voting simply by entering a username voters.

e. Display space voting page

On page space voting the header, navigation, sidebar and footer also remains the

same, only in the chamber voting appeared a picture of two pairs of candidates that underneath there are radio buttons for the button to determine the selection of one of the spouses, then click select or it could be abstention not to vote on the two pairs of candidates.

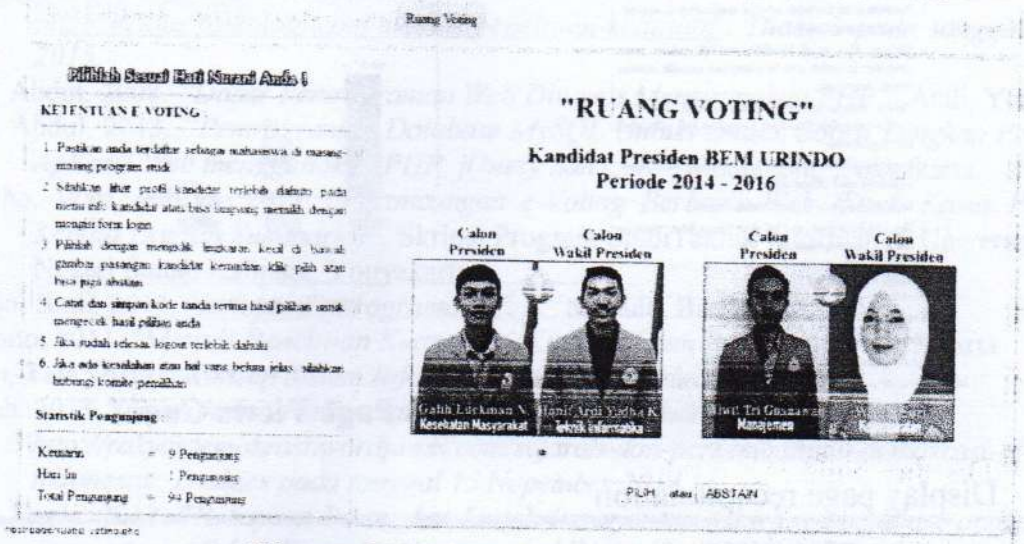

Figure 8 Voting Space Page Views

f. Display result code page selection

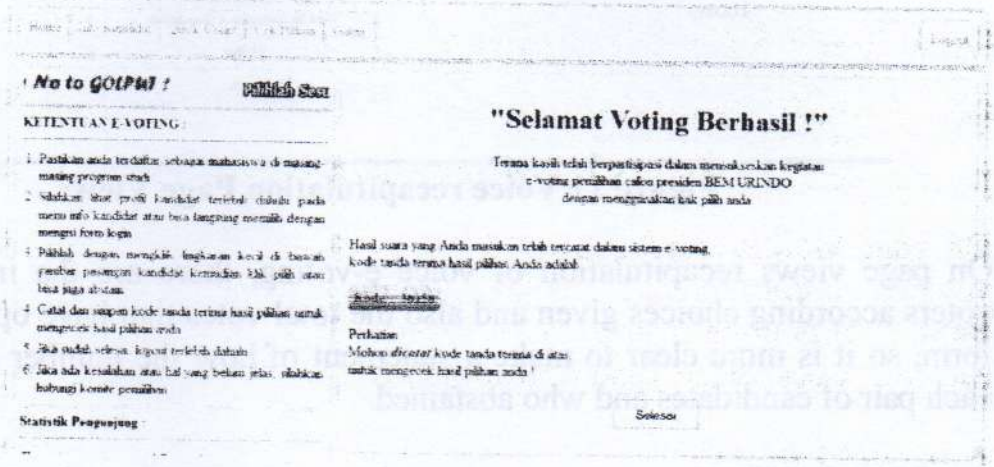

Figure 9 Display Options Results Code page

Code page views this selection results will occur if voters have an election on voting space, then the voter is given a code unique as they choose and it is suggested that record to be able to check the results of what it chooses.

g. Pageviews chart quick count

On page chart quick count of e-voting is the header, navigation, sidebar and footer also remain the same. Meanwhile, in it there is a graph in percentage of election results which will change according to the number of voters from each candidate.

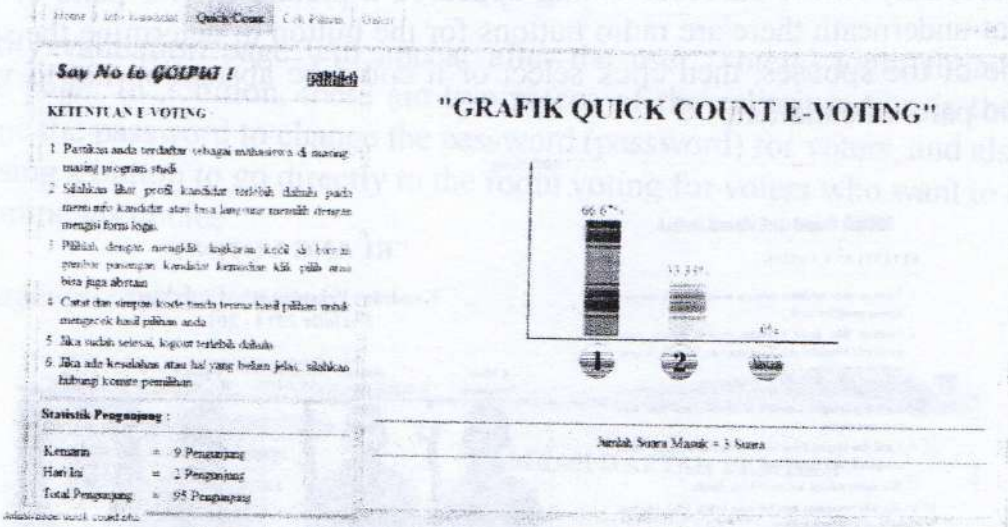

Figure 10 Quick Graphs Page Views Count

h. Display page recapitulation

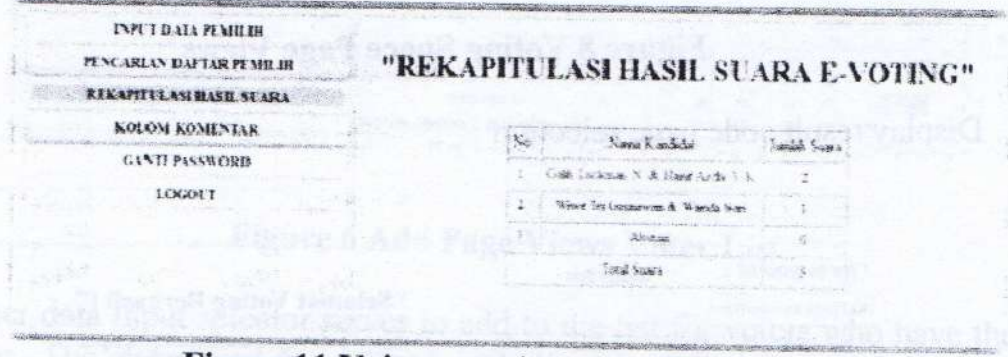

Figure 11 Voice recapitulation Page Views

On page views recapitulation of voice e-voting, there are the info number of voters according choices given and also the total votes that have opted in decimal form, so it is more clear to make a statement of how the number of voters from each pair of candidates and who abstained.

4. CONCLUSION

From the analysis of the research, design, and implementation of e-voting election for President of the Student Executive Board of the University of Indonesia Respati can conclude several things, namely:

a. Conventional elections require resources, time, and the extra energy making it less effective and efficient.
b. E-voting application built with the aim to computerize the electoral process and to develop the use of information and communication technology in the campus of the University Respati Indonesia.
c. E-voting application is useful for reducing the use of paper (paperless) which has been used, while supporting the launching of the program go green.
d. E-voting application is built using PHP and HTML programming language and MySQL database.
e. Features and design of e-voting application interface is poorly designed to be easily understood when used.

Applications Web-based e-voting can be accessed anywhere using the Internet network, not only in the campus of the University Respati Indonesia.

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