Overview

This report describes the successful completion of the We got you application, which was designed to improve community engagement and streamline municipal service management in South Africa. The application offers citizens a simple way to report issues, provide feedback, view service request statuses, and stay up to date on local events and announcements. The project's goal was to implement practical features based on advanced data structures, improve user experience, and promote transparency between municipal authorities and citizens.

Components and features are implemented.

1. Main Menu.

The Main Menu is the application's central hub, allowing access to the following features:

- Report Issues: Users can report issues, specify their locations, and include details and media attachments.

- Local Events and Announcements: Showcases upcoming events and announcements, with filtering and sorting options.

- Provide Feedback: Collects user feedback via in-app forms, offering a platform for rating municipal services.

2. Reporting Issues

Functionality: Users can report municipal issues such as infrastructure damage and environmental concerns.

- The required fields are location, category, priority, and a detailed description.

- Media files can be attached to add visual context.

Each submission generates a unique RequestId.

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User Interface Enhancements:

-The form validates required fields and includes a clear button for resetting entries.

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Users can easily return to the main menu using the navigation buttons.

3. Service Request Status:

-Users can check the status of their requests by entering the RequestId.

- The system shows the status, date of submission, and any updates or changes.

- Purpose: Provides transparency and enables citizens to track the status of their submissions.

4. Feedback Collection System

Functionality:

-Users can submit ratings and optional comments.

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Feedback allows municipal officials to assess user satisfaction and identify areas for improvement.

User Engagement Strategies:

- Thank-you messages in the app encourage users to participate on an ongoing basis.

5. Local Events and Announcements.

Functionality:

-Shows upcoming events and community updates.

- Users can search and filter events by category and date.

Enhancements:

- A dedicated FilterWindow was created to sort events.

- Smart Recommendations were implemented, which analyzes the user's search history and suggests relevant events.

Utilized data structures

1. List: Organizes reported issues and service requests in sequential order.

Usage:

TheList stores reported issues for easy navigation and manipulation.

List manages service requests for efficient display and updates.

2. Dictionary: Enables quick lookup and management of service requests with unique RequestId keys.

Efficiency: Provides constant access for adding, updating, and retrieving data.

3. Queue

Purpose:Manages service requests in a first-come, first-served manner.

Use: Pending requests are dequeued and new requests are queued for processing.

4. SortedDictionary Goal: Keeps service requests organized according to other keys or timestamps.

Use: Assures that data is kept organized for processing in order of priority.

5. Personalized Recommendation Algorithms

The goal is to offer tailored event recommendations by analyzing user behavior and search trends.

Method: tracked user preferences using sophisticated logic and data structures like sets.

User Interface Design:

-Theme: White text for best visibility and a consistent, dark-themed user interface.

-Navigation: Consistent and clear button placement, intuitive navigation across all features.

-Layout Changes: -To improve user experience, search bars, back buttons, and filter buttons were rearranged.

-Specific windows for event filtering and sorting.

Project Difficulties and Their Resolutions

1. Challenge: Putting Real-Time Data Updates into Practice

Solution: Made use of suitable data structures to guarantee quick and effective data updates and retrieval.

2. Challenge: Developing an Easy-to-Use Interface

Solution: Performed user interface testing and utilized input to improve accessibility by adjusting the controls and layout.

3. Challenge: Handling Big Data Sets

Solution: For best results, used sophisticated data structures (dictionaries, sorted collections, etc.).

4. Challenge: Smart recommendations: Developed a strong recommendation system that makes use of user preferences and search history.

Quality Assurance and Testing

Functional Testing: Verified that every feature operated as intended and produced the desired results.

Through UI/UX testing, the interface's usability, accessibility, and visual coherence were confirmed.

Performance Testing: The application's responsiveness and data processing effectiveness were examined.

Upcoming Improvements

-Data Analytics: Use data analysis and reporting to get user input.

-Improved Filtering: Include more sophisticated options for sorting and filtering.

-Notify users in real time of any changes to their service requests or upcoming events.

By offering a complete solution for reporting problems, providing feedback, and getting community updates, the We Got You application effectively achieved its goals. Both users and municipal authorities benefited from the feature-rich functionality, careful user interface design, and efficient use of data structures.