Fake News Faux Real :
Lab 6

I.   Domain Analysis Model:

The "Fake News Detector" is a tool designed to identify and flag potentially fake news stories. To create a domain analysis model for this tool, we can consider the following factors:

1. **Domain**: The domain of the "Fake News Detector" is online news media and journalism.

2. **Purpose**: The purpose of the "Fake News Detector" is to identify and flag potentially fake news stories that are being circulated on the internet. The tool aims to assist users in identifying news articles that may not be credible or reliable.

3. **Functionality**: The "Fake News Detector" uses a combination of machine learning and natural language processing techniques to analyze news articles and assess their credibility. It may also use a database of known fake news sources to cross-reference the article's source and content.

4. **User interface**: The user interface of the "Fake News Detector" may be a website or mobile app that allows users to input a news article's URL or text. The tool will then analyze the article and provide a credibility score or a warning if the article is deemed to be potentially fake.

5. **Data sources**: The "Fake News Detector" may use a variety of data sources to assess the credibility of news articles, including news databases, social media, and online news sources. It may also use user feedback to improve its accuracy over time.

6. **Fact-checking**: The third area of focus is fact-checking. The model should be able to compare the information in the news with known facts and information from reliable sources. This could involve cross-referencing news articles with external sources of information or using data from fact-checking websites.

7. **Accuracy**: The accuracy of the "Fake News Detector" will depend on the quality of its machine learning algorithms and the amount and quality of data it has access to. The tool may need to be updated regularly to keep up with changes in the online news media landscape.

8. **Legal and ethical considerations**: The "Fake News Detector" must be designed in compliance with legal and ethical standards. It must protect users' privacy and not be used to suppress or censor legitimate news stories. It should also be transparent in how it assesses the credibility of news articles and how it makes decisions about what articles to flag as potentially fake.

II.   Boundary, Entity and Control Object:

Boundary objects, entities, and control objects are essential components of any software system. Here are some examples of boundary objects, entities, and control objects for a "Fake News Detector":

1. **Boundary objects**:

   a. **News sources**: The boundary objects for the "Fake News Detector" include the news sources that the system will analyze. This could include websites, social media platforms, and other sources of news and information.
   b. **User interface**: The user interface of the "Fake News Detector" is also a boundary object. This includes the design and layout of the interface, as well as any interactive features or user controls.
   c. **Fact-checking sources**: The "Fake News Detector" may also use external fact-checking sources as boundary objects to cross-reference news articles and verify information.

2. **Entity objects**:

   a. **News articles**: News articles are entity objects that the "Fake News Detector" will analyze to determine whether they are real or fake.
   b. **User data**: User data, such as login credentials or user preferences, is another entity object that the "Fake News Detector" may store and manage.
   c. **Fact-checking data**: The system may also store entity objects such as fact-checking data, which can be used to verify the accuracy of news articles.

3. **Entity objects**:

   a. **Natural Language Processing (NLP) algorithms**: NLP algorithms are control objects that the "Fake News Detector" may use to analyze news articles and identify patterns that indicate fake news.
   b. **Machine Learning (ML) models:** ML models are another type of control object that can be used to train the "Fake News Detector" to improve its accuracy over time.
   c. **Database management system:** The database management system is a control object that the "Fake News Detector" may use to store and manage entity objects, such as news articles and user data.
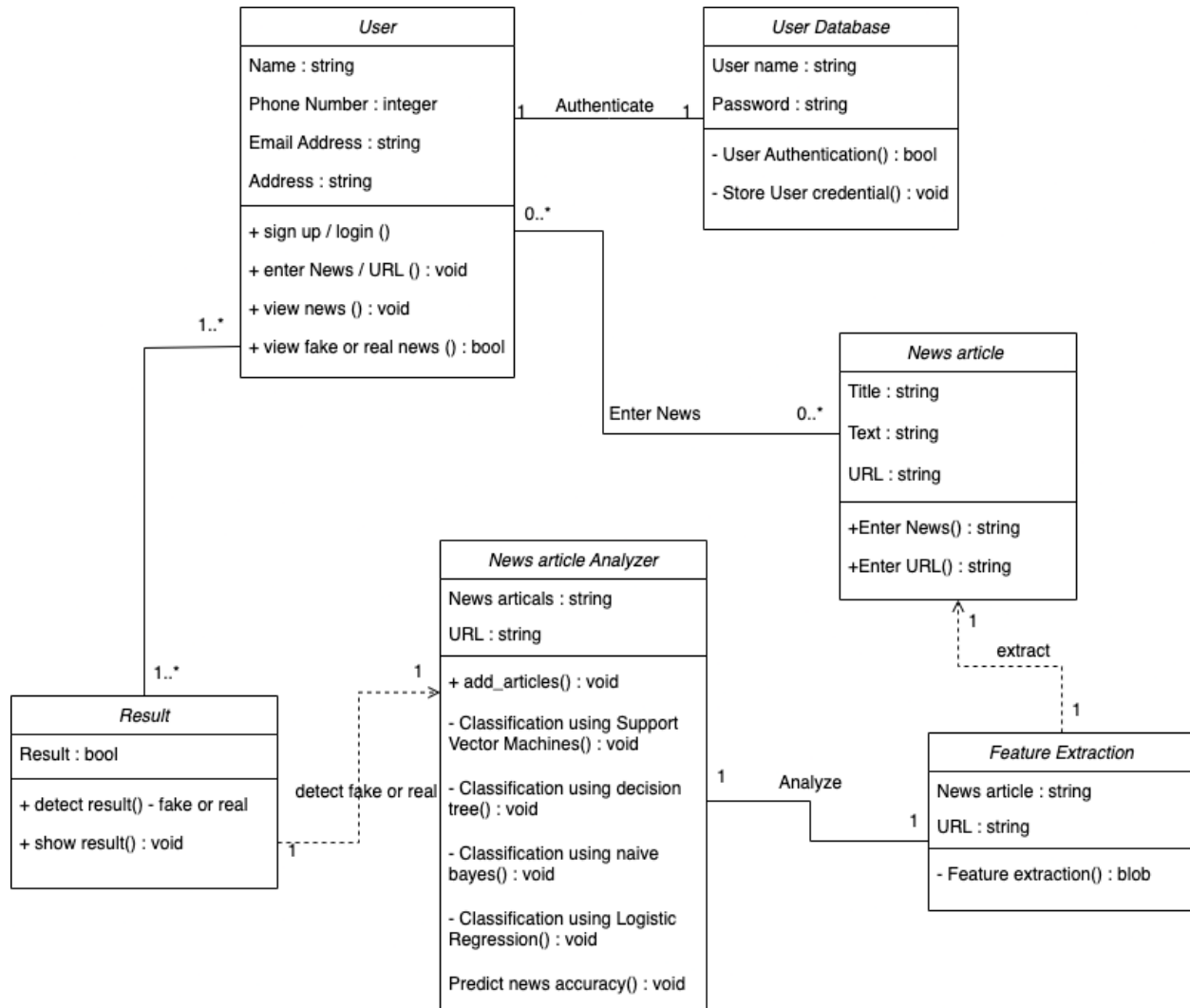
III.   Sequence and Class Diagram:

1. Sequence Diagram:

a. Login/Sign Up for user:
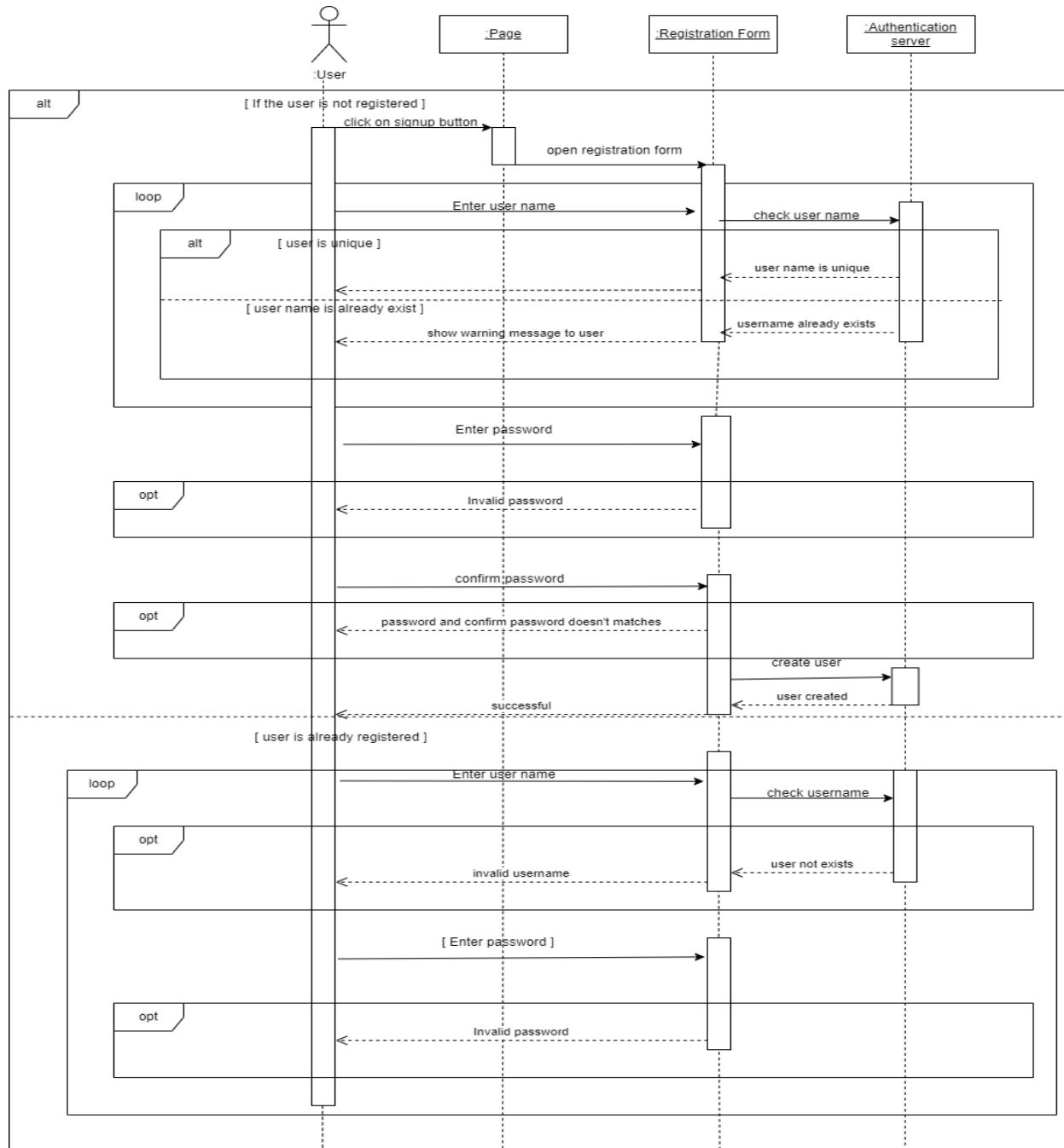
b. Detecting whether news is real or fake:
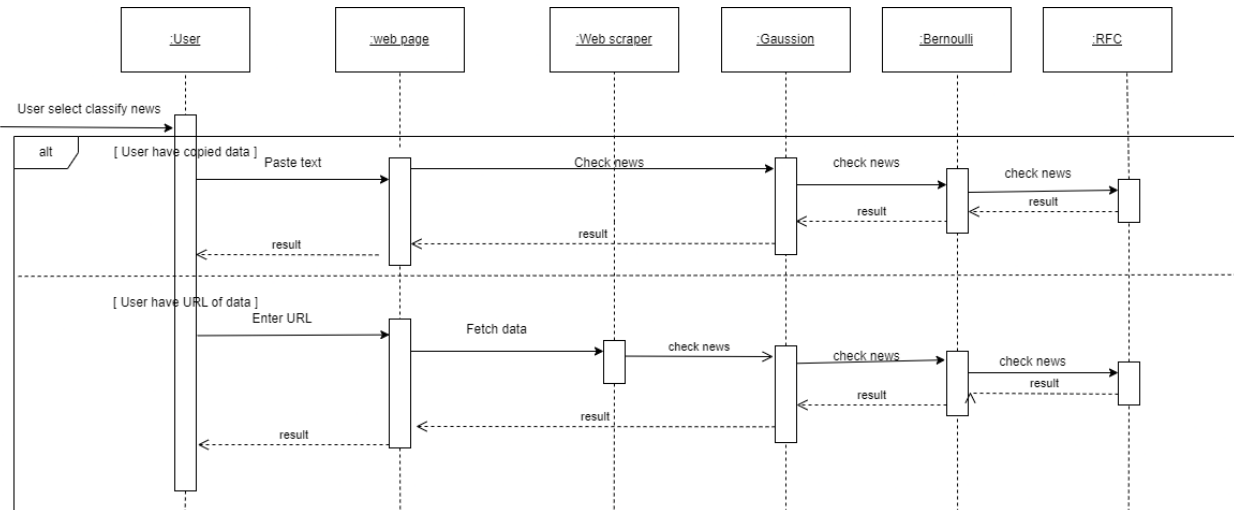
2. Class Diagram:

IV.   High Level System Design:

There are several high-level architecture types that can be used for a "Fake News Detector." One of the most common architecture types is the client-server architecture. In this architecture, the system is split into two primary components: the client-side and the server-side. The client-side is responsible for handling user input and displaying results to the user, while

the server-side is responsible for performing the analysis of news articles to determine whether they are real or fake.

Here's what we think we can do:

1. **Client-side**: The client-side of the architecture includes the user interface, which provides users with a way to input news articles and view the results of the analysis. This could include a web interface, a mobile app, or a desktop application.

2. **Server-side**: The server-side of the architecture includes the back-end system that performs the analysis of news articles. This system may include several components, such as:
- **Data ingestion**: This component is responsible for collecting news articles from various sources and preparing them for analysis.
- **Natural Language Processing (NLP) algorithms**: This component is responsible for analyzing the news articles using NLP techniques to identify patterns that indicate fake news.
- **Machine Learning (ML) models**: This component is responsible for training and improving the accuracy of the system over time.
- **Fact-checking sources**: This component is responsible for cross-referencing news articles with external fact-checking sources to verify information.
- **Database management system**: This component is responsible for storing and managing entity objects, such as news articles and user data.
- **API**: An API can be provided for third-party integration of the fake news detector into other systems.

The client-side and server-side communicate with each other through an Application Programming Interface (API) or network protocols, such as HTTP or WebSockets. The server-side sends the analysis results back to the client-side, which displays them to the user. This architecture type allows for scalability and performance optimization, as the analysis can be performed on multiple servers or serverless functions, and load balanced.