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Multilingual News Portal with Real-Time Translation and Commenting System using Python

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ABSTRACT

In today's rapidly globalizing world, access to real-time information across different languages is essential for fostering understanding and bridging cultural gaps. Traditional news portals often provide limited language options and rely on human translators, which can lead to delays in disseminating information. The need for a more dynamic, scalable, and real-time multilingual news platform is critical.

This paper presents a conceptual framework for developing a **Multilingual News Portal with Real-Time Translation and an AI-Powered Commenting System**. The proposed system leverages AI and third-party services like NewsAPI and Googletrans to break language barriers by offering live translation of news articles and providing comments for that news, allowing users from diverse linguistic backgrounds to engage in global discussions. This platform is designed to empower real-time multilingual interaction without compromising the speed or quality of the content shared.

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1-INTRODUCTION

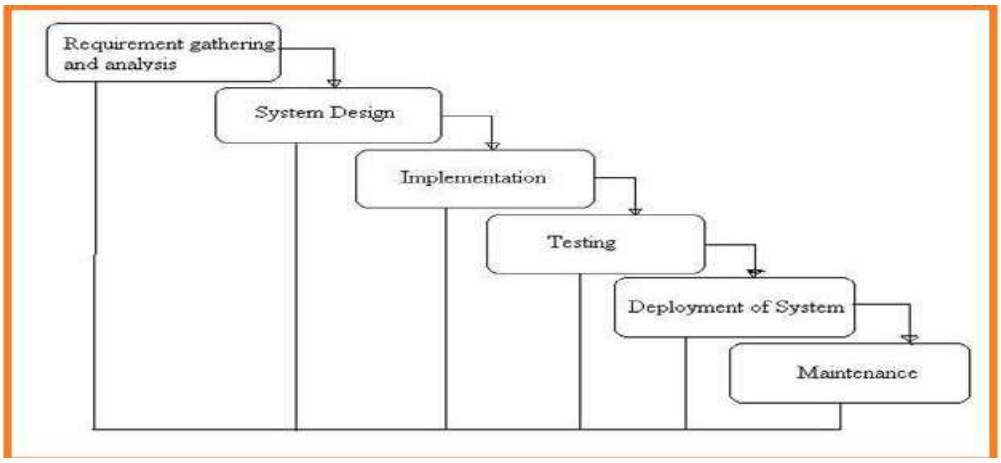
For this innovative project, *Multilingual News Portal with Real-Time Translation and Commenting System,* students will harness the power of Python Flask, AI, and third-party services like NewsAPI and Googletrans to deliver a cutting-edge news experience. The portal is designed to present news from various sources in real-time, thanks to NewsAPI integration, ensuring users receive the latest headlines across multiple languages.

Key to this project is the AI-driven translation system, which uses Googletrans to translate news articles and comments instantly, allowing readers from diverse linguistic backgrounds to interact seamlessly. This translation feature enriches user engagement by allowing users to comment in their native language, which is automatically translated for others, creating a truly inclusive, multilingual discussion space.

Overall, this project blends web development with artificial intelligence to solve real-world problems, offering CSE students hands-on experience in building a robust, language-inclusive news platform that exemplifies the importance of

accessible information sharing in today's globalized world.

2-SYSTEM ANALYSIS



Waterfall Model

Waterfall Model is a sequential model that divides software development into different phases. Each phase is designed for performing specific activity during SDLC phase. It was introduced in 1970 by Winston Royce.

Requirements

The first phase involves understanding what needs to design and what is its function, purpose, etc. Here, the specifications of the input and output or the final product are studied and marked.

System Design

The requirement specifications from the first phase are studied in this phase and system design is prepared. System Design helps in specifying hardware and system requirements and also helps in defining overall system architecture. The software code to be written in the next stage is created now.

Implementation

With inputs from system design, the system is first developed in small programs called units, which are integrated into the next phase. Each unit is developed and tested for its functionality which is referred to as Unit Testing.

Integration and Testing

All the units developed in the implementation phase are integrated into a system after testing of each unit. The software designed, needs to go through constant software testing to find out if there are any flaws or errors. Testing is done so that the client does not face any problem during the installation of the software.

Deployment of System

Once the functional and non-functional testing is done, the product is deployed in the customer environment or released into the market.

3-REQUIREMENTS

FUNCTIONAL REQUIREMENTS

- User can login by providing username and password or create an account to get registered.
- Newspaper access and navigation
- User interaction and Preferences(auto suggestions)
- Content Management
- Save any info whatever they feel important.
- Users can leave comments on specific news article if they want to share their opinion

NON FUNCTIONAL REQUIREMENTS

- Portability
- Security
- Maintainability
- Reliability
- Scalability
- Performance
- Reusability
- Flexibility

SOFTWARE

Python

Python was developed by Guido van Rossum in the late eighties and early nineties at the National Research Institute for Mathematics and Computer Science in the Netherlands.Python is derived from many other languages, including ABC, Modula-3, C, C++, Algol-68, SmallTalk, and Unix shell and other scripting languages.

Python is copyrighted. Like Perl, Python source code is now available under the GNU General Public License (GPL).

Python is now maintained by a core development team at the institute, although Guido van Rossum still holds a vital role in directing its progress.

Python Flask Tutorial

Flask Tutorial provides the basic and advanced concepts of the Python Flask framework. Our Flask tutorial is designed for beginners and professionals. Flask is a web framework that provides libraries to build lightweight web applications in python. It is developed by **Armin Ronacher** who leads an international group of python enthusiasts (POCCO).

Flask

Flask is a web framework that provides libraries to build lightweight web applications in python. It is developed by **Armin Ronacher** who leads an international group of python enthusiasts (POCCO). It is based on WSGI toolkit and jinja2 template engine. Flask is considered as a micro framework.

WSGI

It is an acronym for web server gateway interface which is a standard for python web application development. It is considered as the specification for the universal interface between the web server and web application.

4-MYSQL

MySQL is a relational database management system (RDBMS)[1] that runs as a server providing multi-user access to a number of databases. The SQL phrase stands for Structured Query Language.Free-software-open source projects that require a full-featured database management system often use MySQL. For commercial use, several paid editions are available, and offer additional functionality. Applications which use MySQL databases include: TYPO3,

Joomla, WordPress, phpBB, Drupal and other software built on the LAMP software stack. MySQL is also used in many high-profile, large-scale World Wide Web products, including Wikipedia, Google , Facebook, and Twitter.

MySQL is the world's most popular open source database software, with over 100 million copies of its software downloaded or distributed throughout it's history. With its superior speed, reliability, and ease of use, MySQL has become the preferred choice for Web, Web 2.0, SaaS, ISV, Telecom companies and forward-thinking corporate IT Managers because it eliminates the major problems associated with downtime, maintenance and administration for modern, online applications.

Many of the world's largest and fastest-growing organizations use MySQL to save time and money powering their high-volume Web sites, critical business systems, and packaged software including industry leaders such as Yahoo!, Alcatel-Lucent, Google, Nokia, YouTube, Wikipedia, and Booking.com.

The flagship MySQL offering is MySQL Enterprise, a comprehensive set of production-tested software, proactive monitoring tools, and premium support services available in an affordable annual subscription.

MySQL is a key part of LAMP (Linux, Apache, MySQL, PHP / Perl / Python), the fast-growing open source enterprise software stack. More and more companies are using LAMP as an alternative to expensive proprietary software stacks because of its lower cost and freedom from platform lock-in.

MySQL was originally founded and developed in Sweden by two Swedes and a Finn: David Axmark, Allan Larsson and Michael "Monty" Widenius, who had worked together since the 1980's. More historical information on MySQL

MYSQL TABLES

```
▷ Run | New Tab
DROP TABLE IF EXISTS `comments`;

▷ Run | New Tab | Copy
CREATE TABLE `comments` (
  `news_title` varchar(5000) DEFAULT NULL,
  `comment` varchar(1000) DEFAULT NULL,
  `userid` varchar(100) DEFAULT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
```

```
▷ Run | New Tab
DROP TABLE IF EXISTS `register`;

▷ Run | New Tab | Copy
CREATE TABLE `register` (
  `name` varchar(100) NOT NULL,
  `gender` varchar(100) NOT NULL,
  `user_id` varchar(100) NOT NULL,
  `passwrd` varchar(100) NOT NULL,
  `contact_no` varchar(100) NOT NULL,
  `email` varchar(100) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
```

UML DIAGRAMS

The System Design Document describes the system requirements, operating environment, system and subsystem architecture, files and database design, input formats, output layouts, human-machine interfaces, detailed design, processing logic, and external interfaces.

Global Use Case Diagrams

Identification of actors:

5-IMPLEMENTATIONS OF NEWSAPI

fetch_news(query) function:

```
# Fetch news based on a search query
def fetch_news(query):
    api_key = '186a80824ef04af1a704698a7ca1f145'  # Replace with your NewsAPI key
    url = f'https://newsapi.org/v2/everything?q={query}&apiKey={api_key}'
    response = requests.get(url)
    return response.json()
```

Input: The function takes a query string as input, which is the search term for fetching news articles.

API Key: The variable api_key stores a NewsAPI key. This key is required to authenticate requests to the NewsAPI.

URL Construction: The url variable constructs the NewsAPI endpoint URL using the provided query string and API key. The query string is inserted into the URL.

HTTP Request: The requests.get(url) sends a GET request to the NewsAPI to fetch news articles matching the query.

Return Value: The function returns the JSON response from the API, which contains the fetched news articles and metadata

Fetching News Data:

```
# Fetch news from NewsAPI using the search query
data = fetch_news(query)
```

- Calls the fetch_news function with the query as input and stores the returned JSON response in the data variable.

1.3. **Processing the News Data:**

```
news_articles = []
if data['status'] == 'ok':
    for article in data['articles']:
        news = {
            'title': article['title'],
            'description': article.get('description'),
            'url': article['url'],
            'image_url': article.get('urlToImage', 'https://via.placeholder.com/150')
        }
        news_articles.append(news)
```

- Initialization: news_articles = [] initializes an empty list to store the extracted news articles.
- Check API Status: The condition if data['status'] == 'ok': checks if the API request was successful (i.e., status code is 'ok').
- Iterate Through Articles:
  - The loop for article in data['articles']: iterates over the list of articles in the API response.
- Extract Fields: For each article, it extracts:
  - title: The article's title.
  - description: A brief description of the article.
  - url: The URL link to the full article.
  - image_url: The article's associated image URL. If the image is missing, a default placeholder image ('https://via.placeholder.com/150') is used.
- Store in List: The extracted information is stored as a dictionary in the news variable and then added to the news_articles list.

Implementations of Multilingualism:

Importing the Translator:

```
from googletrans import Transl
```

- This imports the Translator class from the googletrans library, which allows you to translate text between different languages.

6- TESTING

TESTING

Testing is the debugging program is one of the most critical aspects of the computer programming triggers, without programming that works, the system would never produce an output of which it was designed. Testing is best performed when user development is asked to assist in identifying all errors and bugs. The sample data are used for testing. It is not quantity but quality of the data used the matters of testing. Testing is aimed at ensuring that the system was accurately an efficiently before live operation commands.

Unit testing

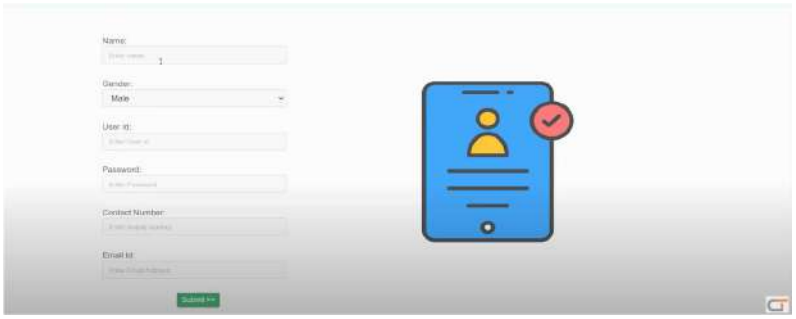
The unit testing is done in the stage of implementation of the project only the error are solved in development stage some of the error we come across in development are given below

SOFTWARE TESTING

Software testing is one of the main stages of project development life cycle to provide our cessation utilizer with information about the quality of the application and ours, in our Project we have under gone some stages of testing like unit testing where it's done in development stage of the project when we are in implementation of the application after the Project is yare we have done manual testing with different Case of all the different modules in the application we have even done browser compatibility testing in different web browsers in market, even we have done Client side validation testing on our application

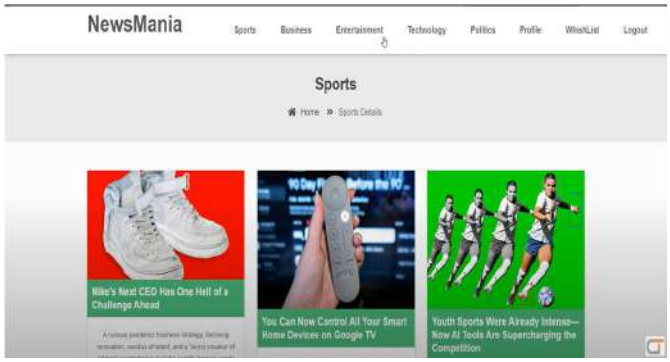
7-SCREEN SHORTS


NewsMania
Home
Signin
SignUp
NEWS


Name:
Gender:
Male
User id:
Password:
Contact Number:
Email Id:


NewsMania
Home
Signin
SignUp
User Login
Home » Signin
User Id
Password
Login


NewsMania
Sports
Business
Entertainment
Technology
Politics
Profile
WishList
Logout



CONCLUSION

The Multilingual News Portal successfully demonstrates how technology can bridge language barriers and foster global interaction. By utilizing real-time translation, users from diverse linguistic backgrounds can access news content in their preferred language, enhancing the inclusivity and accessibility of information. The integration of a multilingual commenting system allows for dynamic discussions and interactions, ensuring that users can communicate seamlessly across languages.

This system not only addresses the challenge of language diversity but also showcases the versatility of Python and Flask in building scalable web applications. The incorporation of translation APIs and robust backend architecture makes it a valuable solution for media platforms, blogs, or any content-driven website that aims to cater to a global audience.

The project highlights the potential of leveraging real-time translation for future innovations in cross-cultural communication. With further enhancements, such as machine learning-based translation improvements and sentiment analysis for comments, the portal could evolve into a more sophisticated and interactive news platform. This project serves as a stepping stone towards more inclusive and connected digital ecosystems.

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