Online Voting System

The word “vote” means to choose from a list, to elect or to determine. Online Voting System is a web-based voting system that will help us manage our elections easily and securely. In this system the voter can give his\her vote online without going to any physical polling station .They can use their personal computer, mobile to cast their votes. There is a database which is maintained in which all the name of the voters with their complete information and national id card number is stored. The System Administrator can login to the system by his/her password. He / She can add, edit and delete new election and for the election new candidate. The System Administrator registers the voters by simply filling a registration form to register the voters. After registration, the voter is assigned a secret voter ID with which he/she can use to login to the system along with their national id card number and cast his/her vote. The system send a confirmation message to the voter that the voting process was successful. The voter can logout from the system. The software has a verification system. If the national id card number and given voter id number which is already in the database are not match with the national id card number and voter id number given by voter to login to the system the voter can’t login to the system. The system provide appropriate error message and the voter is accorded sufficient help on how to carry on tasks. The individual votes are submitted in a database which can be queried to find out who has the highest number of votes and won the election. The System Administrator can see the result and can also logout from the system.

Justifications

Voters will not need to go to the polling station to vote for online voting system .The online voting system will enable the voters to vote from any part of the globe as it is an online application available on the internet .It will also reduce the time spend making long queues at the polling station during voting .It will also save the paper works .Cases of vote miscounts will also be solved since at the backend of this system resides a well-developed database using SQL Server that can provide the correct data once it’s correctly queried. It will give an instant Poll result. The online voting system will also save many expense as it does not need any paper, ballot boxes, ballot papers etc.

Limitation of the current manual voting system:

- It is slow: the voting process has to be completed first before the result are announced and also queuing to vote enhances the slowness
- It is tedious: The clerks involved in the verification and other elections duties get exhausted at the end of the day since everything is manual
- The whole election process is not environmental friendly since the amount of paper required for that single day is humongous
- The process is expensive ,this is because a lot of paper has to be bought ,ballot boxes, and also the printing of the ballot papers

- Time wastage, due to the slowness of the system a lot of time is wasted in the whole election process which could have been useful in undertaking other duties.

References:

1. http://www.dcag.com/images/White_Paper_-_The_problems_with_a_paper_based_voting_system.pdf
2. http://homepage.divms.uiowa.edu/~jones/voting/congress.html

Scope and Objectives

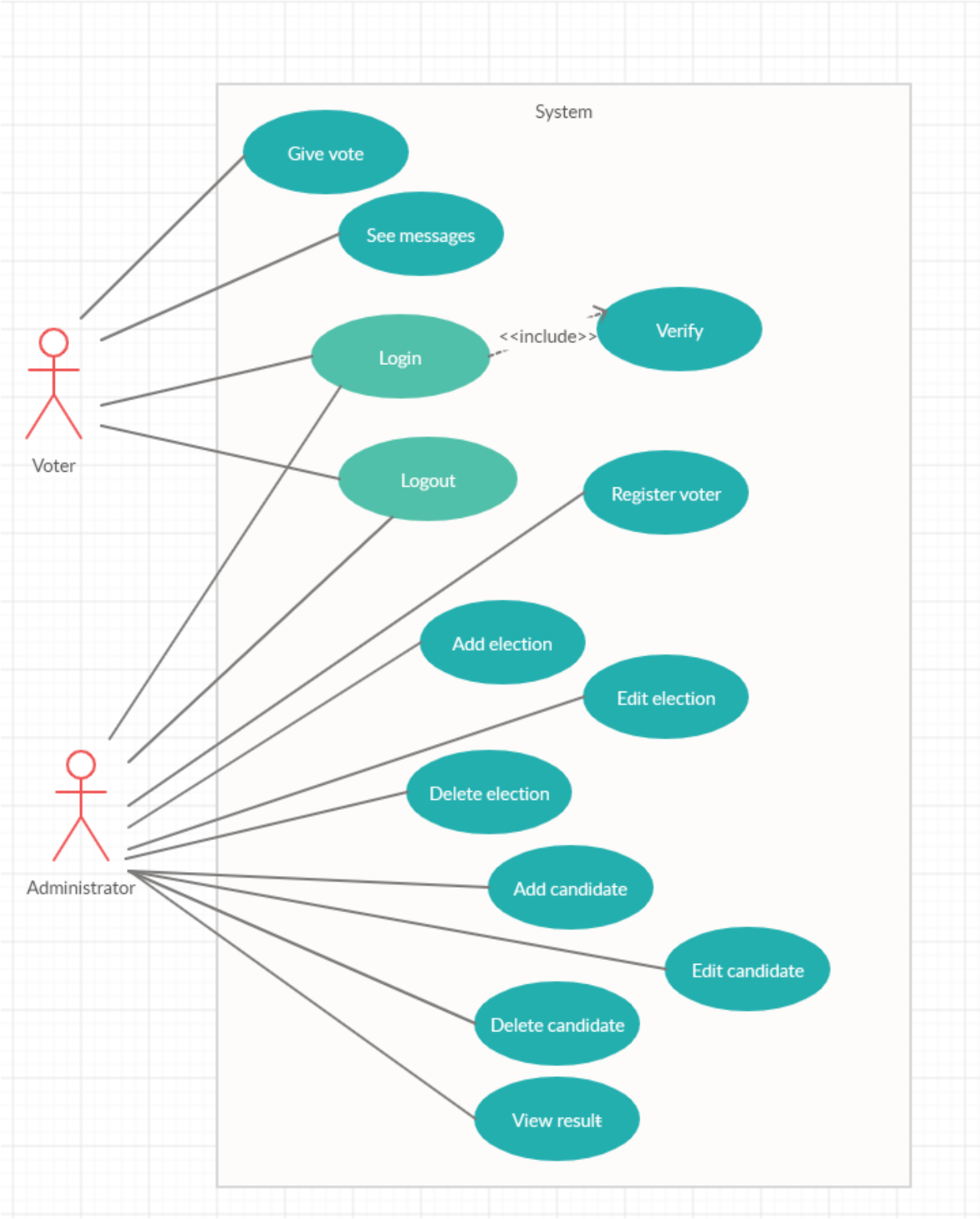
Scope:

- The system will increase number of voters as individuals will find it easier and more convenient to vote, especially those abroad.
- The system will facilitate a faster election process since one can vote from anywhere and the real-time tallying makes it fast to announce the elected leaders.
- It will need less effort and less labor intensive, as the primary cost and focus primary on creating, managing and running a secure web voting portal.
- The election process is made cheaper since printing o ballot papers is eliminated and fewer clerks if any required.
- Cases of double voting are eliminated since the verification process of the system ensure one cannot vote more than once.

Objective:

- To implement an online web-based voting system that can be used during the election period to vote for candidates.
- To come with a system documentation
- To establish the metrics for measuring and evaluating usability
- To establish the principles that support usability
- To validate the system to ensure that only legible voters are allowed to vote.

Overview of the system(Use case diagram) :



Selection of model and team structure for the project:

A model is chosen based on the nature of the project and application, the methods and tools to be used, and the controls and deliverable that are required. The model will be used to build the “Online Voting System” software is “Incremental model”.

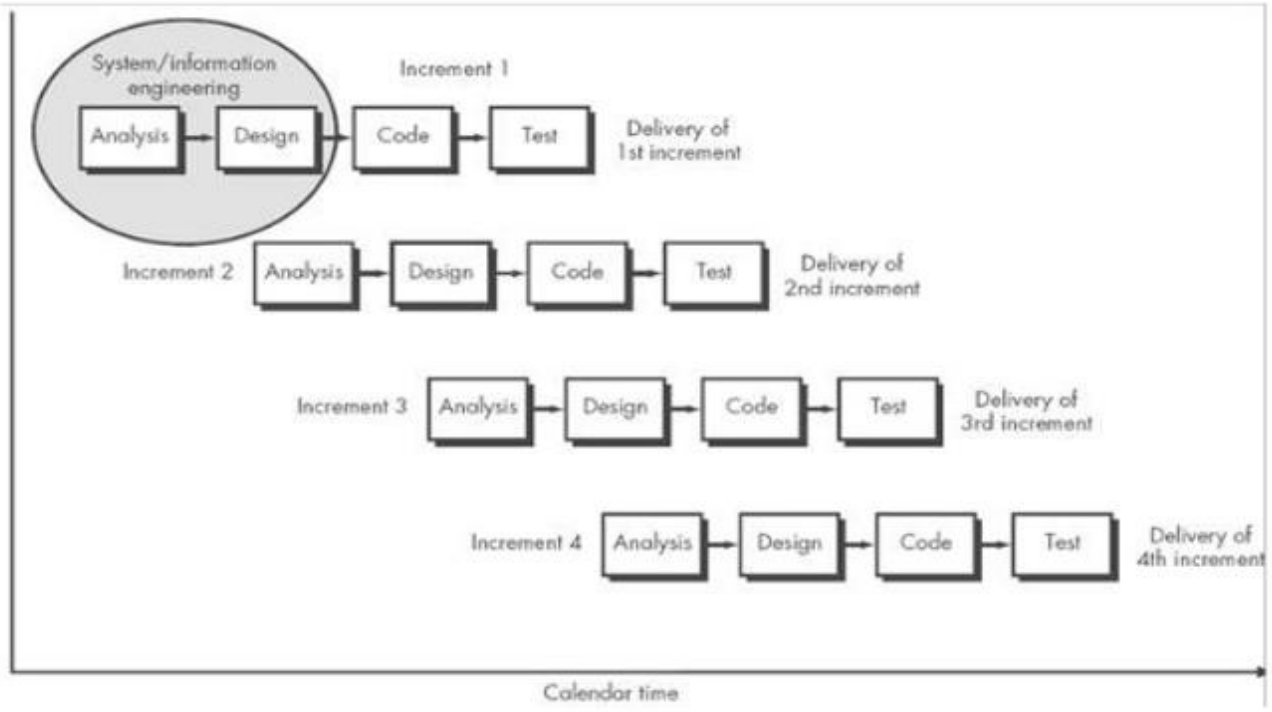


Fig: Incremental model

In Increment model rather than deliver the system as a single delivery, the development and delivery is broken down into increments with each increment delivering part of the required functionality .User requirements are prioritised and the highest priority requirements are included in early increments.Once the development of an increment is started, the requirements are frozen though requirements for later increments can continue to evolve. It Deliver the core product first.It can Add on / refine features. Incremental model provide a platform for evaluation by user.

Criteria for Selecting the Application Development Model.

Factors	Waterfall Model	Incremental Model	V-shaped Model	Agile Model

Well-known user requirements	Excellent	Fair	Excellent	Poor
Short time schedule	Poor	Excellent	Poor	Excellent
Customer/User involvement	Poor	Good	Poor	Excellent
Documentation	Excellent	Excellent	Excellent	Poor

In online voting system voters involvement will be necessary. There requirements are fair well-known. The system database shall store, index, manage and model information needed for this application. So it will be well documented. So "Incremental model" will be suitably fit to build the software of "Online Voting System". Further some advantages will be gotten by using the Incremental model. They are,

- Customer value can be delivered with each increment so system functionality is available earlier
- Early increments act as a prototype to help elicit requirements for later increments
- Lower risk of overall project failure
- The highest priority system services tend to receive the most testing

Team structure for the project:

1. Project manager

Responsible for ensuring that the project team completes the project within time, scope and budget. Has ownership for all project management tasks and activities. Responsible for development and management of the overall project plan. Gathering approval for deliverables from project sponsors. Responsible for managing project risks. Responsible for communication to stakeholders. Responsible for ongoing status reporting, including project health. Responsible for overall management of the vendor relationships. Responsible for addressing issues with resource constraints. Responsible for identifying need for escalation of issues.

2. Security team:

Provides assistance and support for developing and implementing the appropriate and required security environment.

3 .Developers:

Develop the system. They work with the project manager.

4 .Business analyst:

Analyzes and develops an understanding of the current state processes to ensure that the context and implications of change are understood by the department and the project team. Develops an understanding of how present and future business needs will impact the solution. Identifies the sources of requirements and understands how roles help determine the relative validity of requirements. Develops a Requirements Management Plan and shares with the project team and all stakeholders. Identifies and documents all business, technical, product and process requirements. Works with the department to prioritize the requirements. Helps to define acceptance criteria for completion of the solution.

5 .Project product owner:

Oversight for the product's seam-less hardware and software integration within the Loyola architecture. Owner of all application integration design. Identifies needed technical resources. Escalation point for technical issues. Owner of vendor management and relationships for product support. Responsible for product versioning and upgrade decisions. Decision maker for product configuration and infrastructure design.

6. Tester:

Tester do the work of testing of the project. They make the testing documentation which are going to be tested. If there is any bug he/ she report the bugs to the developers.

7 .Sponsor:

Keeps abreast of major project activities and provides additional information requested by the business sponsor. When necessary, addresses issues with project priorities and resource constraints as escalated by the product owner or project manager.

8 .Functional lead:

Provides subject matter expertise for department functions. Accurately and effectively represents the business needs of their department and the inter-relationships between departments. Provides guidance and insight for the project's roll-out within their areas of responsibility. Makes project decisions on behalf of their respective departments. Obtains consensus within their department for broad business impactful decisions. Keeps key departmental sponsors and stakeholders abreast of major project activities. Provides and shares feedback on deliverables. Provides testing support.

9 .Executive sponsor:

Has a vested interest in the successful outcome of the project. Secures funding and overall approval on project. Vocal and visible champion for the project throughout the University. Confirms that the project's goals and objectives are met to ensure that the project obtains the intended business objectives. Keeps abreast of major project activities. Ultimate decision maker for issues that impact the business. Provides final approval for all major scope changes. Provides project direction and setting priorities when competing objectives exist overall in project. Provides approval to proceed to each succeeding project phase. Approves the project schedule. Provides regular feedback to the project team on performance versus expectations.

10 .Executive stakeholder:

Has vested interest in the completion of the project and how the project will impact their specific area. Provides information, as needed, to ensure that the project stays on track and meets the intended goals and deliverables.

11 .Project team member:

A project team member is a person who is actually involved in doing assigned tasks. Team members directly access the project and actively evolve its processes. They're subordinated to the team leader.

12 .Administrator:

Administrator management the whole work and support all. Database of the system is managed by him/her.

13 .Project team leader:

A project team leader is a person who provides leadership and guidance to the team and takes responsibility for the results of teamwork. The team leader role involves the development and encouragement of the team through training, leading, motivation, recognition, rewarding and other activities that stimulate or force team members to do the required tasks.

Resource requirements:

Software requirements:

- Operating System: Windows 10 Professional(64 bits)
- Development language: Purely developed using Java script
- Database: MYSQL
- Design:HTML5,Twitter Bootstrap 3, CSS3
- Validation: Java script
- Testing: Testing is done via XAMPPSERVER
- Web browsers: Mozilla Firebox, Google chrome, Opera and Internet Explorer
- Reporting Tool: through Data Report

Hardware:

- Processor: Intel Pentium(Dual Core)
- Motherboard: Asus Motherboard
- Memory:512 MB
- Display: Samsung 943SWX

Functional requirements for this system:

Functional requirement refers to the necessary tasks, action or activities that the system must accomplish, or enable the user to do. The functional requirements of the system describe the functionality or services that the system is expected to provide. In this case:

- Authentication-The system will identify each authorized voters every time they use the system using National Id card number and Voter id number.
- The system will allow voter to vote via their mobile phones, computers etc.
- Send a confirmation message to the voter that the voting process was successful.
- The system shall provide appropriate error message and user shall be accorded sufficient help on how to carry on tasks.
- The system will impose a successful voter determination strategy in order to determine a successful voter in order to avoid multi voting.
- The system will make vote counting convenient.

Non-functional requirements for this system:

A non-functional requirement is a requirement that specifies criteria that can be used to judge the operation of a system, rather than specific behaviors. The plan for implementing non-functional requirements is detailed in the system architecture. Non-functional requirements define how a system is supposed to be. Outline below are some of the expectations of the system when implemented:

1. Security:

- The system will implement strategies to counter hacking and access by unauthorized persons.
- The application will enable users to access it depending on the level of the user.
- The software offers the users a friendly and convenient entry to communicate with the system.
- The system will implement strategies to avoid multi voting. No voter will be able to cast his /her vote more than once

2. Reliability:

- The system shall be robust enough to have a high degree of fault tolerance. For example if there is an invalid entry, the system should not crash and shall identify the invalid input and produce a suitable error message.
- The system shall be able to recover from hardware failures
- Failure and other natural catastrophes shall rollback the databases to their most recent valid state.

3 . Availiability:

- The system shall be up and running whenever needed.

4. Usability:

- The system shall provide an easy-to-use interface so that the users do not strain to interact with the system.
- The interface shall be intuitive and easily navigable
- User shall be able to understand the menu and option provided by the system.
- Any notification or error messages generated by the system shall be clear, polite and free of jargon.

5. Scalability:

- The system shall be able to expand to meet future needs of the organization and still be able to serve the purpose for which it will build.

6. Data Integrity:

- The system database shall store, index, manage and model information needed for this application.

7. Performance:

- Response time of the system shall be very fast.
- The system shall record the votes correctly.
- By the system result will be able to get within minute after a completion of voting.

Constraints:

- Risk of manipulation by insiders with privileged access to the system.
- Every voter may not have computer/ mobile or net connection
- Limited openness and understanding of the system for non-experts.
- Possible lack of public trust in online voting system based elections as a result of the weaknesses above.

Conclusions:

The online voting system will manage the voter's information by which voter can login and use his/ her voting rights. The system will incorporate all features of voting system. It will provide the tools for maintaining voter's vote to every party and it count total no. of votes of every party. There will be a database which will be maintained by the Administrator of the system in which all the names of the voter with complete information will be stored.

The registered voter will be able to login to the system by his/ her national id card number and voter id number and can give vote to any party only single time. Voting details will store in database and the result will be displayed by calculation done by the system. By online voting system percentage of voting will be increase. It will decrease the cost and time of voting process. It will be very easy to use and less time consuming.