

IMPLEMENTATION OF THE E-VOTING SYSTEM IN THE ELECTION OF THE OSIS SMA DHARMA PANCASILA VOCATIONAL SCHOOL BASED ON WEB-BASED METHODS RAPID APPLICATION DEVELOPMENT (RAD)

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Abstract

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In manual voting often results in errors in vote counting, The goal to be achieved from making this e-voting application is to be able to assist committee officers in calculating the number of voters and election results quickly and accurately. For data analysis techniques using Rapid Application Development (RAD) method, which is one of the data analysis while to design this application the method used is object-oriented design using the Unified Modeling Language (UML). Based on the analysis of system requirements, a system was created web-based student council chairman election. The choice of a web-based system was due to This website is widely known by the public. So to finish The problem was proposed by a web-based e-voting system. In conclusion with With this application, general elections can run honestly and fairly and can minimize errors that can be made by humans or reduce manipulation and fraud that can occur.

Keywords: Osis, E-Voting, Rad, Uml, Website.

1. INTRODUCTION

In addition to the teaching and learning process, in the school environment there are also several organizations and other activities to appreciate talents and interests students in developing their achievements. There are also formed organizations that it accommodates student appreciation and creativity for schools. in high school SMA Dharma Pancasila these organizations can be said to be goes well. Such as the Class Representative Assembly, Student Organizations Intra-School, Marawis Organization, Paskibra Organization and other organizations others that support their talents and interests. Which every organization has an organizational structure consisting of a SMA Dharma Pancasila, vice SMA Dharma Pancasila, treasurer, Secretary and Coordination of each field and to choose leaders organization the so held election general.

With advances in information technology that have an impact on its users, brought changes to the voting system. Voting can now be used via electronic media with computer technology or known as E-voting. The implementation of E-voting itself has been carried out in many countries by various models. The voting adoption model is also very diverse, for example using smartcards and touchscreen computers.

In this study the authors conducted a case study at SMA Dharma Pancasila, which has been in determining the SMA Dharma Pancasila of the student council using the method conventional voting. The election of the student council president is wrong an election the students were waiting for. For change of term of office the organizational structure of the student council, the election of the chairman of the student council is carried out once a year. Lots School institutions that still use the conventional method are using paper media in selecting the student council chairman. Likewise with SMA Dharma Pancasila. This method is less effective considering the many obstacles that arise may be encountered in the election of student council president. In the voting manual error often occurs in the calculation of votes, the process is slow manual selection and consume a lot of costs in carrying out the process voting. This voting process can be carried out without disturbing the activities carried out is running, meaning that students can choose their voice after study hours finished or after the students come home from school. Therefore, voting requires implementation procedures that can guarantee the confidentiality and validity of the results implementation of the voting.

Based on these problems, it is necessary to have a system that have conveniences in selecting the student council chair so as to reduce damage and errors in the calculation of the vote and does not take much cost. The system that will be created must also facilitate the calculation of votes and make it easier for the committee to carry out the election of the student council chairman. Base on analysis of system requirements, a system for selecting the student council president is made Web-based. The choice of a web-based system is because currently the website has widely known by the public. The website can be accessed anywhere with conditions there is still network access to the website server. In research on "Design of e-voting information system" SMS-based" this research was conducted to make it easier to do voting by using SMS on mobile phones. An e-voting app based on this SMS Gateway was built using Gammu software and with using the PHP programming language. This system uses SMS to carry out voting, it is hoped that it will provide accurate, fast voting results and reliable and can reduce the number of students who do not vote and do not will interfere with the teaching and learning process. (Rizqi Andhestia Adhim Harjono, 2014).

In a study on "E-voting the election of the mayor of Bengkulu in the coffee shop" general election (KPU) Bengkulu City" this system uses the design database system and process design. Process design, namely describes how the processes in the information system are shown by data flow diagram (DAD). The resulting e-voting application can make it easier in the Bengkulu mayoral election and vote counting. (Sulastri, Leni Natalia Zulita, 2015).

2. METHOD

Rapid Application Development (RAD) is a development process linear sequential software emphasizing development cycles in short time. RAD uses an iterative (repetitive) method in develop a system in which a working model of the system constructed early in the development stage with the aim of establishing user requirements and then removed. In normal information system development, requires a minimum of 180 days, but by using the RAD method, the system can be solved in time 30-90 days. The RAD model has 3 stages as follows.

- Requirements Planning: Users and analysts conduct meetings to identify the objectives of the system and information needs to achieve goals. At this stage it is the most important thing is the involvement of both parties.
- System Design Process At this stage the activity the users involved determine to achieve the goal because at this process carries out the design process and makes improvements if still there is mismatch design among user and analyst.
- A user can directly comment if there is a discrepancy in the design, design the system by referring to the user requirements documentation created at the previous stage. The output of this stage is the

specification software which includes the general system organization, structure, data and others. Implementation This stage is a stage programmer who develops the design of a program that has been approved by users and analysts. Before being applied to a the organization first carried out the testing process on the the program whether there is an error or not. At this stage the user usually provide feedback on the system that has been made as well as obtain approval for the system.

3. RESULTS AND DISCUSSION

The results of the study will be based on the research design that was initiated by with needs identification, prototype evaluation prototype, coding, testing system, system evaluation

3.1. System Development

In the development of the e-voting system for the election of the chairman of the trio smk student council For this partner, the research uses the Rapid Application Development (RAD) method. In this study chose the RAD method because the stages are structured, software development can be done in a fast time with emphasizing on a short cycle, the software developed can the results are known without waiting a long time because the process is divided into modules and the main reason using developer method Rapid Application Development (RAD) is this development method will works well when applied to small-scale applications. The Rapid Application Development (RAD) development method has experienced four stages of the development cycle, namely:

a. Requirements Analysis Phase

This phase has the objective of identifying services, Boundaries and objectivity of the data collection system carried out on stakeholders

b. Modeling Analysis Phase

The purpose of the modeling analysis phase is to analyze all activities in the overall system architecture by involving identification and description of software system abstractions that fundamental.

c. Modeling Design Phase

The purpose of the modeling design phase is to design the system based on the previous analysis. Analysis stage and the design is iterated until the system design is obtained that really fulfills the need.

d. Construction Phase

The purpose of the construction phase is to demonstrate the platform, hardware and software used and Limitations in implementation, as well as testing the performance of software prototypes that has been built so that it can be seen whether the prototype is in accordance with the analysis and design specifications that have been previously identified. The final result of the construction phase I platform, hardware and software used and Restrictions list implementation and test plan.

3.2. Building Prototype

At the prototype stage, it is divided into 2 stages, namely design UML and Interface Design. After identifying the system requirements, the prototype is then developed design in the form of use case diagrams, activity diagrams, sequence diagrams and classes diagram.

a. Use Case Diagrams

Use Case diagrams are used by the author to map direct interactions between actors, namely library administrators and users with the system.

b. Definition of Use Case

The following is the definition of a use case in the e-voting system for the election of the student council president:

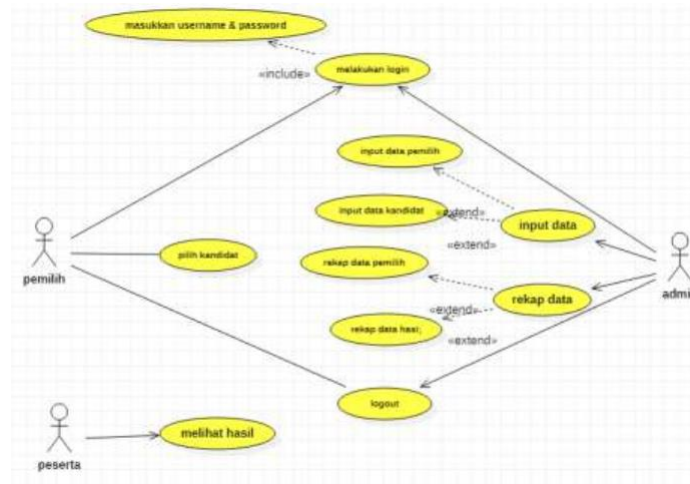


Figure 1. Use Case Diagram of E-Voting

The following is the definition of actors in the e-voting system for the election of student council presidents:

Table 1. Actor Definition

No	Actor	Description
1	Admin	Users who can process input data voters, input candidate data, voter data recap and recap the result data
2	Voter	Users who can vote for candidates
3	Participant	Users who can see the results

c. Activity Diagrams

The following is an activity diagram or an evoting system activity diagram: election SMA Dharma Pancasila osis:

1. Activity Diagram

Login to be able to login to the main page, select candidates, both students and candidate for student council SMA Dharma Pancasila must first log-in by entering the appropriate NIM and password.

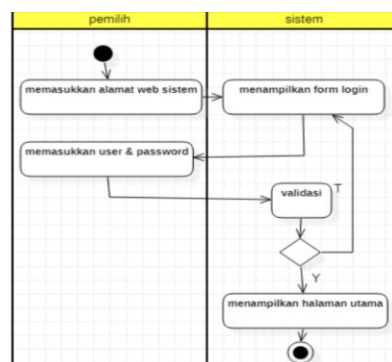


Figure 2. Activity Diagram Login

Students and prospective student council president candidates enter their username and password on the login page. This system will validate the login are the username and password valid or not, if yes, the system will display the main page select the candidate, if not then username and the password is asked to be filled again correctly.

2. Activity Diagram Upload Voters

Officers access the admin page to manage voter data and the system displays the entered voter data previously. Officers can manage data voters such as uploading voter data, editing voter data and delete voter data. The system can carry out the processing process voter data based on e-voting system officers.

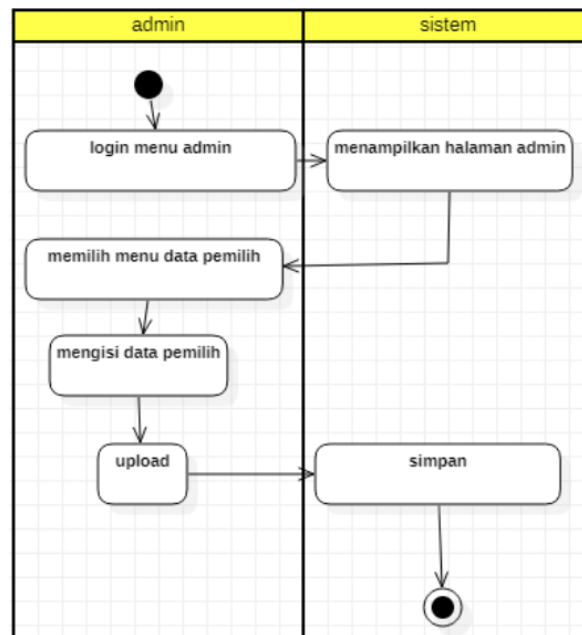


Figure 3. Activity Diagram of Voter Data Upload

3. Activity Diagram Add candidate

Officers can access the admin page to manage data candidate for chairman of the student council. The system will display the candidate page candidate.

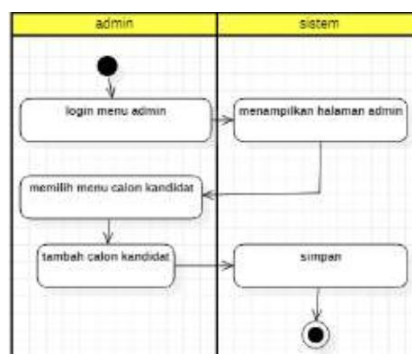


Figure 4. Activity Diagram Add Candidate

4. Activity Diagram Select Candidates

As depicted in Figure below, both selectors and candidates for student council chairman may only vote 1 (one) time and have to log-in first. Voters log in according to the username and password that has been given by officer. After the voter selects a candidate, the system will automatically returns to the main menu login page.

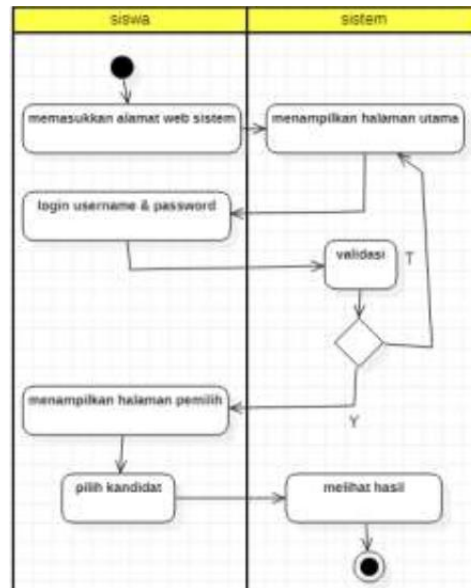


Figure 5. Activity Diagram Select Candidates

5. Activity Diagram Viewing Results

As depicted in Figure 4.8, admin officers who can displays the results of the e-voting. And will be displayed directly public which is then seen directly by other participants.

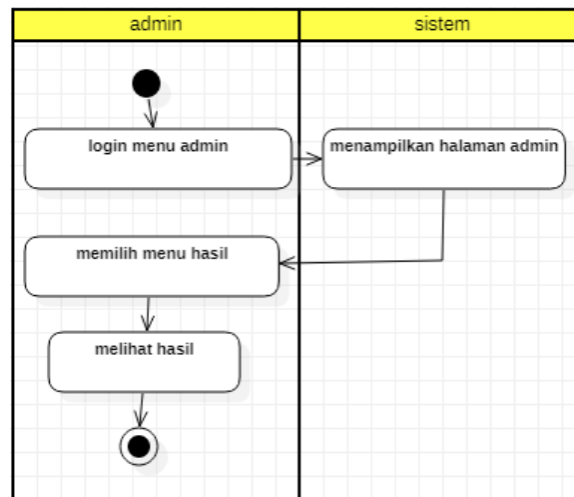


Figure 6. Activity Diagram Viewing Results

3.3. Sequence Diagrams

The following is a sequence diagram contained in the election e-voting system: candidate for president of the student council:

1. Login

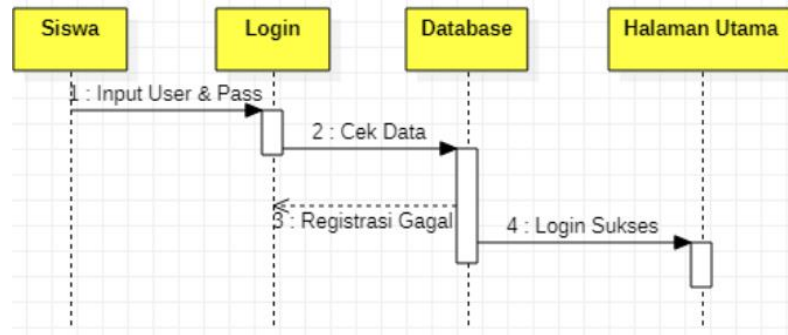


Figure 7. Sequence Diagram Login

The picture above explains that at the beginning of starting the system a login is required first, by entering the username and password to login authenticate whether the user has registered as a participant.

2. Upload Voter Data

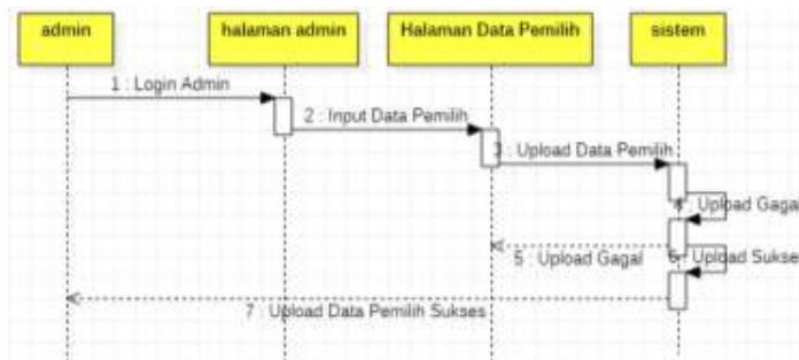


Figure 8. Sequence Diagram of Uploading Voter Data

Figure 4.8 explains how to upload voter data is admin, then admin inputs voter data and uploads it to system.

3. Add Candidate Data

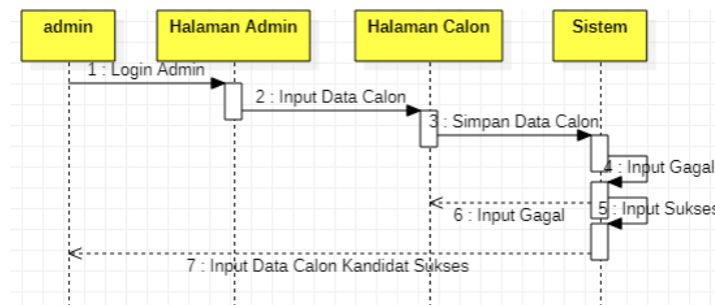


Figure 9. Sequence Diagram Add Candidate Data

Figure 9. explains that to add data the candidate is admin, then the admin inputs the candidate's data which is then inputted save to system.

4. Select Candidate

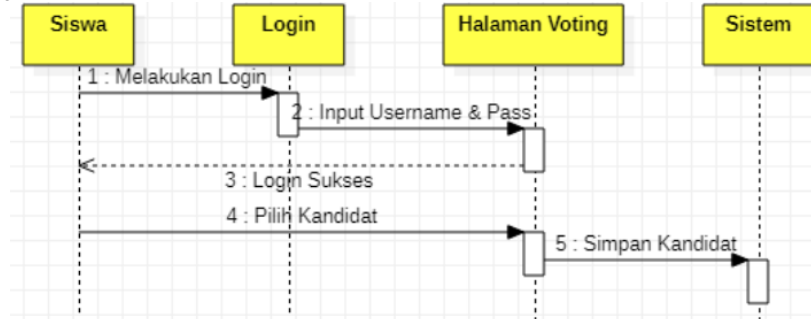


Figure 10. Sequence Diagram Select Candidates

Figure 10 explains that participants login first to be able to enter the voting page, after logging in students vote candidate and will be automatically saved by the system

5. View Results

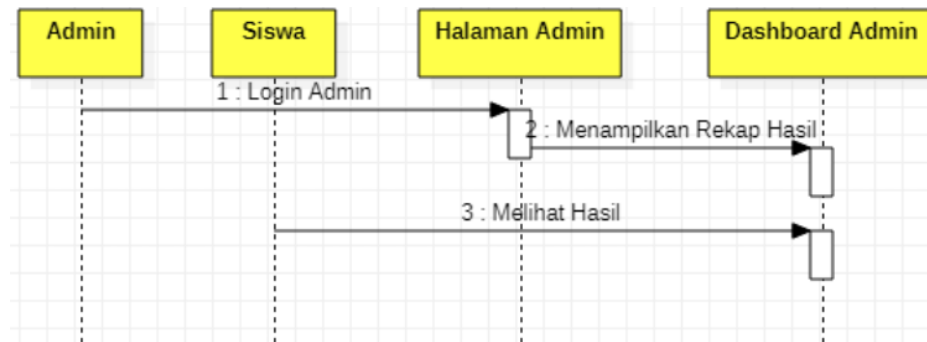


Figure 11. Sequence Diagram Viewing Results

Figure 4.11 explains to see the results, namely the admin logs in and enter the admin page, then the admin displays the recap results temporary voting to a screen for students to see.

3.4. Class Diagram

Class diagrams or class diagrams describe the structure of the system in terms of defining the classes will be made to build the system. Classes have what are called attributes and methods or operation. Attributes are data variables, which can be provides state information in which each object of the A class has its own value. Operation/method or often called service (service) or operation is a procedure or function which becomes the behavior of the class-&-object and becomes object responsibility. In the form of programming is a form of subprogram that used against class-&-object attributes.

The following is a class diagram contained in the e-voting system for selecting candidates: SMA Dharma Pancasila of the Student body :

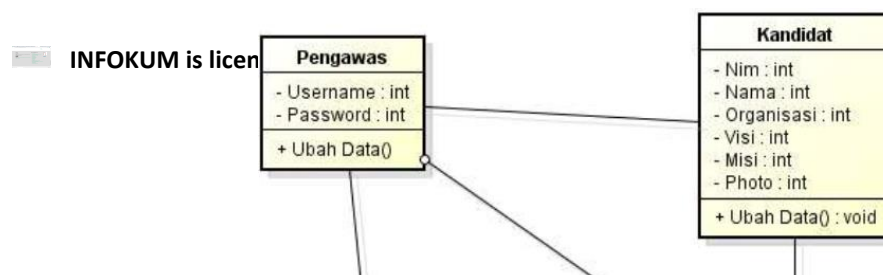


Figure 12. Class Diagram

4. CONCLUSIONS

- a. The design of this system is expected to be a reference or flow for making general election applications that can run honestly and fairly and can minimize errors that can be carried out by humans or and reduce manipulation and possible fraud.
- b. With the design of this application is expected to help students and schools in conducting honest and effective general election activities fair and free from fraud in elections.
- c. This application is expected to be able to provide satisfactory service for students and can make the selection process fair and fair and confidential and free from fraud and manipulation of results election.

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