IT314: Software Engineering

Lab Session VI - Domain Analysis Model

Group 17: A platform for creating and managing online polls and surveys

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- **Create the domain analysis models for your course Project:**

Here is a possible domain analysis model for the poll and survey-taking website:

1. **User management**
    - User registration and login
    - User profile management
    - User roles and permissions (e.g., administrator, editor, participant)
2. **Poll and survey creation**
    - Ability to create and customize polls and surveys
    - Various question types (e.g., multiple choice, open-ended, rating scale)
3. **Poll and survey distribution**
    - Option to share polls and surveys through social media, email, or direct link
4. **Data collection and analysis**
    - Real-time data collection and analysis
    - Graphical representation of poll and survey results
    - Option to export data to various formats (e.g., CSV, PDF)
5. **Security and privacy**
    - Secure user authentication and data encryption
    - Option to make polls and surveys anonymous
6. **Customer support**
    - Option to contact customer support via email
    - Access to a knowledge base or FAQ section

By analyzing these key features and requirements, we can create a functional poll and survey-taking website.

- **Identify boundary, entity, and control object:**

1. **Boundary objects:**

The boundary objects are the area units within the project where the actors move. The boundary objects are answerable for user interaction and mainly constitute screens, menus, forms, dialogs, etc.

In our project, Boundary objects will be the interface through which the user accesses the website. Mainly, it would be through screen interfaces of desktops, laptops and mobile devices, and peripheral devices along with the screens.

2. **Entity objects:**

The entity objects of our website are the various individuals and groups that interact with the tool. Some examples are:

Poll/survey creators: These are the individuals or groups who create the poll or survey. They design the questions, choose the response types, and customize the appearance of the poll.

Poll/survey: The main entity representing the poll or survey. This may include information such as the title, description, and questions.

Answers/choice: An entity representing each possible answer choice for a question.

Response: An entity representing the response submitted by a user to a poll/survey.

Respondents: These are the individuals who complete the poll or survey. They provide the data that is collected and analyzed by the poll creator.

Administrators: In some cases, there may be individuals or groups who are responsible for administering the use of polls & surveys within an organization. They may set policies for using the tool, manage user access, and ensure that data privacy and security standards are met.

3. **Control objects:**

The controller object effectively provides an interface between the boundary and entity objects from each other, creating a system flexible to changes in the computer program and process logic.

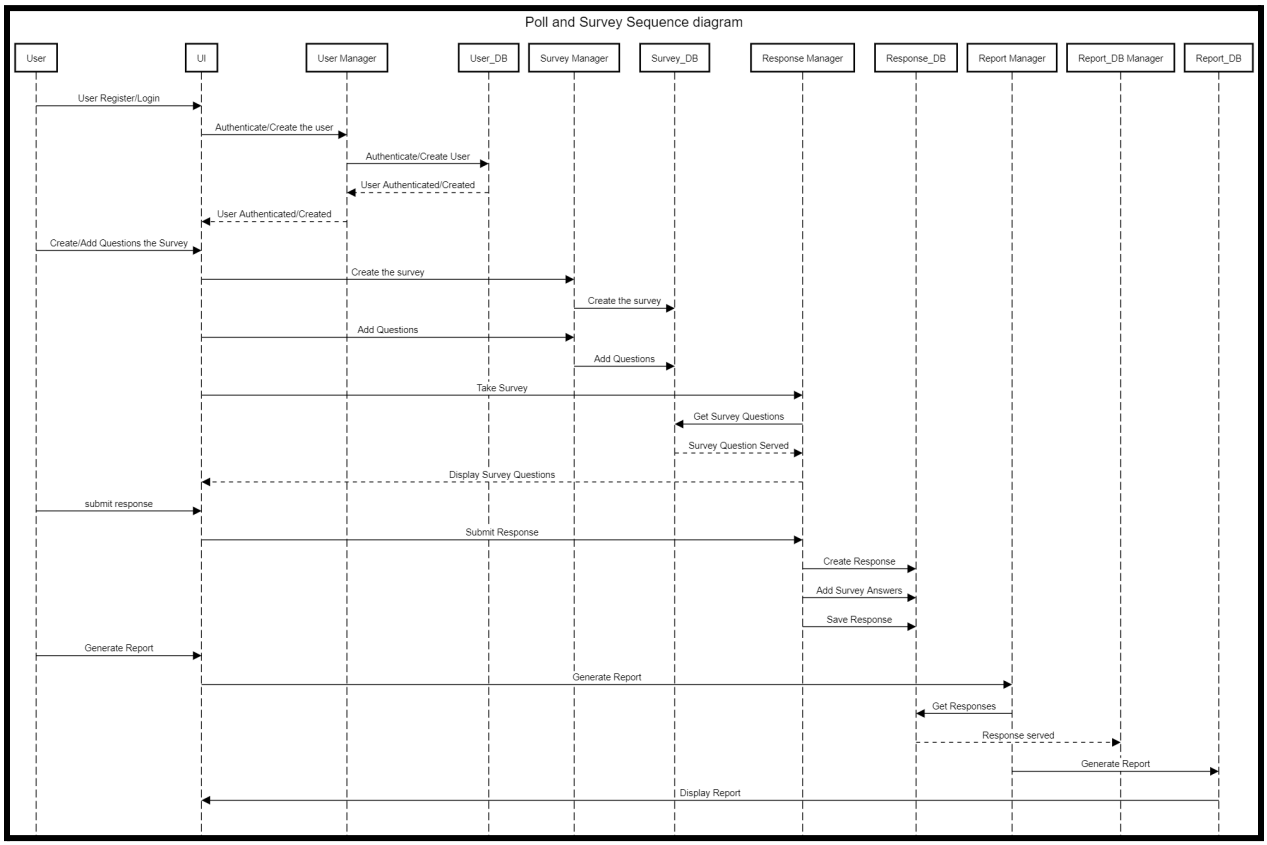
Add and edit questions: Questions can be added by clicking on the plus icon (+) in the toolbar and selecting the type of question to be added. You can also edit questions by clicking on the question and selecting the Edit icon (pencil) that appears.

Reorder questions: You can easily reorder questions by clicking on the question and dragging it to a new location.

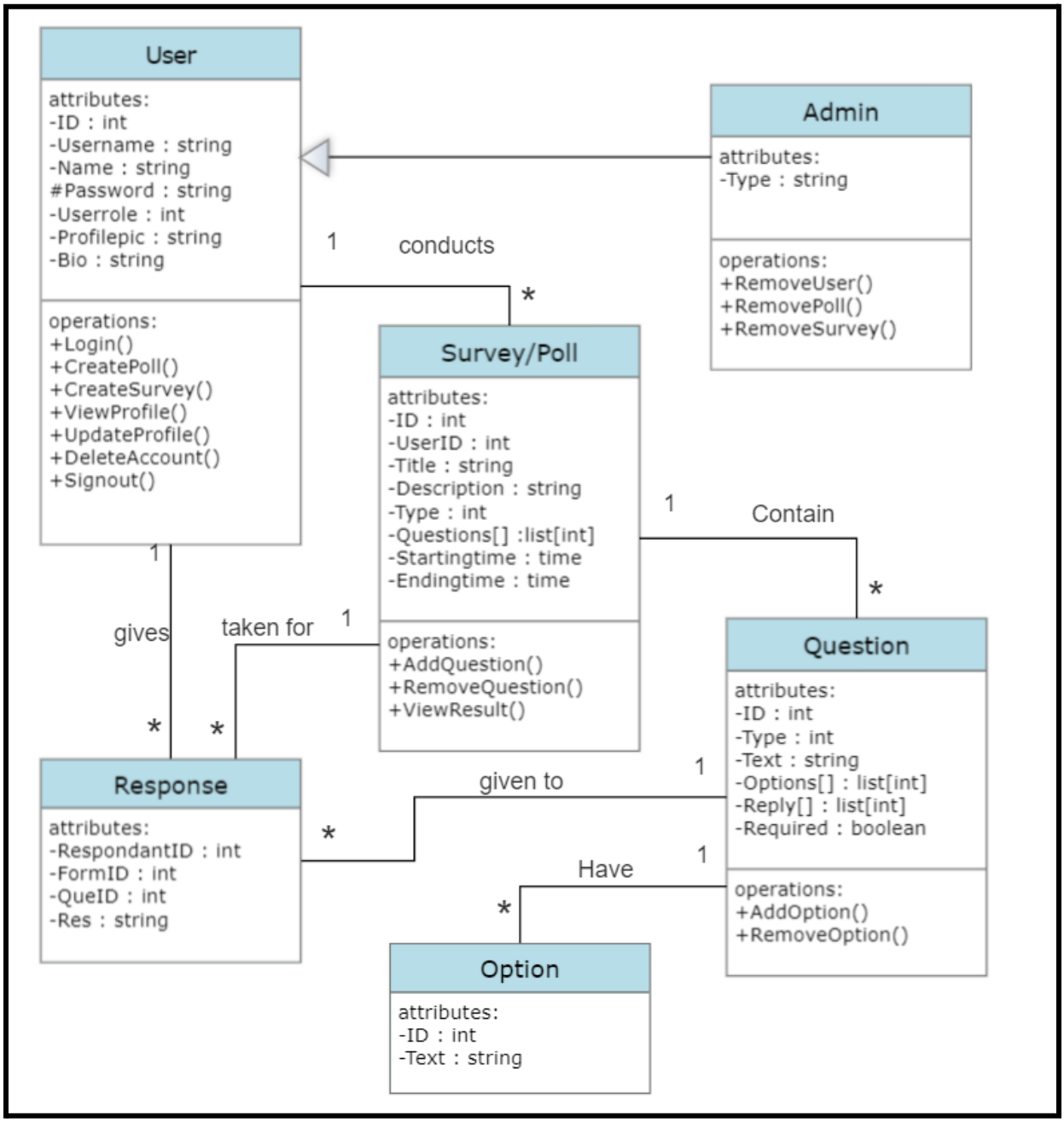
Customize the theme: You can customize the theme of your poll/survey by clicking on the Theme icon in the toolbar and selecting a pre-built theme or customizing your own theme to go with the general domain of the questions in the survey.

- **Draw a sequence diagram and class diagram:**

Sequence diagram:



Class diagram:



- **Identify the design goals:**

1. **User-friendly interface:** The website should have a simple and intuitive design that makes it easy for users to navigate and complete surveys or polls.
2. **Mobile responsiveness:** The website should be optimized for mobile devices since many users access the internet through smartphones and tablets.
3. **Customizability:** The website should allow survey creators to customize their surveys with branding and design.
4. **Data security:** The website should have security protocols to ensure that user data is protected.
5. **Analytics and reporting:** The website should provide analytics and reporting features to help survey creators analyze the data collected from their surveys.
6. **Efficient data management:** The website should provide tools for managing and organizing survey data effectively.
7. **Scalability:** The website should be designed to handle large volumes of traffic and data as it grows over time.
8. **Navigation:** The user should be able to easily navigate, identify and find the tools required for the survey on the interface of the site
9. **Customer Support:** Provide users with a general FAQ and contact information for general doubts and support

- **Create a high-level system design:**

HLD document consists of data flows, flowcharts, and data structures to help developers to understand and implement how the current system is being designed intentionally to function.

It explains the connections between system components and operations, which depict the logic and architecture design needed for the system's functionality and flow for each and every module of the system

Components of High-Level Design:

- Attributes and features of software entities.
- Relationships between different software entities (components, modules, classes, etc.)

- **Choose architecture:**

A **three-tier architecture** is a popular way to design web applications, and it can be a good fit for a poll and survey-taking website. Here's how you might implement a three-tier architecture for this type of website:

Presentation Tier:

The presentation tier is the user interface layer of the application.

In the case of a poll and survey-taking website, this would be the website itself, where users can view and interact with polls and surveys. This tier would be responsible for displaying the appropriate web pages, handling user input (such as submitting survey responses), and communicating with the application tier.

Application Tier:

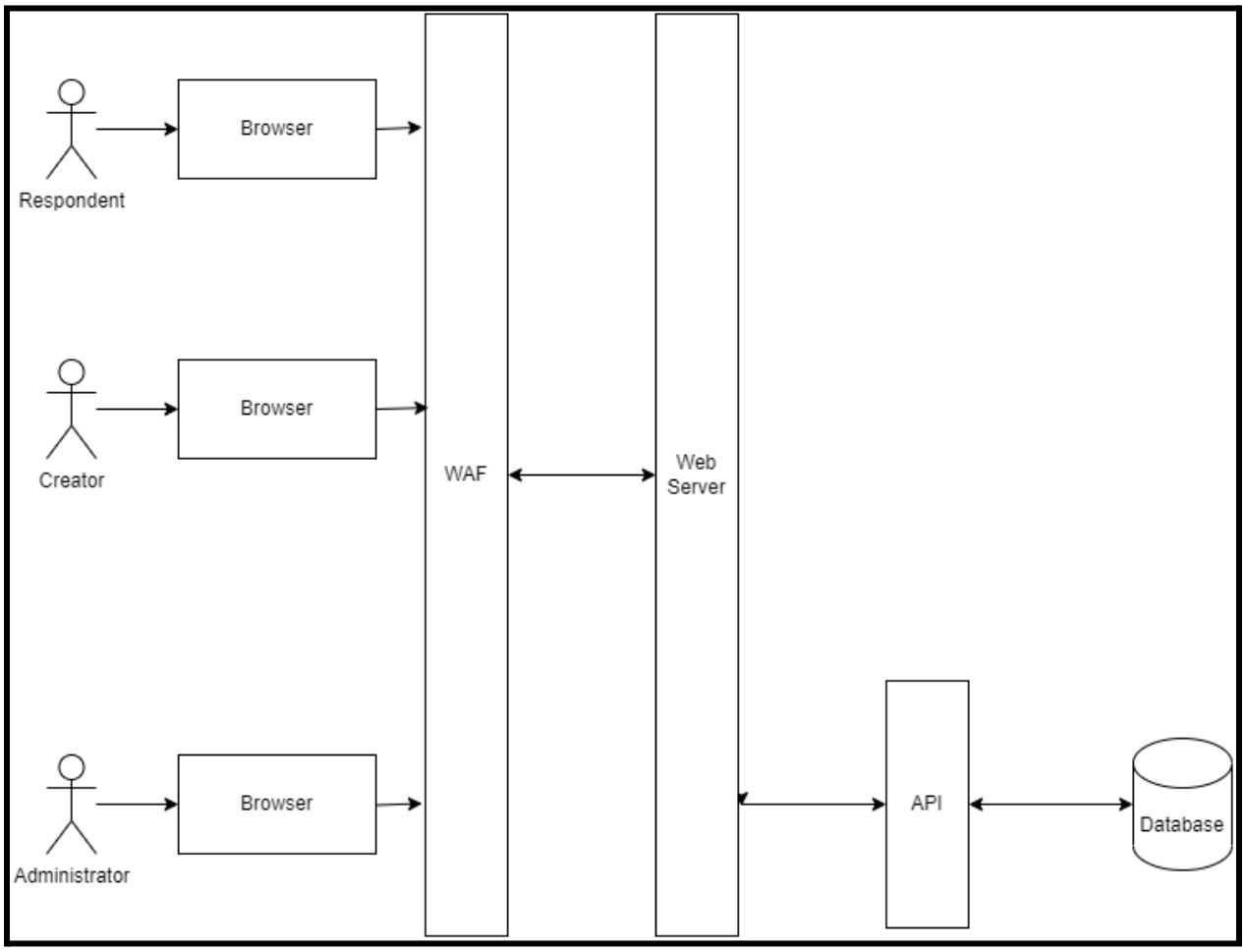
The application tier, also known as the logic tier, is responsible for the business logic of the application.

In the case of a poll and survey-taking website, this tier would handle tasks such as creating new polls and surveys, storing and retrieving survey responses, and generating reports based on the data collected. This tier would communicate with both the presentation tier and the data tier.

Data Tier:

The data tier, also known as the persistence tier, is responsible for storing and retrieving data used by the application.

In the case of a poll and survey-taking website, this would include storing information about polls and surveys, as well as survey responses. This tier would communicate with the application tier to perform tasks such as adding new data or retrieving existing data.



By separating the website's functionality into these three tiers, you can create a more modular and maintainable application. It also allows you to scale each tier independently, depending on the needs of your application. For example, if you have a large user base but relatively simple data storage requirements, you could scale up your presentation and application tiers while keeping your data tier relatively small.

- **Identify the subsystems:**

A poll and survey-taking website typically consists of several subsystems that work together to collect, store, and analyze data. Some of the key subsystems include:

User interface subsystem: This subsystem is responsible for presenting the poll or survey to the user in a user-friendly and interactive manner. It includes features like forms, buttons, checkboxes, and drop-down menus.

Data collection subsystem: This subsystem collects the responses submitted by users and stores them in a database. It includes features like data validation, error checking, and data cleaning.

Authentication and security subsystem: This subsystem ensures that only authorized users can access the poll or survey and that user data is kept secure. It includes user login and password authentication, SSL encryption, and firewalls.

Reporting and analytics subsystem: This subsystem analyzes the data collected from the poll or survey and generates reports and visualizations. It includes features like data aggregation, statistical analysis, and data visualization tools.

Administration and management subsystem: This subsystem allows the website administrator to manage user accounts, create new polls or surveys, and monitor user activity. It includes user management, poll or survey creation, and data backup and recovery.