GitaWiz: Bhagavad Gita Wisdom API & Application

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1. Overview

GitaWiz is a spiritually enriching application that provides wisdom and guidance from the Bhagavad Gita, tailored to users' personal challenges and questions. The application follows a client-server architecture with the following components:

1. **GitaWisdomServlet**: A Java servlet that processes user queries, communicates with the Gemini API to identify relevant Bhagavad Gita verses, retrieves those verses from the Bhagavad Gita API, and provides an AI-generated interpretation.

2. **DashboardServlet**: A servlet that provides analytics on user interactions with the system, displaying statistics such as most common queries, query patterns by time of day, geographic distribution, and more.

3. **Android Mobile Application**: A user-friendly mobile interface that allows users to submit queries and view the verses and interpretations recommended by the system.

Data Flow

1. User submits a query from the Android application
2. The query is sent to the GitaWisdom Servlet via HTTP POST
3. GitaWisdomServlet processes the query:
   - Calls Gemini API to identify relevant Bhagavad Gita verses
   - Retrieves the verses from the Bhagavad Gita API
   - Gets an interpretation from Gemini
   - Logs the interaction in MongoDB
4. The response is sent back to the Android application
5. The user can view analytics through the Dashboard Servlet

3. Server-Side Components

3.1 GitaWisdomServlet

The primary servlet responsible for processing user queries and providing wisdom from the Bhagavad Gita.

Key Features:

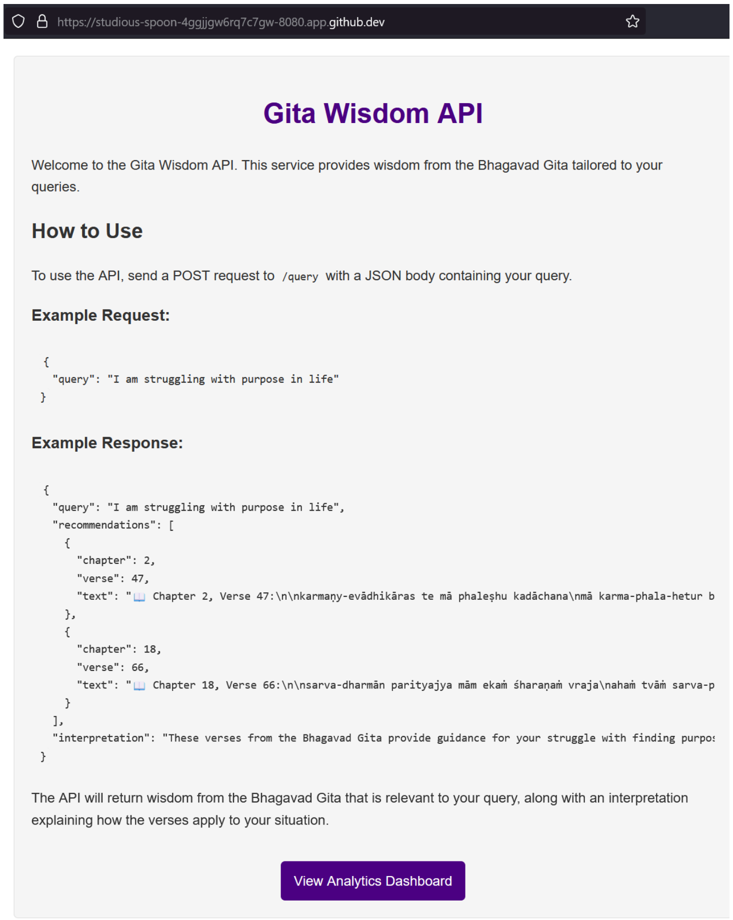
- Receives user queries via HTTP POST requests

- Calls Google's Gemini AI to select relevant Bhagavad Gita verses
- Retrieves the full text and translation of the verses using RapidAPI's Bhagavad Gita API
- Gets an AI-generated interpretation explaining how the verses apply to the user's query
- Logs all interactions in MongoDB for analytics
- Provides fallback mechanisms in case of API failures

API Endpoints:

Endpoint	Method	Description
`/query`	POST	Accepts a JSON payload with user query and returns relevant Gita verses with interpretation
`/`	GET	Displays welcome page with API usage instructions

Landing page:



Gita Wisdom API

Welcome to the Gita Wisdom API. This service provides wisdom from the Bhagavad Gita tailored to your queries.

How to Use

To use the API, send a POST request to `/query` with a JSON body containing your query.

Example Request:

```
{
  "query": "I am struggling with purpose in life"
}
```

Example Response:

```
{
  "query": "I am struggling with purpose in life",
  "recommendations": [
    {
      "chapter": 2,
      "verse": 47,
      "text": "📖 Chapter 2, Verse 47:\n\nkarmaṇy-evādhikāras te mā phaleṣhu kadāchana\nmā karma-phala-hetur b
    },
    {
      "chapter": 18,
      "verse": 66,
      "text": "📖 Chapter 18, Verse 66:\n\nsarva-dharmān parityajya mām ekaṁ śharaṇaṁ vraja\nahaṁ tvāṁ sarva-p
    }
  ],
  "interpretation": "These verses from the Bhagavad Gita provide guidance for your struggle with finding purpos
}
```

The API will return wisdom from the Bhagavad Gita that is relevant to your query, along with an interpretation explaining how the verses apply to your situation.

Request Format:

```
{
"query": "I am struggling with purpose in life"
}
```

Response Format:

```
{
  "query": "I am struggling with purpose in life",
"recommendations": [
{
"chapter": 2,
"verse": 47,
"text": "📖 Chapter 2, Verse 47:\n\nkarmaṇy-evādhikāras te mā phaleṣhu kadāchana\nmā
karma-phala-hetur bhūr mā te saṅgo 'stv akarmaṇi\n\nTranslation:\nYou have a right to perform your
prescribed duties, but you are not entitled to the fruits of your actions. Never consider yourself to be the
cause of the results of your activities, and never be attached to not doing your duty."
},
}
"chapter": 3,
"verse": 19,
"text": "📖 Chapter 3, Verse 19:\n\ntasmād asaktaḥ satataṁ kāryaṁ karma samāchara\nasakto hy
ācharan karma param āpnoti pūruṣhaḥ\n\nTranslation:\nTherefore, without attachment, perform always
the work that has to be done, for a person who performs work without attachment attains the Supreme."
}
],
"interpretation": "These verses from the Bhagavad Gita speak directly to your struggle with finding
purpose in life. In Chapter 2, Verse 47, Lord Krishna offers a profound wisdom: focus on your actions,
not on their results. You have control only over what you do, not over the outcomes. This teaching
encourages you to find purpose in the work itself rather than being attached to specific
outcomes.\n\nThe second verse reinforces this idea, suggesting that performing your duties without
attachment is the path to spiritual fulfillment. When we work with dedication but without desperately
clinging to particular results, we find deeper meaning and peace.\n\nThis wisdom suggests that
purpose isn't something external to find, but emerges naturally when we engage wholeheartedly in our
responsibilities while releasing anxiety about outcomes. By focusing on giving your best to each
moment and action, you may discover that purpose isn't a destination but emerges through the journey
itself."

}
```

3.2 DashboardServlet

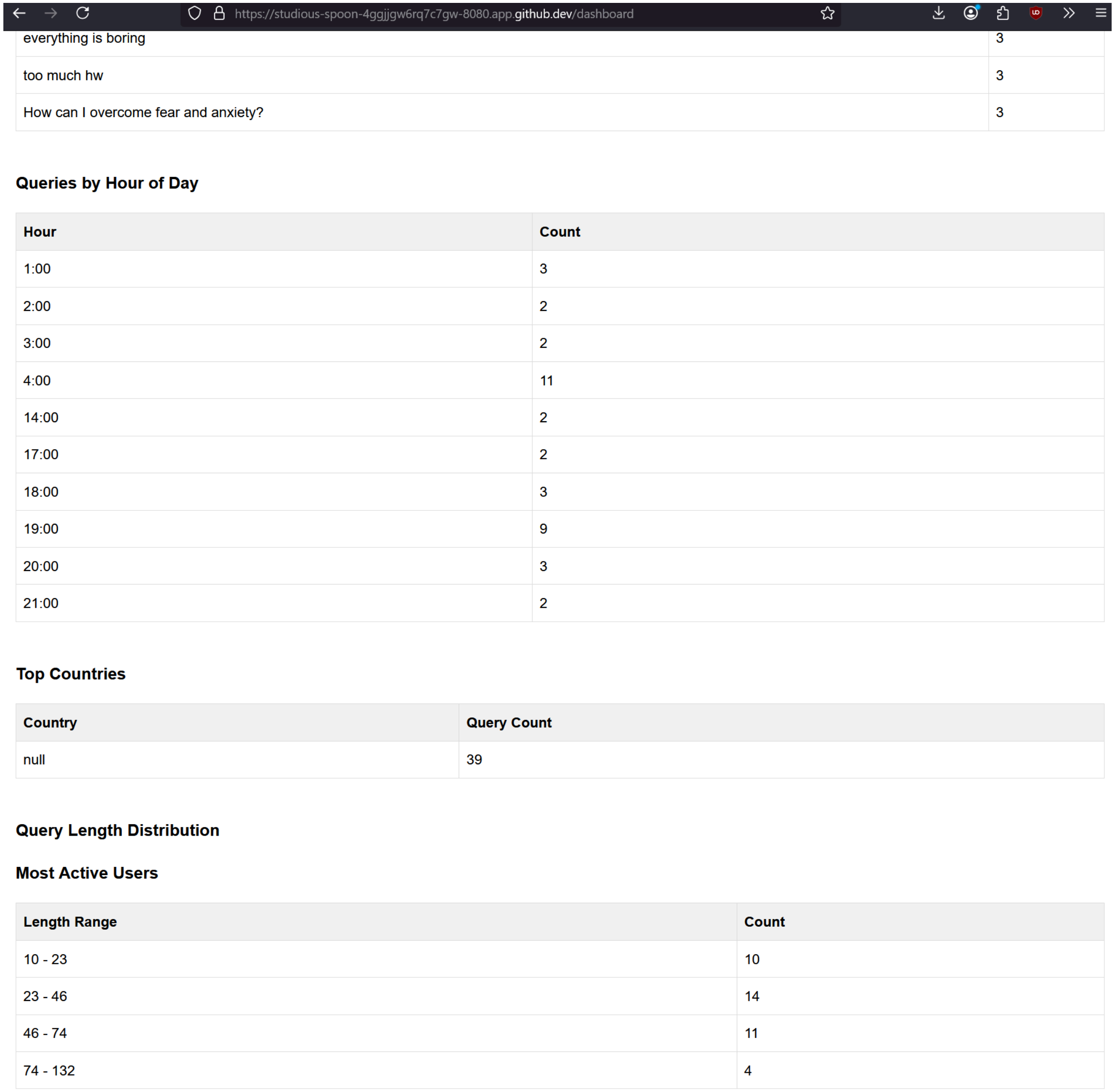
The analytics dashboard that provides insights into user interactions with the GitaWiz system.

Key Features:

- Displays total number of queries processed
- Shows most common queries and their frequency
- Analyzes query patterns by time of day
- Provides geographic distribution of users
- Analyzes query length distribution
- Identifies most active users
- Extracts top keywords from user queries
- Shows recent logs of system interactions

API Endpoints:

Endpoint	Method	Description
`/dashboard`	GET	Displays the analytics dashboard with visualizations and metrics


https://studious-spoon-4ggjjgw6rq7c7gw-8080.app.github.dev/dashboard

everything is boring	3
too much hw	3
How can I overcome fear and anxiety?	3

Queries by Hour of Day

Hour	Count
1:00	3
2:00	2
3:00	2
4:00	11
14:00	2
17:00	2
18:00	3
19:00	9
20:00	3
21:00	2

Top Countries

Country	Query Count
null	39

Query Length Distribution

Most Active Users

Length Range	Count
10 - 23	10
23 - 46	14
46 - 74	11
74 - 132	4

Dashboard Metrics:

- Total Queries
- Most Common Queries
- Queries by Hour of Day
- Top Countries
- Query Length Distribution
- Most Active Users
- Top Keywords in Queries
- Recent Logs

3.3 MongoDB Utility

A helper class for managing MongoDB connections and operations.

Key Features:

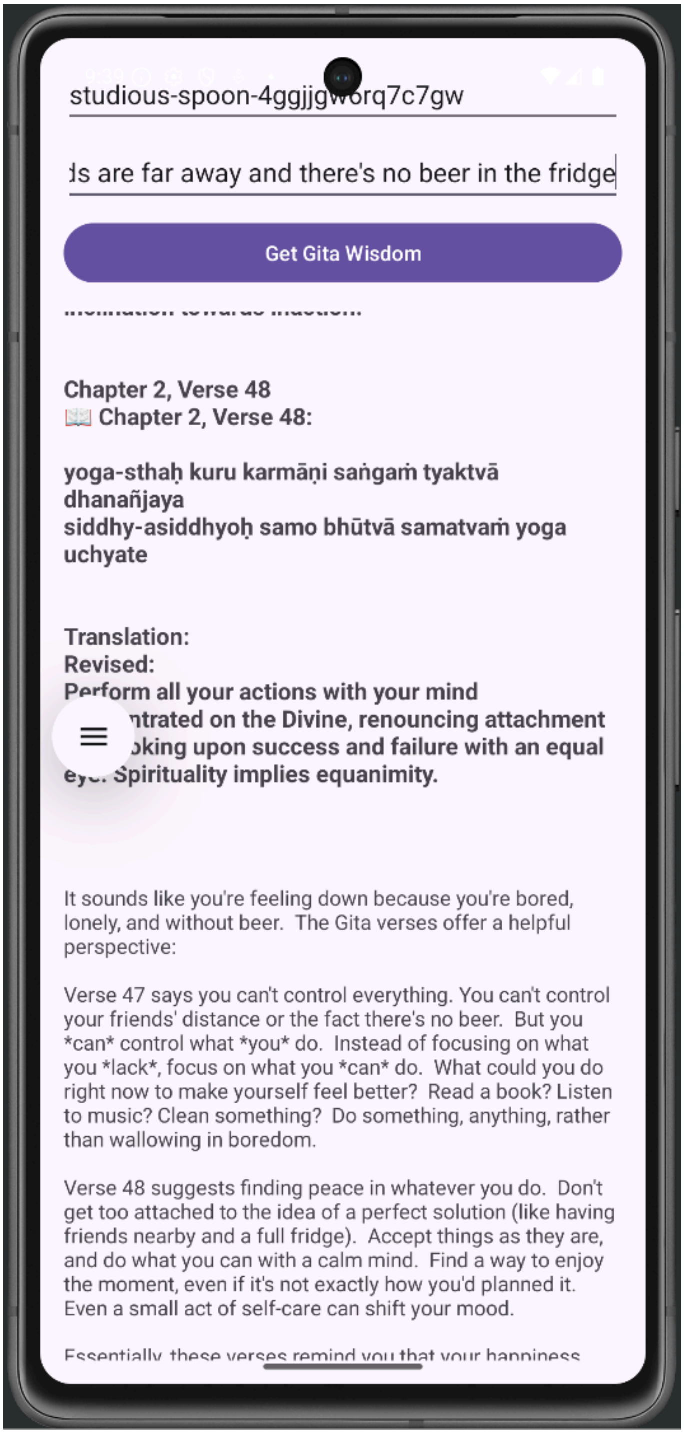
- Provides singleton pattern for MongoDB client
- Manages database connections efficiently
- Centralizes database access across servlets
- Handles connection pooling and cleanup

4. Android Client Application

The mobile client provides a user-friendly interface for interacting with the GitaWiz API.

Key Features:

- Simple interface for entering queries about life challenges
- Server configuration field with default value
- Clear presentation of recommended Bhagavad Gita verses
- Displays AI-generated interpretations that relate the verses to the user's query
- Scrollable view for reading longer responses
- Error handling with user-friendly messages

- 

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ds are far away and there's no beer in the fridge

inclination towards inaction.

Chapter 2, Verse 48
📖 Chapter 2, Verse 48:

yoga-sthaḥ kuru karmāṇi saṅgaṁ tyaktvā dhanañjaya
siddhy-asiddhyoḥ samo bhūtvā samatvaṁ yoga uchyate

Translation:
Revised:
Perform all your actions with your mind concentrated on the Divine, renouncing attachment and looking upon success and failure with an equal eye. Spirituality implies equanimity.

It sounds like you're feeling down because you're bored, lonely, and without beer. The Gita verses offer a helpful perspective:

Verse 47 says you can't control everything. You can't control your friends' distance or the fact there's no beer. But you *can* control what *you* do. Instead of focusing on what you *lack*, focus on what you *can* do. What could you do right now to make yourself feel better? Read a book? Listen to music? Clean something? Do something, anything, rather than wallowing in boredom.

Verse 48 suggests finding peace in whatever you do. Don't get too attached to the idea of a perfect solution (like having friends nearby and a full fridge). Accept things as they are, and do what you can with a calm mind. Find a way to enjoy the moment, even if it's not exactly how you'd planned it. Even a small act of self-care can shift your mood.

Essentially, these verses remind you that your happiness

UI Components:

- Server URL input field
- Query input field
- Submit button
- Verses display area (showing chapter, verse number, Sanskrit text, and English translation)
- Interpretation display area (showing AI-generated explanation)

Sample User Flow:

1. User opens the application

2. Default server URL is pre-populated
3. User enters a question like "How can I overcome fear?"
4. User taps "Get Gita Wisdom" button
5. Application displays loading indicator
6. Server responds with relevant verses and interpretation
7. User reads the wisdom and can scroll through the content
8. User can submit a new query at any time

5. External APIs Used

5.1 Google Gemini API

The application uses Google's Gemini 1.5 Flash model for two primary functions:

1. **Verse Selection**: Analyzing the user's query and determining the most relevant Bhagavad Gita verses that address their concern.
2. **Interpretation Generation**: Creating compassionate, accessible explanations of how the selected verses relate to the user's specific situation.

5.2 Bhagavad Gita API (via RapidAPI)

Used to retrieve the actual Sanskrit text and English translations of the Bhagavad Gita verses identified by Gemini.

6. Database Schema

MongoDB Collection: userqueries

Field	Type	Description
query	String	The user's original question or concern
timestamp	Date	When the query was processed
client_ip	String	IP address of the client
user_agent	String	User agent string from the client

response_time_ms	Long	Time taken to process the request in milliseconds
recommended_verses	String	JSON string of the verses recommended
explanation_length	Integer	Character count of the generated interpretation

7. API Testing

You can test the API using curl:

```
curl -X POST https://ideal-journey-rrr44rpwv75cxgwv-8080.app.github.dev/query \-H "Content-Type: application/json" \d "{\"query\": \"I am struggling with purpose in life\"}"
```

8. Development Setup

Prerequisites:

- Java Development Kit (JDK) 11 or higher
- MongoDB Atlas account
- Google Gemini API key
- RapidAPI key for Bhagavad Gita API
- Android Studio (for mobile app development)

Environment Variables:

- `GEMINI_API_KEY`: Google Gemini API key
- `RAPIDAPI_KEY`: API key for accessing the Bhagavad Gita API

Running the Server:

1. Clone the repository
2. Set up the required environment variables
3. Deploy to a Jakarta EE compatible server (e.g., Tomcat, Jetty)
4. Access the server at: `https://[your-github-codespace]-8080.app.github.dev/`

Building the Android App:

1. Open the project in Android Studio
2. Connect to an Android device or emulator

3. Build and run the application

9. Project Requirements Fulfillment

This project fulfills the requirements for Project 4 as follows:

1. **Distributed System**: Implements a client-server architecture with an Android mobile client and Java servlet backend.
2. **RESTful API**: Provides a RESTful API for querying Bhagavad Gita wisdom.
3. **External APIs**: Integrates with Google Gemini API for AI-powered verse selection and interpretation, and with the Bhagavad Gita API for verse retrieval.
4. **Database**: Uses MongoDB to store and analyze query data.
5. **Analytics**: Implements a comprehensive dashboard for visualizing system usage.
6. **Mobile Client**: Provides an intuitive Android application for end users.
7. **Documentation**: Complete documentation of system architecture, API endpoints, and usage.

9.1 Android Application Requirements Fulfillment

The Android application meets all the specified requirements:

1. **User Interface**:
   - Implements a clean, intuitive interface with proper layout and spacing
   - Includes appropriately labeled input fields, buttons, and output areas
   - Uses ScrollView to accommodate variable-length responses
   - Provides clear feedback to the user through Toast messages
2. **Functionality**:
   - Allows users to input server URL (with a sensible default value)
   - Provides a field for entering queries/questions
   - Submits requests to the server via HTTP POST
   - Processes JSON responses and displays them in a readable format