Web Technologies - Web Development Project – Assignment 1

Project Initiation Form

Contents

Section 1: Team

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Section 2: Skills & Interests

Please highlight your skills & interests in terms of:

Programming Languages	Angular Js, Node Js, HTML, CSS
Databases Systems	Mongo Db/MySQL
Application Servers / Web Servers	Express.js
Technologies & Architectures	REST API, MVC architecture
Others (you may add other relevant skills)	Github, Git, Agile methodologies, Cloud computing

Section 3: Description of project idea

Project Goal

The goal of UpToDate Newspaper is to create an intelligent News Aggregator that collects and displays real-time news articles from multiple sources, providing users with a seamless, personalized reading experience. The platform will allow users to browse, search, and filter news by category while ensuring credibility and accessibility. In the future, we aim to integrate a Content Management System (CMS) to enable user-generated content, allowing contributors to publish articles within the platform.

Project Description

Brief:
UpToDate NewsPaper is a News Aggregator designed to bring the latest news from trusted sources like BBC, The New York Times, and CNN into one platform, eliminating the need for users to visit multiple sites. The system will provide real-time updates, categorization, and personalization based on user preferences. As a future enhancement, we plan to incorporate a Content Management System (CMS) to allow user-generated content, creating a hybrid model of news aggregation and independent journalism. Lastly, unlike other conventional news sites UpToDate will be minimalist and simple to comprehend for users of all age group.

Technologies:

The project will be built using modern web technologies, including:
- Frontend: AngularJS (for dynamic UI), HTML, CSS, Bootstrap
- Backend: Node.js with Express.js
- Database: MongoDB or MySQL (for storing user preferences)
- APIs: News APIs (e.g., NewsAPI, NYT API) for fetching external news
- Authentication: JWT (JSON Web Token) for secure login (when CMS is integrated)
- Hosting & Deployment: AWS/GCP/Heroku
- Version Control: GitHub

Functional components of the project, including user-control, graphical user interface and hardware design

1. Core News Aggregation Features (Initial Focus)
    - Fetch News from APIs: Integrate with trusted news sources.
    - Categorization & Filtering: Users can browse news by categories (Politics, Sports, Technology, etc.).
    - Search Functionality: Users can search for news by keywords.
    - Personalization: Display recommended articles based on user reading history.

2. Future CMS Integration (Planned Expansion)
    - User-Generated Content: Allow registered users to write and publish their own articles.
    - Admin Moderation: Control quality and manage user submissions.

- *Main assets (data files, content files, graphical) needed for this project.*

The main assets needed for the project are:
1. **Data Files**:
      - *News API Data*: JSON responses from external news APIs (e.g., NewsAPI, NYT API).
      - *User Preferences & Profiles*: Stored in a database (MongoDB) for personalized recommendations.
      - *Search Indexes:* Indexed keywords for fast search functionality.
2. **Content Files:**
      - *Static Web Pages:* Homepage, news categories, user profile pages, and future CMS-related pages.
      - *User-Generated Content (Future CMS):* Articles, comments, and media files uploaded by users.
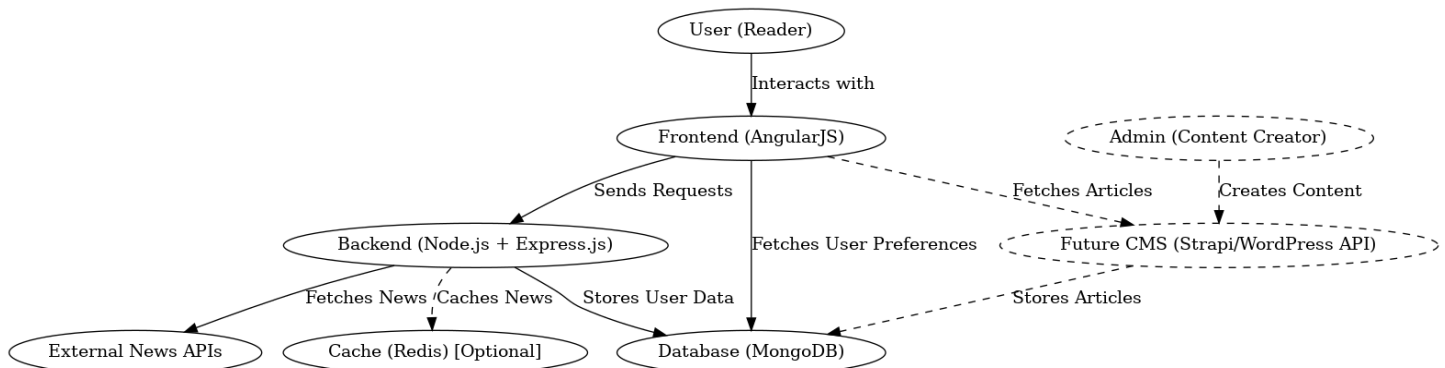3. **Graphical Assets:**
      - *Website UI Components*: Buttons, icons, banners, and images.
      - News Thumbnails & Logos: Downloaded dynamically from news sources or placeholder images when unavailable.
      - Charts & Graphs (if applicable): For data visualization (e.g., trending topics).

- *Additional technologies.*

      - Strapi or WordPress API – To enable content creation and management.
      - CKEditor or TinyMCE – For rich text editing in user-generated content.

- *A diagram of the components and their relationship / interconnectivity.*

Fig. relationship of the components

Motivation

The primary motivation behind developing UpToDate NewsPaper is to offer a centralized platform for consuming real-time news from multiple reputable sources, eliminating the need for users to visit multiple websites individually. It provides an opportunity to explore full-stack development and gain hands-on experience in database integration, API consumption, and user authentication. By focusing on an engaging user experience through features like personalization and interactive commenting the project aims to promote informed discussions and simplify news consumption.

Challenges

- *Main challenges*
    1. **Handling Multiple APIs**
        - Different news providers have unique formats, rate limits, and restrictions.
        - Solution: Implement API standardization and caching.
    2. **Ensuring News Credibility & Avoiding Fake News**
        - Aggregated news should come from reputable sources only.
        - Solution: Carefully curate API sources and implement fact-checking measures.

    3. **Personalization & Recommendation System**
        - Needs efficient data analysis for accurate recommendations.
        - Solution: Start with simple keyword-based suggestions before implementing AI-based recommendations.
    4. **Future CMS Integration**
        - A CMS will require new user roles, content moderation, and additional storage.
        - Solution: Plan a scalable architecture that can support future expansion.

- *What systems are necessary for project success, but are not obviously or easily solvable?*

1. **Real time News Aggregation:**
    - It is necessary to ensure users have up to date articles from various reputable sources but it is challenging, as different APIs often use different data formats, models and rate limits.
2. **User Authentication and role management:**
    - Why it's Necessary: Allows distinct privileges for guests, registered users, and admins, ensuring secure content submission and moderation.
    - Why it's Challenging: Implementing secure sign-up/login flows, token-based sessions (JWT), and password encryption demands adherence to security best practices.
3. **Content Moderation System**
    - Why it's Necessary: Prevents the spread of spam, offensive material, or false information in user-submitted articles or comments.
    - Why it's Challenging: Balancing automated filters (e.g., AI-based detection) with manual review can be complex and resource-intensive.

Existing Similar Projects

Similar existing projects
Google News – AI-driven news aggregation.
- Apple News – Aggregates content from multiple publishers.
- Flipboard – Personalizes news based on user preferences.

While these platforms provide aggregation, UpToDate NewsPaper will differentiate itself by allowing future user-generated content through a CMS, making it a hybrid news and independent journalism platform.