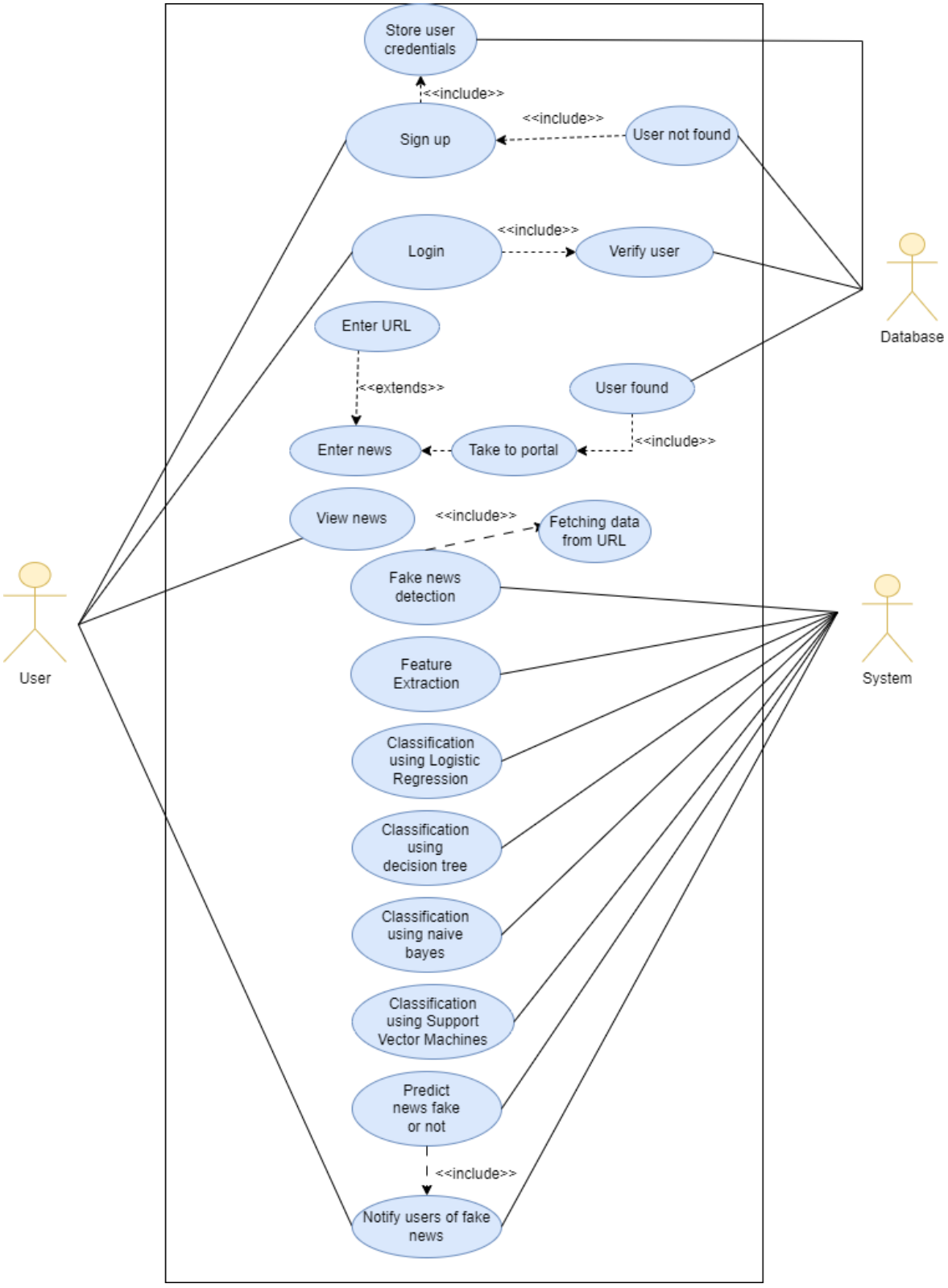
Group 24 : Fake News Faux Real

Use Case diagram:



Use Case	Sign up
Description	To allow the user to either sign in to an existing account or create a new account to access the system.
Primary Actor	User
Secondary Actor	Database
Pre condition	1. The user has access to a device with an internet connection and a web browser. 2. The user has not already registered an account on the FakeRanks Faux Real platform. 3. The user has an interest in using a fake news classifier tool.
Post condition	The user is either signed in to the system or has created a new account and is automatically signed in.
Flow	1. The user opens the system's login page. 2. If the user already has an account, they select the "Sign in" option and enter their username/email and password. 3. The system verifies the user's credentials and logs them in. 4. If the user does not have an account, they select the "Sign up" option and provide the required information, such as their name, email, password, and any other relevant details. 5. The system verifies the user's information and creates a new account for them. 6. The system automatically logs the user into the new account. 7. The user is redirected to the system's main page or the page they were trying to access before being prompted to sign in/up.

Alternate Flow	3.a If the user enters incorrect login credentials, the system prompts them to try again. 5.a If the user provides incomplete or incorrect information during the sign-up process, the system prompts them to correct the errors or provide additional information.
Extension	If the system is offline or not functioning properly, the user cannot sign in or sign up

Use Case	Feeding article text for fake news classification
Description	To input article text into the FakeRanks Faux Real platform for fake news classification
Primary Actor	User
Secondary Actor	Database
Pre condition	1. The user is logged into their FakeRanks Faux Real account 2. The user has access to an article that they want to classify as either real or fake news 3. The user has copied the article text to their device's clipboard
Post condition	The user has received a classification result for the article text they provided.
Flow	1. The user navigates to the FakeRanks Faux Real platform and logs in to their account. 2. Once logged in, the user is directed to the platform's dashboard. 3. On the dashboard, the user selects the "Classify News" option. 4. The user is prompted to paste the article text into a text box provided by the platform. 5. The user pastes the article text from their device's clipboard into the text box.

	6. The platform analyzes the article text and provides a classification result, indicating whether the article is real or fake news. 7. The user is presented with the classification result.
Alternate Flow	
Extension	1. If the user encounters any errors while pasting the article text or submitting it to the platform, they are prompted with an appropriate error message and given instructions on how to rectify the issue. 2. If the article text provided by the user is in a format that is not compatible with the platform's analysis algorithm, the user is prompted with an error message and given instructions on how to reformat the text.

Use Case	Feeding article text for fake news classification by providing a link to the article
Description	To input article text into the FakeRanks Faux Real platform for fake news classification by providing a link to the article
Primary Actor	User
Secondary Actor	System
Pre condition	1. The user is logged into their FakeRanks Faux Real account 2. The user has access to an article that they want to classify as either real or fake news 3. The user has the URL link for the article 4. The article text should be in between 2015 to 2020 and it is also related to Donald Trump.
Post condition	The user has received a classification result for the article text retrieved from the provided URL link.

Flow	1. The user navigates to the FakeRanks Faux Real platform and logs in to their account. 2. Once logged in, the user is directed to the platform's dashboard. 3. On the dashboard, the user selects the "Classify News" option. 4. The user is prompted to provide the URL link to the article they want to classify. 5. The user pastes or types the URL link into the text box provided by the platform. 6. The platform retrieves the article text from the provided URL link and analyzes it. 7. The platform provides a classification result, indicating whether the article is real or fake news. 8. The user is presented with the classification result.
Alternate Flow	
Extension	1. If the user encounters any errors while providing the URL link or submitting it to the platform, they are prompted with an appropriate error message and given instructions on how to rectify the issue. 2. If the article text retrieved from the provided URL link is in a format that is not compatible with the platform's analysis algorithm, the user is prompted with an error message and given instructions on how to reformat the text.

Use Case	Notifying the user of the classification result for a given article
Description	To receive a notification of the classification result (real or fake news) for a given article
Primary Actor	User

Secondary Actor	System
Pre condition	1. The user is logged into their FakeRanks Faux Real account 2. The user has provided article text or a link to an article for classification by the platform
Post condition	The user has received a notification of the classification result for the provided article.
Flow	1. After providing article text or a link to an article, the user waits for the classification result. 2. Once the platform has analyzed the provided article text, it provides a classification result. 3. The platform sends a notification to the user indicating the classification result, either "real news" or "fake news". 4. The user receives the notification and views the classification result. 5. The user can choose to view more information about the classification result, such as the reasons behind the classification or the platform's confidence level in the classification.
Alternate Flow	
Extension	If the platform encounters any errors during the classification process, the user is prompted with an appropriate error message and given instructions on how to rectify the issue

Use Case	Feature Extraction for Fake News Classification
Description	The goal of this use case is to extract relevant features from the raw text data to be used in the classification of fake news articles.
Primary Actor	FakeRanks Faux Real System (preprocessing of text data)

Secondary Actor	
Pre condition	1. The input to this use case is raw text data obtained from various sources such as news articles, social media, and other online content. 2. The system has access to the necessary libraries and resources for processing text data.
Post condition	1. The output of this use case is a set of relevant features extracted from the raw text data, which can be used as input to the fake news classification algorithm. 2. The extracted features are in a suitable format for the classifier, and the system is ready to proceed with the classification process.
Flow	1. The system reads in the raw text data. 2. The system applies various preprocessing techniques such as tokenization, stop word removal, and stemming to clean the data. 3. The system applies feature extraction techniques such as bag-of-words, n-grams, and word embeddings to extract relevant features from the cleaned text data. 4. The system performs dimensionality reduction techniques such as PCA or t-SNE to reduce the number of features and improve computational efficiency. 5. The system outputs the extracted features in a suitable format for use in the fake news classification algorithm.
Alternate Flow	1a. If the raw text data is not available, the system prompts the user to provide the input. 2a. If the preprocessing techniques fail to clean the data effectively, the system may resort to manual inspection or other advanced techniques. 3a. If the feature extraction techniques fail to extract relevant features, the system may experiment with

	other techniques or adjust the parameters of the existing techniques. 4a. If the dimensionality reduction techniques fail to reduce the number of features effectively, the system may experiment with other techniques or adjust the parameters of the existing techniques.
Extension	

Use Case	Classification using SVM for FakeRanks Faux Real with Preprocessed Text Input by the System
Description	The goal of this use case is to use SVM to classify preprocessed text data fed into the FakeRanks Faux Real system as either real or fake news.
Primary Actor	FakeRanks Faux Real system
Secondary Actor	
Pre condition	1. The FakeRanks Faux Real system has access to a preprocessed dataset of labeled news articles to use for training the SVM model. 2. The FakeRanks Faux Real system has access to a preprocessed dataset of unlabeled news articles to classify using the SVM model.
Post condition	1. The FakeRanks Faux Real system has a trained SVM model that can classify new, preprocessed news articles as either real or fake. 2. The performance of the SVM model has been evaluated using metrics such as accuracy, precision, recall, and F1 score.
Flow	1. The FakeRanks Faux Real system receives preprocessed news articles to be classified. 2. The preprocessed text data is split into training and testing sets.

	3. The SVM algorithm is applied to train a model using the preprocessed text data and their corresponding labels (real or fake). 4. The performance of the SVM model is evaluated using metrics such as accuracy, precision, recall, and F1 score. 5. The trained SVM model is used by the system to classify new, preprocessed news articles as real or fake.
Alternate Flow	
Extension	

(3) Write the non-functional requirements of your system. Justify each of them and why those are applicable.

Non-functional requirements are the quality attributes that define how the system should behave in terms of performance, security, reliability, usability, and other aspects. Here are some non-functional requirements that could be justified for the fake news faux real project:

Performance: The system should be able to process a large volume of news articles and social media posts in real-time, and provide accurate results within seconds. This is important to ensure that fake news articles are detected as quickly as possible, before they can be shared and potentially cause harm.

Usability:
The system should be easy to use and navigate, with clear instructions and feedback for users. This is important to ensure that users can effectively utilize the system without requiring extensive technical knowledge, and to encourage widespread adoption of the system.

Compatibility:
The system should be compatible with different devices and platforms. It should be accessible to all users, regardless of the device they use.

Scalability:
To ensure scalability, the system utilizes machine learning and natural language processing techniques. These techniques help in automating the detection of fake news, which are trained on large datasets of fake and real news. By doing so, the system can quickly and accurately analyze vast amounts of news articles, making it scalable to analyze a large volume of data.

Security:
The system ensures the security of user data by implementing encryption methods to protect sensitive information such as passwords and personal information. It also implements user access controls to ensure that only authorized personnel can access and modify data which is achieved by implementing authentication protocols, such as two-factor authentication and role-based access control. Users are validated utilizing numerous security stages so solid security is given.

Flexibility:
It is achieved by delivering the system through multiple platforms, updating content, collaborating with others, and gathering continuous feedback. These measures can help ensure that the system remains relevant, adaptable, and effective in promoting media literacy and combating fake news.
Speed: Given how rapidly false news may propagate, the fake news detection system must be able to analyze massive volumes of data quickly. The detection and halting of the spread of bogus news may be delayed by a sluggish system.

Accuracy:
The false news detection system's accuracy is crucial since it is essential to make sure the system is dependable and capable of doing so. Inaccurate detection might result in false positives or negatives, which can make users doubt the system and perhaps propagate misleading information.

Customizability:
The system must be customizable to meet the needs of different users. This is important because different users may have different requirements for the fake news detection system.

Adaptability:
The system must be adaptable to changing trends and patterns of fake news. This is important because fake news can change rapidly and the system must be able to keep up with these changes.

Reliability:
The project takes a comprehensive approach to ensuring the reliability of its tool, combining reliable sources, advanced AI algorithms, human review, and a transparent methodology to provide users with accurate and trustworthy information.
Prediction of whether the news is real or fake ought to be quick.

Ease of use: Since, the product is a GUI based website; it is easy for people from all walks of life to understand how to use it.

Security: Validation of users is done by using a database. All the user information is stored in a database and users are not allowed to move to the main portal if their login fails.