Team Guinan

presents

Online Voting System

Submitted to:

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Submitted By:

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1.0 Introduction

Online Voting System or E-voting system is a web application to allow people to vote for their favorite candidate online. This voting system is created to target universities to help the students vote for their leader in the university elections.

This voting application allows the voter to log in using valid credentials. The “Voter” first needs to register for the application using an “Authentication Token” that will be provided by the university itself for security reasons. After the voter registers for the application, he/she will be redirected to the Log-in page to log in to the system using their valid credentials.

After the user logs in to the system, a web page containing the candidate’s information like their image, position (like President, Vice President, etc.), and the respective voting button of each candidate will be shown. The voter can vote for one candidate for the following position like one candidate running for President and one candidate running for Vice-President. After the user clicks on the vote button, other buttons will be disabled and the vote will be counted for that candidate.

For now, the same page represents the number of votes that have been casted for that individual, once the user has clicked the vote button and voting button has been disabled. The same page also has the vote info button which takes the user to the page where the user can get more information about the candidate.

1.1 Background Study

Online Voting system or E-Voting system is a general term encompassing different types of voting methods. The online voting methods include optical scan voting systems, punched cards and specialized voting kiosks. It can also involve votes via private computer network, telephone, or the internet.

1.2 Significance of the Study

The main purposes of Online Voting System include:

- Improved voting services for the voters by making the voting process easier and more accessible.

- Over time, online voting reduces costs associated with setting and staffing polls stations. However, the start-up costs can be high.
- Provides an effective election management system for the premises.
- Counting of votes is done using databases so it reduces mistakes in the result of the elections. Which makes it more reliable at that point.
- Provides a more engaging experience as people can vote anytime from anywhere using the internet. That especially true for young electors like people between 18-30. These people are more familiar with modern technologies.
- Voting online delivers a more environment friendly way for the electors to vote, rather than using physical means like papers to vote.

1.3 Project Initialization and Planning:

A project plan lays the path to be followed to achieve a designated goal. We created the documents listed below to help us pave the way to achieve our goal in analysing the project scope, project goals, who our stakeholders are in this project and how we can communicate with them and what are the roles and responsibilities of each member of the team.

I. Business Case Document:

BUSINESS CASE	
Proposed Project	University's Online Voting System
Date Produced	2021-10-12
Background	Online Voting or e-voting is a form of voting system that allows the user to vote for their leader via a web-application. It mitigates the hassle and overcrowding caused by traditional queue-voting system using physical ballots and cards. This online system will provide the user a web interface to cast their votes. The votes will be stored in a database and can be queried to find out the winner of the election.
Business Need/ Opportunity	1. More Engagement: - Implementing an online voting system will allow the users to vote from anywhere anytime. 2. Reduced Cost: - No wastage of physical resources like papers, ballots, etc. 3. Safe: - In times of COVID-19, an online system is a safe option, as it prevents the risk of contamination.
Options	Providing a MVP after the team is done with the second activity of the project.
Cost-Benefit Analysis	
The project will be created using open-source technologies and will be implemented on local server, so there is no cost related to the project.	
Recommendation	
1. Recommend to use the GDPR Act – (General Data Protection Regulation) for candidate's data integrity. 2. Recommend to use encryption on data in the database.	

II. Project Charter Document:

PROJECT CHARTER	
Project Name	University's Online Voting System
Date Produced	2021-10-12
Project Goals	Goal of this project is to implement a voting system online using a web application, to provide a more reliable and hassle free mode of voting for the users.
Project Objectives	1. A voter will be able to login using the login page. 2. The voter will be able to vote for their favourite candidate while clicking on a button. 3. After the button has been clicked, all the other buttons for candidates will be disabled and vote will be recorded in the database.
Project Budget	The budget for the project is none as the project is being implemented using open sources technologies.
Project Sponsor	Timothy Maciag
Project Manager	Kwather

Additional Key Project Stakeholders
Student Union, University Council, Timothy Macaig, Developers(Kawther, Lakshay and Akash), Candidates, Voters.

Overall Project Milestones	**Dates**
Designing the Login Page	2021-10-19
Designing the Voting page	2021-10-25

Overall Project Risks
The potential project risks are not known at the moment.

III. Project Scope Document:

PROJECT SCOPE STATEMENT	
Project Name	University's Online Voting System
Project Deliverables	**Detailed Description**
Web based online voting system for University of Regina clubs and student union	Our online web based voting system will follow the idea of model view controller. The view is the user interface where users can login, view candidates for each available position and vote. Users will also be able to view the number of votes each candidate got. As well, candidates will be able to add information about themselves and maybe a picture to help the voters choice.

Project Exclusions
Basically, the system will not include Admin login authority. All the entered information will be saved in a database to be viewed and manipulated by the voters. (For example, if a user votes for a candidate, candidate's info in the database will be updated accordingly).

IV. Project Roles and Responsibilities document:

PROJECT ROLES AND RESPONSIBILITIES		
Project Name	Online voting system for University	
Name	**Role**	**Responsibilities**
Kawthar Alkhateeb	Project Manager, Developer	• Organisation of internal team meetings for flawless execution of projects. • Streamlining the project milestones within project scope and time. • Measuring project performance using appropriate tools and techniques. • Complete participation in project development and ensuring corrective procedures on project working. • Use of leadership skills to guide and motivate team towards success.
Akash Marwaha	Team Lead, Developer	• Using technical expertise to provide input in Project development. • Maintaining high quality of project performance using good coding habits and practices. • Preparing business requirement documents for projects like Business case document and Project charter document. • Assisting team with writing front end and backend code with project performance reviews. • Research, evaluate and verifying software products.
Lakshay	Front end and Backend Developer	• Using front end technologies like html, jQuery and CSS to develop and maintain user interface. • Fixing tests and bugs for usability. • Using technologies like Node.js and Express.js to build applications • Assessing the speed and efficiency of build application. • Using problem solving skills to build better login on running applications.

V. Stakeholder Register :

STAKEHOLDER REGISTER				
Project Name	University's Online Voting System			
Name	**Project Role**	**Level of Power**	**Level of Interest**	**Level of Support**
University of Regina	The system is intended to be used by the University of Regina clubs and student usinon, so they are our only stakeholder.	High	High	Neutral
Dr. Tim Maciag	Project Sponsor	High	High	Supportive
Kawthar, Akash, Lakshay	Team members /developers	High	High	Supportive
University's of Regina students	Users/voters	LOW	High	Neutral

2.0 Goals

2.1 Initial intended goals

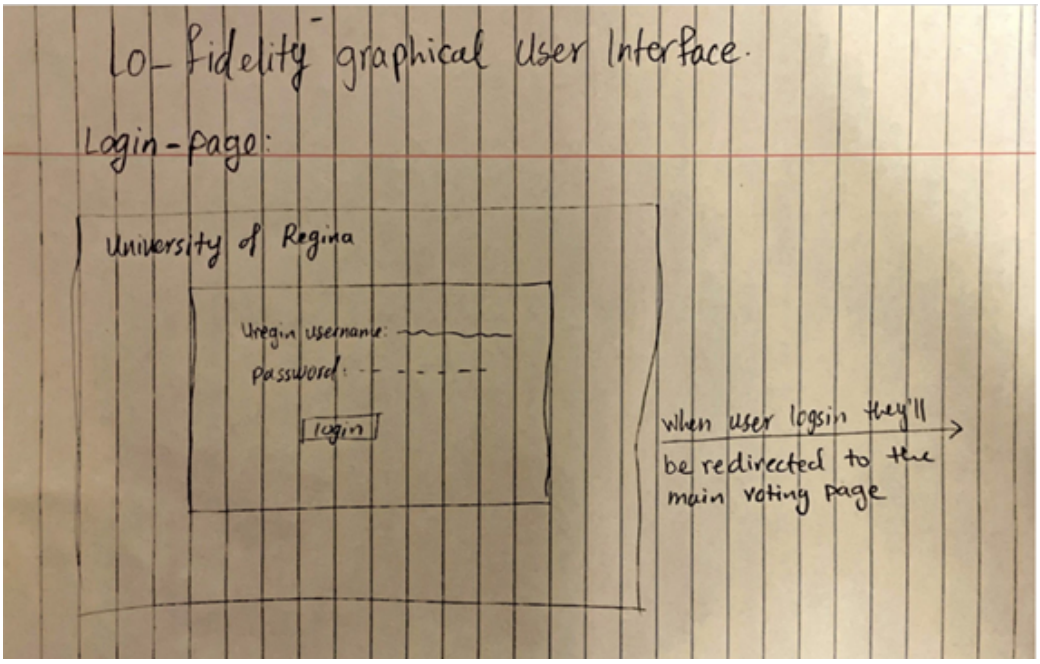
Team Guinan's initial intended goals were displayed in low fidelity graphs.

It was decided that three functioning pages will be built with their specific working functionalities:

I) Login Page:

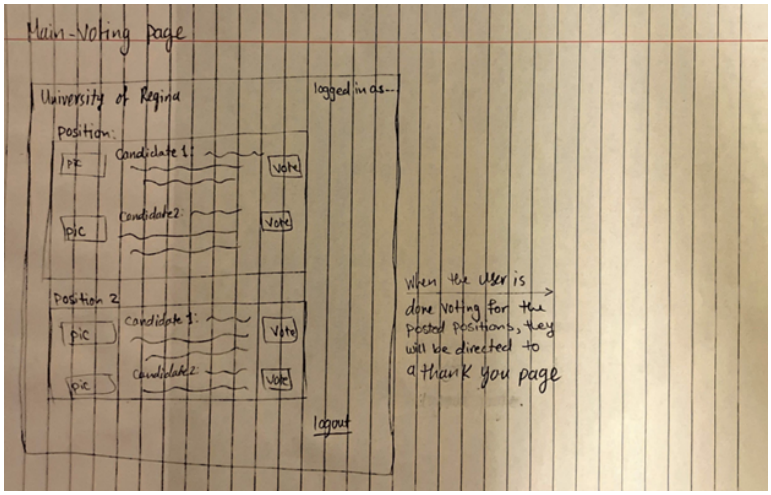
The first home page the user will be able to use username and password registered with the university of Regina to login to the university of Regina voting system.

Low fidelity graph representation:



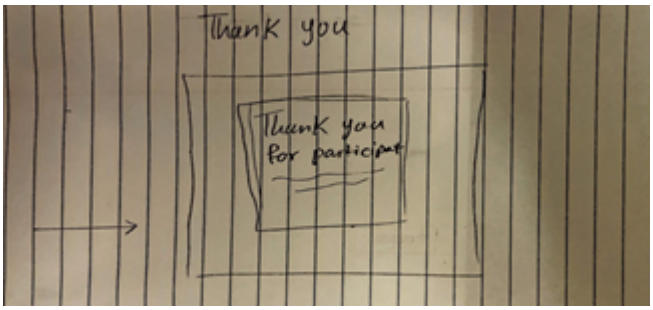
II) Voting Page:

After the successful login of the user, users will be redirected to the voting page, where they can vote for the preferred candidate for the different positions.



II) Confirmation Page:

The last would have been the voting confirmation page to let customers know that the vote has been counted.

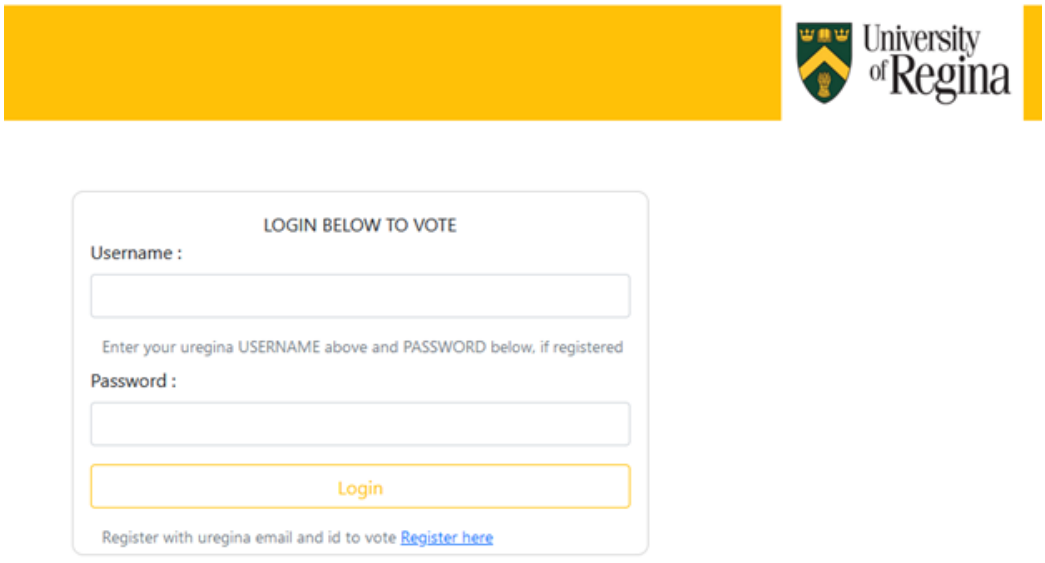


2.1 Goals achieved

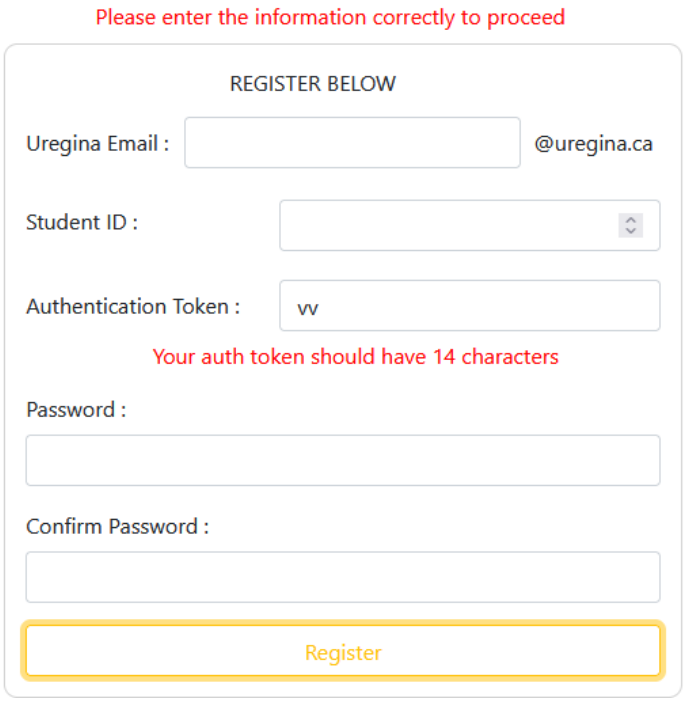
1) Login Page with Registration capability:

We realized that we would not be able to connect our project to the university's database. So, we created our own and we created an independent registration page to allow users to register securely.

Login:

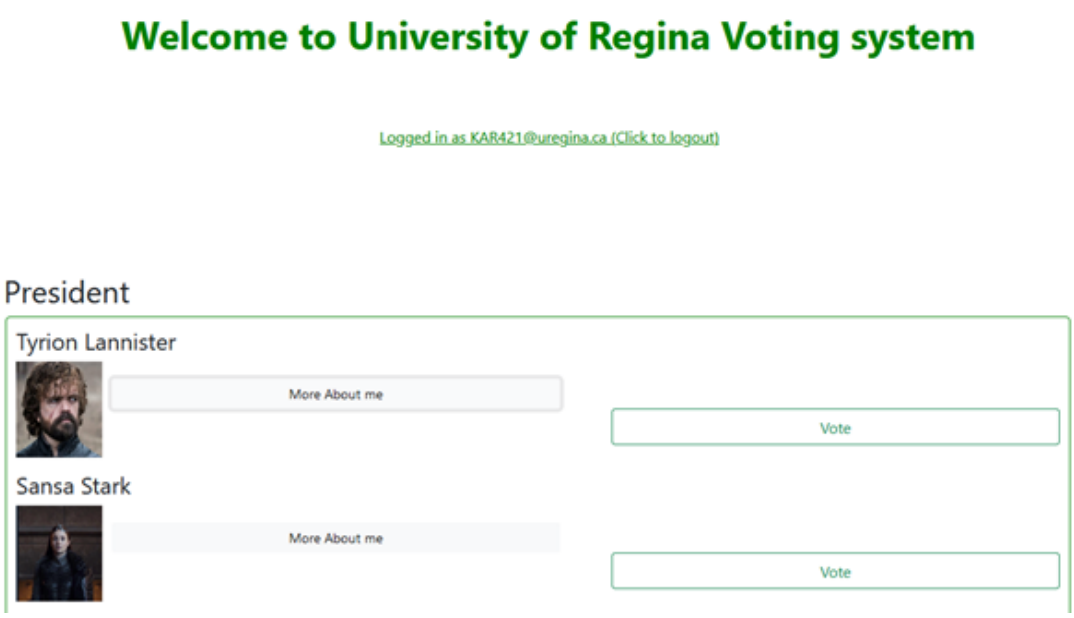


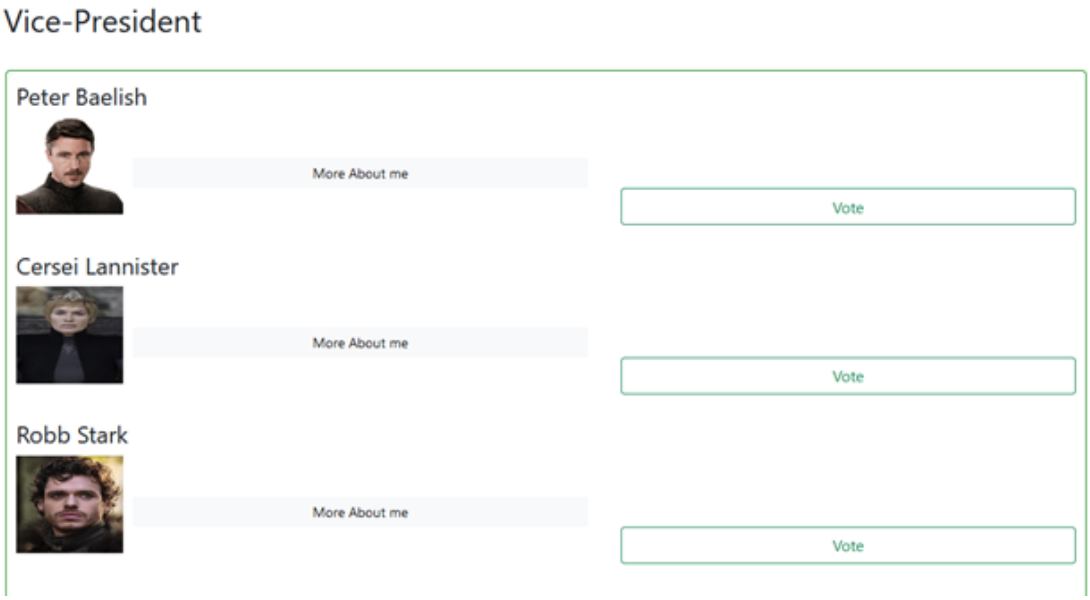
Register:



2) Voting Page

Page with functionality to vote after clicking the button. Button disables once voted and the vote count appears.





3) Information Page:

Voter info which appears on clicking the “More About me” button on the voting page. This displays the detailed information of the voting candidate.

3.0 Feedback

3.1 Feedback Received:

As per the feedback received from Dr. Tim and classmates, security was a huge concern in relevance to the online voting system.

3.2 Feedback impact:

After the feedback about the security, certain steps were adopted to make the online voting system as secure as possible.

1) **Passport:**

Node.js passport technique has been used to authorize users that store password with hashing and salting to make the system secure.

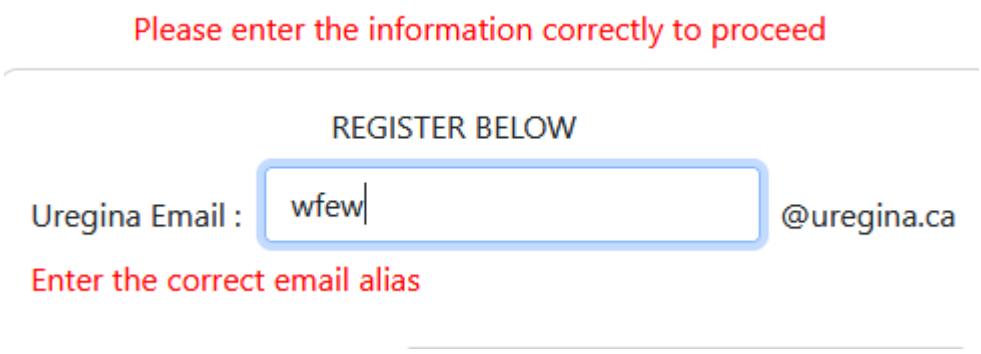
Sample code:

```
app.use(passport.initialize());

app.use(passport.session());

passport.use(User.createStrategy());

passport.serializeUser(User.serializeUser());

passport.deserializeUser(User.deserializeUser());

req.login(user, (err) => {

    if (err) {

      res.redirect("/");

    } else {

      passport.authenticate("local", { failureRedirect: '/error' })(req, res, () => {}
```

2) **Javascripts validations:**

Javascript validations have been used to allow users to enter only if conditions are fulfilled.These conditions include entering authentication token and uor email alias.

Example:



4.0 Reflection

4.1 Team Reflection

As a team we are proud of what we have implemented and we feel that we were successful in this project. There are many things in this project we like, for instance we really like the idea that we have the freedom to choose an idea for this project. It allowed us to choose something we are comfortable and love doing.

We are mostly proud of our collaboration and work as a team. Each one of us had equal responsibilities throughout the project experience. We are proud that we were able to work as a team and implement the system and submit it on time.

As we worked together on this project, we have learnt many things in team management and team collaboration. As well, we have learnt new technologies and used them in our system. For instance, we saw the need to have alerts to confirm the user's vote selection, for this we had to learn more about sweetalert2 technology, none of us knew this before. In team management, we learnt how to work and collaborate effectively to achieve team's goals.

4.2 Challenges

Any team project can face problems and obstacles, so does our project. Throughout the project implementation we have faced many problems in implementing the software, managing our time and problems with technology like GitHub. In the last phase of the project, coding, we faced problems with the technologies and the programming languages we decided to use in our project. We tried to overcome this by searching and learning from online resources. We tried to help each other out when someone needed help we tried to be there for them. We tried to find alternatives that are easier to learn and implement but still give us what we needed.

Reference

https://www.elections.ca/content.aspx?section=res&dir=rec/tech/ivote/comp&document=benefit&lang=e