

SENG 3210– Applied Software Engineering

Vox Choice

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Date submitted

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# Introduction

The inability to come to a consensus among students with differing perspectives, especially when it comes to planning study events, makes an online polling platform such as VoxChoice necessary. Conventional techniques could be laborious and ineffective, particularly when handling several poll topics and remote voting. For this reason, the SENG 3210 instructor is looking for a flexible way to expedite the decision-making process and give students more voice. Comprehending the context necessitates acknowledging the significance of administrative control and remote access. To engage in polls from any location, students need an interface that is easy to use, and teachers need tools to effectively generate, manage, and analyze poll topics. To maintain the confidentiality and integrity of the voting process, data security and privacy must also be given top priority. Clearly stating this underlying data gives the design choices context and supports the capabilities and functionalities included in VoxChoice. VoxChoice is developed to accommodate the needs of the class, and is therefore equipped with a familiar interface and easy to understand functionality.

The VoxChoice program is intended to enable students to voice their opinions on a range of topics, beginning with the choice of a study tour destination, to remote voting for the SENG 3210 course. The program consists of an administration interface for teachers and a frontend interface for users, or students. Instructors have administrative authority to generate and manage poll topics, while users can access the system remotely to participate in surveys. The system will be deployed on mobile devices for people to access easily and download at their convenience.

To document the design process, and provide an understanding of the decision making process in this project, our team has created this detailed report outlining the problem, requirements, different solutions, our roles in the team and many other aspects of the project. This report also provides a timeline of our project, and the possibilities for product refinement and the expansion for the future. Lastly, a section has been reserved for the necessary references and appendix.

# Design Problem

This section has the following two subsections:

## Problem Definition

The SENG 3210 class faces challenges in reaching a consensus for selecting study tour destinations due to a multitude of diverse opinions. The absence of a structured and remote-friendly platform impedes efficient decision-making processes. Instructors and students lack a dedicated online polling system that can facilitate transparent, secure, and inclusive participation. The absence of such a tool hinders the collective decision-making process, impacting the overall efficiency of the study tour planning and potentially limiting future opportunities for collaborative decision-making within the academic community. The need for a versatile online polling system, adaptable to various topics and user roles, is evident to overcome these challenges.

## Design Requirements

This section has the following three subsections:

### Functions

* User Registration and Authentication
  + Users should be able to register and create accounts on the platform.
  + Users should be authenticated securely before being allowed to participate in polls.
* Poll Creation and Management
  + Administrators should have the ability to create new polls.
  + Administrators should be able to edit or delete polls as needed.
* Voting mechanism
  + Vox Choice should empower the user to express their opinions (votes) on specific topics.
  + Each user should be limited to one vote per poll.
  + The system should record and maintain vote counts accurately.
* Real-time DashBoard for Administrators
  + Administrators should have access to a dashboard displaying real-time statistics and summaries of the current poll results.
  + The dashboard should update dynamically as new votes are cast.

* Objectives
* User-friendly: Ensure that the VoxChoice interface is intuitive and easily navigable for both students and instructors.
* Scalable: Design the system architecture to handle potential growth in users and polls without sacrificing performance.
* Secure: Implement robust security measures to protect user data, authenticate users securely, and prevent unauthorized access.

### Non-functional requirements and constraints

* Performance
  + The system must adhere to performance standards expected of mobile applications.
* Security and Integrity
  + Vox Choice must have implemented functionalities to safeguard data against unauthorized modification or misuse.
  + Have incorporated a robust user authentication and privacy mechanism.
* Modifiability
  + Vox Choice should have the ability to add new UI components with minimal development effort.
* Compatibility
  + Vox Choice should be compatible with mobile devices running Android API level 19 (KitKat) or higher.

# Solution

In this section, you will detail various solutions generated during your team's brainstorming sessions for project implementation. Not all solutions may encompass all desired features, and some may not fully meet the constraints. These solutions emerge as your team explores ways to implement all features within the specified constraints. Ultimately, you'll choose a solution that, in your assessment, incorporates all necessary features and adheres to the constraints. It's crucial to bear in mind that the process of engineering design is iterative!

## Solution 1

Write a brief description of your first solution and provide the reasons for not selecting this one.

You can use the component diagram, sequence diagram, and class diagram.

## Solution 2

This solution is an improved solution but might not be the final solution that you select. Give a brief description of this solution here.

You can use the component diagram, sequence diagram, and class diagram.

## Final Solution

This solution is the final solution. Explain why it is better than other solutions. You may use a table for comparison purposes. After providing the reason for selecting this solution, detail it below.

### Features and the software architecture

Discuss all the features of your final solution. Describe the functionalities of the top-level components and how they will be used for enabling those features. The product features may be tabulated (with a title) for improved comprehension. Use component diagrams to model the internal structures (i.e., sub-components or second-level components) of two major components. Describe the functionalities of the sub-components and the interactions (e.g., the interfaces) between the sub-components. Explain the interfaces between the top-level architecture and the internal structures (i.e., explaining how the internal structures interact with other top-level components).

### The system interfaces

Describe the temporal events (i.e., the time-triggered events) and the signal events (i.e., events received from external components) for the intended application. Describe the expected response of the system to each event.

### The user interface design

Design the user interface components. Describe the user interface components, the possible business events, and the responses to the triggered events.

### The requirements traceability matrix

List the system’s requirements and map the requirements to the corresponding design component, code component (e.g., java class file or XML configuration file), and the required testing scenario.

### Environmental, Societal, Safety, and Economic Considerations

Explain how your design project considered environmental, societal, and economic considerations. It may include how your implementation has positive contributions to the environment and society. What type of financial decisions did you make? How did you make sure that the implementation is safe to use?

*3.3.5.1 Environmental considerations*

Explain how your design project considered environmental considerations.

*3.3.5.2 Societal considerations*

Explain how your design project considered societal considerations.

*3.3.5.3 Safety considerations*

Explain how your design project considered safety considerations.

#### Economic considerations

Explain how your design project considered economic considerations.

### Limitations

Every product has some limitations, so is the case with your design solution. Highlight some of the limitations of your implementation here.

# 

# Teamwork

Since this is a group project, you must have a fair distribution of tasks among yourselves. To this end, you must hold meetings to discuss the distribution of tasks and keep track of the project progress.

## Meeting 1

Time: February 1, 2024, 10:00 am to 11:00 am

Agenda: Project Setup and Brainstorming

| **Team Member** | **Task** | **Completion State** | **Next Task** |
| --- | --- | --- | --- |
| **Harsh Sarvaiya** | Github, and Introduction | 100% | Creating the Login Page |
| **Ekam Taneja** | Functional/ Non-Functional Requirements | 100% | Creating the Prompt and choices screen |
| **Toshiro Turner** | Objectives & Problem Definition | 100% | Task 3 |

Harsh Sarvaiya: I was in charge of creating the Github and sharing it with the other collaborators along with the professor. Furthermore, I was incharge on writing the introduction and organizing the report. I also participated in the brainstorming process. In the upcoming session, I will be working on creating the Login Page

Module Allocated: Designing and Creating the Login Page

Ekam Taneja: I worked on writing the functional and nonfunctional requirements. I also participated in the brainstorming process. In the upcoming session, I will be working on the prompt and choices screen

Module Allocated: Designing and Creating the Prompt and Choices Screen.

Toshiro Turner: I also participated in the brainstorming process. In the upcoming session, I will be working on connecting the Login Page and Prompt/Choices Screen. I will also be doing

Module Allocated: Connecting the Login Page and Prompt/Choices Screen. Creating the collecting the votes mechanism.

## 

## Meeting 2

Time: March 4, 2024, 10:00 am to 11:00 am

Agenda: Project Setup and Brainstorming

| **Team Member** | **Task** | **Completion State** | **Next Task** |
| --- | --- | --- | --- |
| **Harsh Sarvaiya** | Github, and Introduction | 100% | Creating the Login Page |
| **Ekam Taneja** | Functional/ Non-Functional Requirements | 100% | Creating the Prompt and choices screen |
| **Toshiro Turner** | Objectives & Problem Definition | 100% | Task 3 |

Harsh Sarvaiya: I was in charge of creating the Github and sharing it with the other collaborators along with the professor. Furthermore, I was incharge on writing the introduction and organizing the report. I also participated in the brainstorming process. In the upcoming session, I will be working on creating the Login Page

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# Conclusion and Future Work

* Provide a concise summary of your accomplishments, outlining the design functions and objectives successfully achieved while adhering to the specified constraints.
* In consideration of the limitations inherent in the application design, offer recommendations for potential enhancements in future iterations of the design.

# References

* Use the IEEE reference style.
* Do not put any reference if it is not cited in the text.

# Appendix

If you want to provide any additional information, use this appendix.