PAK-AUSTRIA FACHHOCHSCHULE:
INSTITUTE OF APPLIED SCIENCES AND TECHNOLOGY

IT & Computer Science

Instructor Name: Dr. Nabeel Ahmed   **Lab Engr.:** Zainab Tahir

Name: Group Project 5   **Reg #:** B22F1053SE23

Section: SE (GREEN)   **Date:** 29/01/2025

Project Proposal

1. Project Title:
   GitHub Code Snippet Search Engine

2. Team Members:
   I. Abuzar Khan
   II. Sufyan Humam
   III. Jawad-ul-Islam
   IV. Qasim Khan
   V. Mavia Ahmed
   VI. Farhan Shah

3. Project Lead:
   Abuzar Khan

4. Project Duration:
   Weeks 3 - 15 (Total: 12 weeks)

5. **Introduction**:
   In modern software development, developers frequently search for reusable code snippets to speed up the development process. GitHub, being a vast repository of open-source code, contains a wealth of useful code fragments. However, searching for relevant snippets is often time-consuming and inefficient. To address this issue, our project aims to develop a GitHub Code Snippet Search Engine that allows users to search for code snippets efficiently based on keywords, programming languages, and relevance scores.

6. Objectives:
   - Develop a lightweight and efficient search engine for GitHub code snippets.
   - Provide keyword-based search functionality.
   - Allow filtering by programming language.
   - Display relevant snippets with repository links and metadata.
   - Ensure user-friendly UI/UX.
   - Optimize search performance for quick results.

7. **Scope & Limitations:**

Scope:

- The system will fetch publicly available code snippets from GitHub repositories.
- Users can search by entering keywords and selecting a programming language.
- Results will be displayed with a preview of the snippet and a direct link to the repository.
- The system will include basic ranking mechanisms to show relevant results first.

Limitations:

- The project will not support private repositories due to access restrictions.
- Advanced AI-based code understanding will not be implemented in this version.
- The search engine will focus on fetching results through GitHub's API, limiting deep analysis.

8. **Methodology:**

Technologies & Tools:

- Frontend: React.js / HTML, CSS, JavaScript
- Backend: Node.js / Flask (Python)
- Database: MongoDB / Firebase (for storing search logs and user preferences)
- API: GitHub REST API or GraphQL API
- Hosting: Github Pages / Vercel / Netlify etc.

Development Phases:

1. Research & Planning (Week 3-4): Understanding GitHub API, defining system requirements.
2. Frontend & UI Development (Week 5-7): Designing a responsive UI.
3. Backend & API Integration (Week 8-10): Implementing search logic with GitHub API.
4. Testing & Optimization (Week 11-12): Ensuring performance and fixing bugs.
5. Finalization & Deployment (Week 13-14): Deploying the project and preparing documentation.
6. Presentation & Submission (Week 15): Demonstrating the project.

9. **Expected Outcomes:**

- A functional web application capable of searching GitHub code snippets efficiently.
- A user-friendly interface for developers to find reusable code quickly.
- Industry relevance by improving the efficiency of software development workflows.
- Experience in working with real-world APIs and industry-standard tools.

10. Industry Relevance:

This project is highly relevant to the software industry as it aligns with real-world development challenges. Developers often struggle with discovering reusable code snippets quickly. By providing an efficient search mechanism for GitHub, our project aims to improve productivity and streamline the development process, making it a valuable tool for the developer community.

11. Conclusion:

The GitHub Code Snippet Search Engine is a practical and industry-related project that is achievable within one semester. It will help our team develop skills in API integration, web development, and search optimization while delivering a functional product that can benefit developers worldwide.

Prepared by:
Team Abuzar Khan

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