PROTOTYPE OF E-ELECTION APPLICATION

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ABSTRACT

Election is one of the mechanisms of democratic electoral processes which occur and whether it was the turn of the leader election in large scale or small scale. Indonesia still uses conventional election in which the data collection process of voters and candidates was done manually and the datas are stored in papers, the election process is vote the candidates by stabbing the paper, for voters who can not see the candidates at the paper be provided with braille letters,

Many problems in the conventional electoral process such as distribution of electoral materials are often hampered because of transportation problems and inaccessible areas, frequent occurrence of double voters and duplication occurs vote results, production of election materials are often slow, use lots of paper causes waste papers and the other problems.

Therefore, with the build Prototype E-Election Applications can support and complement the conventional electoral process, this application can handle process of the collections data candidates and voters digitally, printing of voter identity cards with a barcode id based on NIP (Identity Number of Voter) from NIK (Identity Number of Population) at the identity card population, the election supported by process audio visual media, making it easier with regard to disabled voters, the calculation process can be quickly obtained results.

Keywords : E-Election Application, Digital Data Collection, Printing Card, Audio Visual Election, Calculation

1. INTRODUCTION

1.1 Background

Election of Indonesia is still in the conventional system. Many factors could hinder the cource of election. The important thing of election is collecting the voter.Collectiong the voters can be done digitaly to reduce use of paper (paperless) and errors in data collection for integrated population so that minimize the occurrence of double voters that may result in mark-vote. Digital data collection can help officer in the process of data collection. If there are changes to the voter's data, officials can quickly overcome because the data stored in a structured database

Over time, the number of political parties and candidate selection and increasing amounts resulted in changes in ballot measures tailored to the needs and causes confusion amid in the communit. The hole was also the ballot box can not accommodate folding the ballots that are too wide, consequently the ballot box must be re-created or altered as needed. The process of folding paper with large size result in damage to the sound of paper such as paper tearing and folding paper, not just to make the identity of the candidates election is not clear. This is clearly a more complex constraints on the preparation of elections and the H election day.

Elements of other important roles are the distribution of ballot papers, ballot boxes, ink or the needs of others also play a part in the election. Each region has polling stations (TPS) which is the meeting place of the election and Officer Ballot Group Organizer (KPPS).

Many things happens on the field constraints in the distribution of election requirements, such as transport constraints to remote areas, delay in delivery, printing of ballots that have not been completed, the ballot

box does not fit, damage to the ballots and many more.

Complexities and constraints that occur to make the election process did not go well and are less efficient and effective time spent. Above constraints can be overcome by the application of technology solutions in the elections, elections to the creation of an effective and efficient prototype that is by making elections for Electronic Application (E-Election).

Electronic transactions such as e-Election is a legalization of the Indonesian legal institutions. Application system stored in the E-Election can be changed according to the needs of such elections if there are changes in the number of political parties and candidate selection, the system can be changed without replacing all. Each an increase and changes in technology, this system can be followed by an increase in security systems and adding more bandwidth terintegritas and quota database to store data that is needed.

1.2 Problem Definition

Based on the background of the problems, the formulation of the problem can be formulated by make a prototype Applications E-Election

1.3 Purpose

Based on the problems studied, the purpose of this research is to develop prototype applications E-Election. While objectives to be achieved in this research are:

1. *Creating an E-Election application to support the election process*

2. *Facilitate the data collection process that is participating in the election voters and candidate selection.*

3. *Make it easier for voters who have physical disabilities such as blind, deaf, and because the prototype of E-Election application is supported by audio-visual media for deaf's voter. Audio visual media is complemented by the headset as a hearing aid. When voters are moving the mouse cursor in the direction of the selected image, eating would appear to explain the identity of sound candidates / pemilihanyang selected candidates*

4. *Facilitate the process of vote counting.*

5. *The contents of this application can be changed according to user needs.*

2. MODEL, ANALYSIS, SYSTEM DESIGN, DAN IMPLEMENTATION

2.1 Model

Data analysis techniques in the manufacture of software using a software modeling paradigms like the following waterfall:

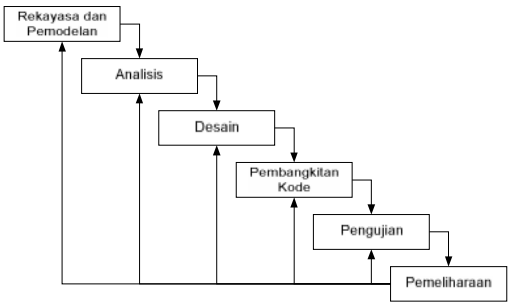


Figure 1. Waterfall Paradigma

1. *Engineering and Modeling*

   Is part of the largest systems in the work of a research project, initiated by setting the various needs of all the elements necessary to allocate into the system and software creation.

2. *Analysis*

   Identifying problems that previously occurred (conventional election) with mambandingkan new solution analysis (E-Election), describes the analysis of the current system, software requirements spesification (SRS) on the functional requirements and non functional, the target user, the software and hardware specifications that are used .

3. *Design*

   Using a structured modeling is to design ERD, context diagram, DFD, table relation, table structure, architecture and interface design application.

4. *Coding*

   Programming language used was PHP 5 and MySQL as a DBMS (Database Management System).

5. *Testing*
   Testing program using alpha and betha testing. Alpha test by filling out forms available on the type of application black box testing methods. Betha testing conducted objectively where application programs directly tested in the field of institutions concerned with making a questionnaire about user satisfaction with the content of user friendly point requirements.
6. *Maintenance*
   The final stage in which a software may have already completed the changes or additions as requested by the user. software that has been made subject to change according to user demand. Maintenance can be done if there is additional demand functions in accordance with the wishes of the user or both the growth and development of software and hardware.

2.2 Analysis

2.3 Problem Analysis

Table 1 Problem Analysis

No.	***Problem***	***Part***
1.	*The data collection process voters and candidates are still conventional, data is recorded and stored by manual archiving (paper).*	*Voters and Officers*
2.	*Selection manual (in checklist of ballots on election candidates image)*	*Voters*
3.	*Selection process less effective and efficient so that time consuming.*	*Voters*
4.	*Materials distribution process for the selection process such as ink, ballot papers, ballot boxes and other less prevalent, so many areas that do not get the ingredients.*	*Officers*
6.	*If there are errors or deletions in the candidate selection, while paper production process already in progress, automatically ballots must be changed to follow developments there. This disadvantage many parties and add cost.*	*Officers and Administrator*
9.	*This system requires a lot of officers that require expenses to pay staff salaries.*	*Officers*
10.	*The process of vote counting fast enough and takes a long time.*	*Officers and Administrator*

2.3.1 User Analysis

Qualification must have:

1. *Officer: computer control, windows operating system operates 9x/2000/XP*
2. *Administrator: computer control, operates 9x/2000/XP windows operating system, network management and addressing problems / damage that occurs in the system, understanding enough to*
3. *Voters: knowing the election procedures and the use of application systems.*

2.3.2 Hardware Analysis

1. *One of Personal Computer (PC) for the server and the administrator's access rights. This PC computer doubles as an officer to perform tasks such as data collection staff, printing of voter identity cards and so on.*
2. *Two Personal Computer (PC) for the client and the access rights is the user / voter. PC is used for the selection process in which the program applied to E-Election.*

2.3.3 Software Analysis

1. *PHP as a programming language.*
2. *MySQL as a DBMS (Database Management System).*
3. *Web server using Apache. Mozilla Firefox or Internet Explorer as your browser.*

2.4 System Design

2.3.1 ERD (Entity Relathionship Diagram)

ERD is a relationship between entities in the system used to describe the relationship between entities or data structures and relationships between files. The ERD of the application to be made are as follows:

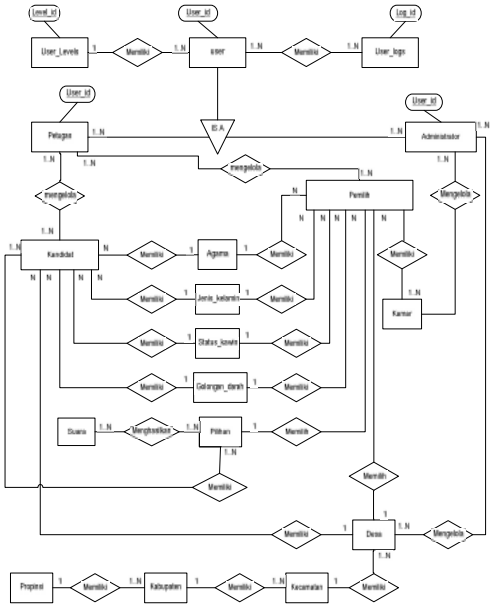


Figure 2 Entity Relationship Diagram

2.3.2 Context Diagram

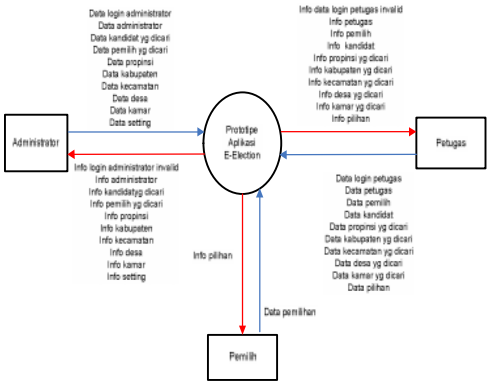


Figure 3 Context Diagram

2.3.3 DFD Level 1

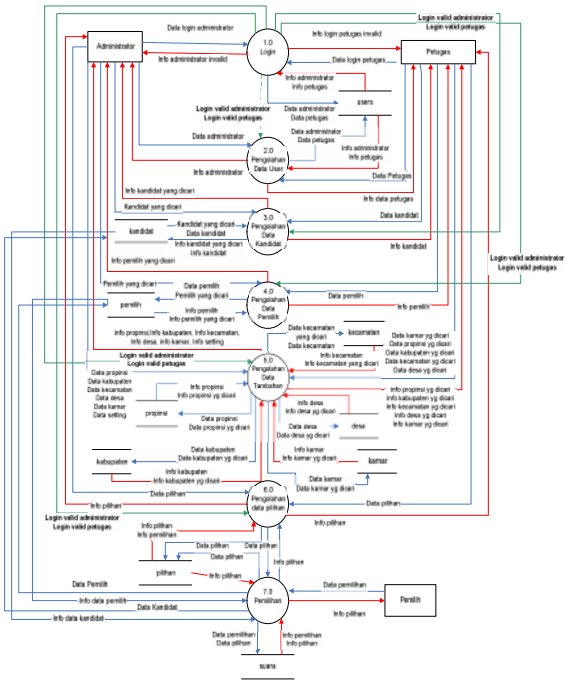


Figure 4 DFD Level 1

2.3.4 Relations Scheme

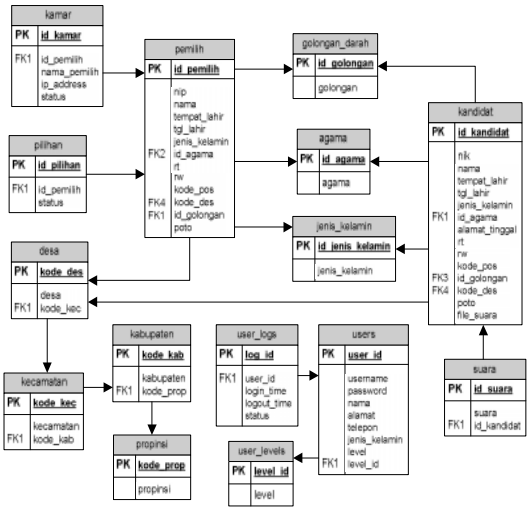


Figure 5. Relations Scheme

2.3.5 Design Code NIP (Number of Voters and Number of Candidates)

The design code based on the NIP and NIK main number listed on the ID card (Identity

Card). NIP and NIK data automatically appear at the time of data collection as well as voters candidates. NIK NIP data and code of province, district code, district code, birth date code and serial number ID.

NIK and the NIP data are useful for access in the selection process. Voters who have registered by the officers will get a voter card which is listed on the identity cards of voters short of NIP, name, place and date of birth and addresses of voters.

NIP is listed on the voter identity cards will be generated into a form of barcode code. Barcode code is useful as a voter access to be able to vote, where the officer will scan the barcode on the voter identity cards with barocode reader. The design and NIK NIP code as follows:



Example : 352405.500287.0001

Table 2 Listring Type Notes

Kode Jenis Catatan		
Kode	Nama	Keterangan
35	Propinsi	Menerangkan nama propinsi yaitu Jawa Timur
24	Kabupaten	Menerangkan nama kabupaten yaitu Lamongan
05	Kecamatan	Menerangkan nama kecamatan yaitu Balat
.	Titik	Sebagai pembatas
50	Tanggal Lahir	Menerangkan tanggal lahir (Jika perempuan tanggal lahir ditambah 40 (tanggal lahir+40)
02	Bulan Lahir	Menerangkan bulan lahir
87	Tahun Lahir	Menerangkan tahun lahir
.	Titik	Sebagai pembatas
0001	No Urut	Menerangkan nomor urut

Contoh barcode code NIP 352405.500287.0001:



Fiugre 6 Barcode Code

2.4 Design Interface

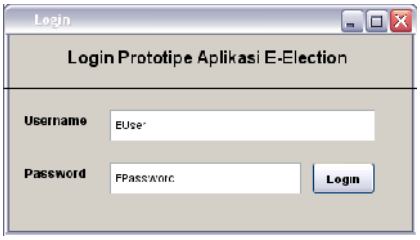


Figure 7 Login

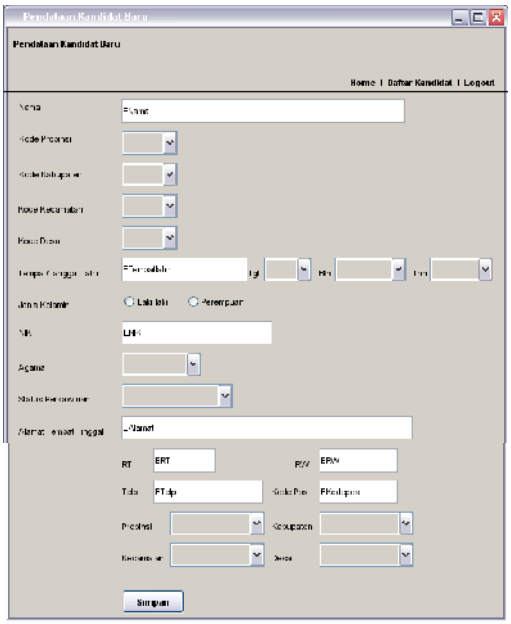


Figure 8 Insert Candidate

2.5 Architecture Menu Officer Design

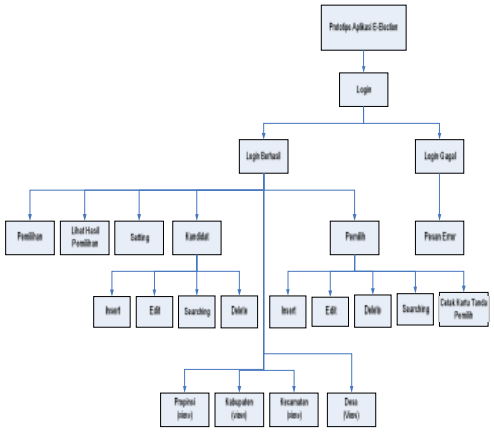


Figure 9 Architecture Menu Officer Design

2.6 Network Semantic Officer

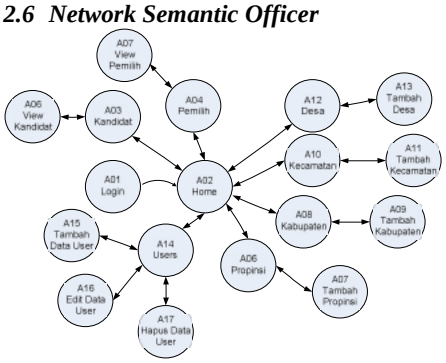


Figure 10 Network Semantic Officer

2.7 Design Room Selection, Network and Flow Selection

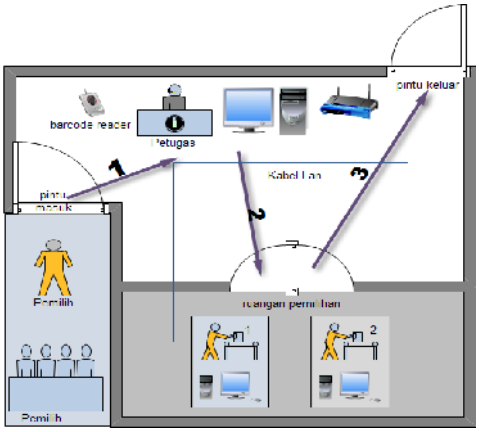
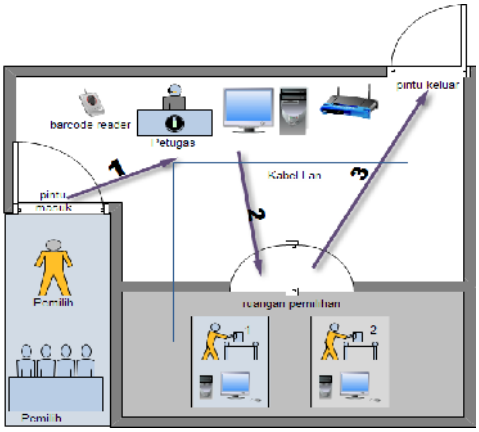


Figure 11 Design Room Selection, Network and Flow Selection



2.8 Implementation

At this stage will be implementation of the system built. This stage carried out after the analysis and design done, and then implemented at the programming language used.

2.9 System Implementation

The purpose is to confirm the implementation of the module design programs on the system actors so that the user can provide input to the system builder.

2.9.1 Hardware Implementation

The hardware on the server and client are used to implement the system are as follows:

1. *Processor : Minimum 1,8 GHz*
2. *Harddisk : Free space 2 Gb*
3. *Memory : DDR 256 Mb*
4. *Monitor : 15" (server) and 17" (client)*

2.9.2 Software Implementation

Server Computer:

1. *Windows XP Operating System.*
2. *XAMPP for Webserver.*
3. *MySQL for database storage.*
4. *Macromedia Dreamweaver for writing program code.*
5. *Firework Mozilla or Internet Explorer as a web browser*

Client Computer:

1. *Windows XP Operating System.*
2. *Firework Mozilla or Internet Explorer as your web browser.*

2.9.3 Form Implementation

Implementation of the form carried out to find every page that made the program. Here is the form that made implementation.

Table 3. Form Administrator Implementation

Menu	Deskripsi	Nama File
Login	Untuk menangani proses *login* admin.	Login.php
Home	Tampilan awal setelah berhasil *login*	Home.php
Users	Untuk manajemen *users* seperti tambah user, edit user dan delete user	Listuser.php
Tambah Kamar	Untuk menambah kamar dan hapus kamar	Tambahkamar.php
Propinsi	Untuk mengolah data propinsi seperti tambah propinsi dan edit propinsi	Listpropinsi.php
Tambah Propinsi	Untuk menambah data propinsi	Addpropinsi.php
Edit Propinsi	Untuk merubah/edit data propinsi	Edipropinsi.php
Kabupaten	Untuk mengolah data kabupaten seperti tambah kabupaten dan hapus kabupaten	Listkabupaten.php
Tambah Kabupaten	Untuk menambah data kabupaten	Addkabupaten.php
Edit Kabupaten	Untuk merubah/edit data kabupaten	Edtkabupaten.php
Kecamatan	Untuk mengolah data kecamatan seperti tambah kecamatan dan hapus kecamatan	Listkecamatan.php
Tambah Kecamatan	Untuk menambah data kecamatan	Addkecamatan.php
Edit Kecamatan	Untuk merubah/edit data kecamatan	Edtkecamatan.php
Desa	Untuk mengolah data desa seperti tambah desa dan hapus desa	Listvillage.php
Tambah Desa	Untuk menambah data desa	Addvillage.php
Edit Desa	Untuk merubah/edit data desa	Edtvillage.php
Logout	Untuk keluar dari sistem aplikasi	Logout.php

Table 4 Form Officer Implementation

Menu	Deskripsi	Nama File
Login	Untuk menangani proses *login* petugas	Login.php
Home	Tampilan awal antarmuka admin setelah *login*	Home.php
Pemilih	Untuk melihat daftar pemilih, melakukan proses tambah pemilih baru, *ubah* pemilih, *hapus* pemilih, *cari* data pemilih dan cetak kartu tanda pemilih	Listpemilih.php
Tambah Pemilih	Untuk menambah data pemilih	Addpemilih.php
Ubah Pemilih	Untuk merubah/ubah data pemilih	Edtpemilih.php
Cari Pemilih	Untuk merubah/ubah data pemilih	Listpemilih.php
Cetak Kartu Pemilih	Untuk mencetak kartu tanda pemilih	Cetakkartu.php
Cetak Data Pemilih	Untuk mencetak data pemilih	Detailpemilih.php
Kandidat	Untuk melihat daftar kandidat, melakukan proses tambah kandidat baru, *ubah* kandidat, *hapus* kandidat dan *cari* data kandidat	Listkandidat.php
Tambah Kandidat	Untuk menambah data kandidat	Addkandidat.php
Ubah Kandidat	Untuk merubah/ubah data kandidat	Ubahkandidat.php
Cari Kandidat	Untuk merubah/ubah data kandidat	Listkandidat.php
Cetak Data Kandidat	Untuk mencetak data kandidat	Detailkandidat.php
Suara	Untuk menambahkan file suara kandidat	Suara.php
Pemilihan	Untuk melakukan proses pemilihan, yaitu menginputkan NIP Pemilih yang akan melakukan pemilihan	Listpemilih.php
Lihat Hasil Pemilihan	Untuk melihat hasil pemilihan, yaitu jumlah suara kandidat yang diperoleh	Listhasil.php

Table 5. Form Voter Implementation

Menu	Deskripsi	Nama File
Pemilihan	Untuk menangani proses pemilihan, yaitu memilih kandidat	Kamarpemilih.php

2.9.4 Interface Implementation

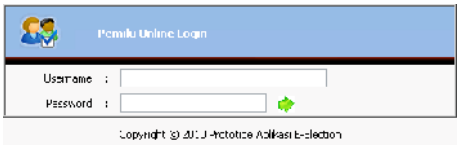


Figure 12 Login

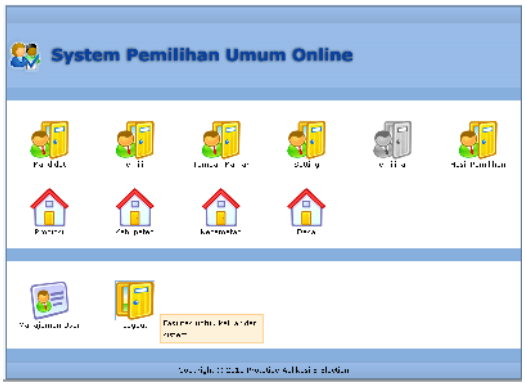


Figure 13 Home

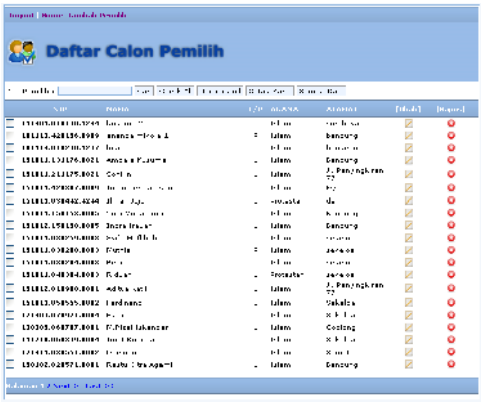


Figure r 14 List Voters



Figure 15 Print Voter Card

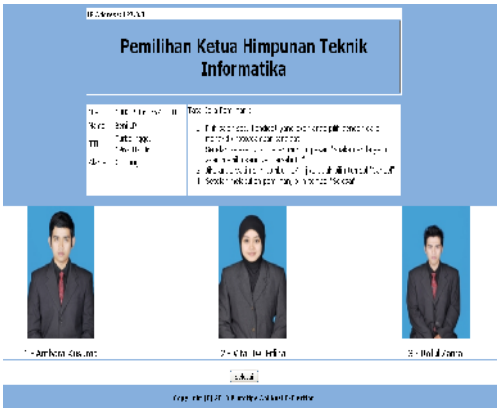


Figure 16 E-Election

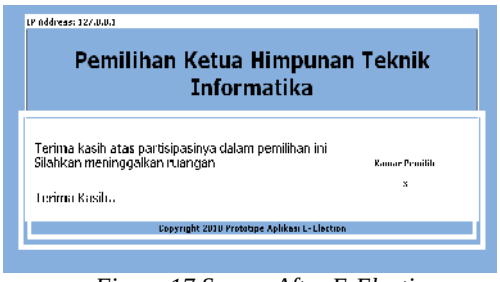


Figure 17 Screen After E-Election

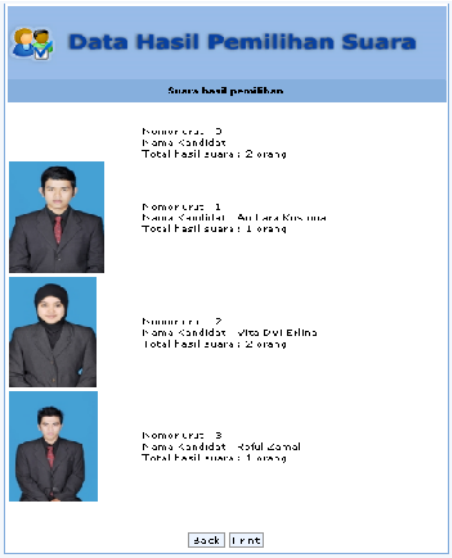


Figure 18 Electoral Vote Result

3 RESULT AND DISCUSSION

From the analysis, design and implementation that has been done, further testing, among others:

3.1 Alpha Testing

Based on test results that have been done BlackBox can be concluded that a functional system is able to produce the expected outputs.

3.2 Betha Testing

Betha test is a test directly to the user to try new applications and fill out a questionnaire about user satisfaction. From the questionnaire will be carried out calculations to be able to take the conclusions of the assessment of the newly created application

Details of tests conducted Betha namely:

1. *Title Selection is Electoral UNIKOM Association of Computer Science*
2. *There are three election candidates and twenty-five voters*
3. *Implementation of the election on February 3, 2010 held at the Library Informatic UNIKOM Bandung began 09.00am until 11:00am*
4. *After the election, organizers distribute questionnaires to the administrators of two questionnaires, two questionnaires to officers and twenty-five questionnaires to voters*

The results obtained from testing Betha:

1. *Prototype applications of this e-Election admiinstrator and staff Facilitate the processing of data and obtain the required information.*
2. *Voters can make the selection process easier and faster*

4 CONCLUTION AND RECOMENDATION

4.1 Conclutions

The conclusion of the thesis entitled "Application Prototype E-Election" is as follows:

1. *This application can provide a tool and facilitate data collection officers in the voters and candidates.*
2. *This application can perform printing voter identity cards and barcode of voter id code.*
3. *Voters can make the selection process effectively and efficiently.*
4. *This application allows disabled voters regarding (deaf, blind, tunawicara) for assistance with audio visual media.*
5. *With this application can reduce the use of paper during the data collection and the selection (Papperless).*

6. *The results of vote counting can be quickly generated.*
7. *The contents of this application can be changed according to user needs.*

4.2 Recommendation

In the manufacture of prototype applications to E-Election is still much that can be developed, such as:

1. *Programs that have built applications are still based on client server, should be developed on-line through the Internet and mobile media.*
2. *Application program that has built its database using MySQL, it should if the data can ditagani large database developed using Oracle.*
3. *Application programs that have been established communications with the electorate through an intermediary application screen and mouse, should be developed with media touch screen display.*
4. *This application program should be equipped with a data backup feature, in order to cope in the event data is corrupt or lost data.*

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