Intelligent News Aggregator

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Introduction:

The increasing volume of news and information available online has made it challenging for users to find reliable, relevant, and categorized content. The **Intelligent News Aggregator** aims to address this challenge by collecting, organizing, and presenting news articles in a user-friendly interface. Using **C++**, the system will employ advanced data structures and algorithms to ensure high efficiency and usability.

Objectives:

- Collect news articles from multiple sources in real-time.
- Categorize articles based on topics, such as technology, politics, sports, and entertainment.
- Allow users to sort and filter articles based on relevance, publication date, or popularity.
- Provide seamless navigation and user-friendly interaction.
- Enhance user experience with features like article history, search functionality, and recommendation systems.

System Design

1. Core Data Structures:

- **Stacks (Navigation History):** Used to maintain a record of previously viewed articles, enabling users to navigate backward seamlessly.
- **Queues (News Feeds):** Manage incoming news articles in a queue to process and display them in the order they are received.
- **Trees (Categorization):** Represent categories and subcategories in a hierarchical tree structure, allowing efficient categorization and retrieval of articles.
- **Graphs (Article Relationships):** Create a graph of articles, where nodes represent individual articles and edges signify relationships (e.g., similar topics or references).
- **Sorting Algorithms:** Use sorting techniques like quicksort or heapsort to display articles in a prioritized order based on user preferences (e.g., relevance or date).

2. User Interface:

Develop a graphical user interface (GUI) using **Qt**, featuring:

- Home Page: Display categorized articles.
- Search Box: Filter and find articles quickly.
- Detailed Article View: Present complete content with navigation options.
- Recommendations Section: Show related articles.

Advantages:

- Efficient and real-time organization of news.
- Improved user experience with categorization and navigation.

Implementation Tools:

1)Programming Language:

- **C++** for both backend logic and frontend interface development.

2)Frameworks:

- **Qt**: To build a modern and interactive GUI.
- **Boost**: For efficient handling of advanced data structures and algorithms.

3)APIs:

- Use APIs like **NewsAPI** or **RSS Feeds** to fetch real-time news data.

4)Libraries:

- Utilize standard C++ libraries for data processing and STL for efficient implementation of data structures.