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OFFICE OF STUDENT WELFARE
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ARTIFICIAL INTELLIGENCE CLUB

ZUNTRA DIGITAL

Budditor

AI and Machine Learning Track

HACK THE HORIZON 2.0

Hackcelerate

Marvin Remiigius

Joy Shaju J

Karikalan K

HACK THE HORIZON 2.0

AI-POWERED CODE DEBUGGING ASSISTANT

Problem: Software bugs slow down development, affect product quality, and frustrate developers. The debugging process is often time-consuming and complex, especially for beginners or teams working under tight deadlines.

ABSTRACT

Budditor is a full-stack web application that accelerates development using AI. It features a React and Tailwind CSS frontend with a Python/Flask backend, utilizing the Google Gemini API for intelligent code analysis. The integrated Monaco Editor highlights syntax errors and logical suggestions, providing immediate, context-aware feedback. This prototype showcases how AI tools can enhance developer productivity by streamlining bug detection.

INTRODUCTION

Pesky bugs in software development disrupt product quality, delay development cycles, and frustrate developers. Debugging is a complex and time-consuming task, especially for beginners or teams with tight deadlines. An effective solution is necessary to streamline this process and enhance developer productivity.

PROPOSED SOLUTION

AI-Powered Code Debugging Assistant which will analyze code written in an interactive editor and then automatically highlight syntax errors, logical issues, and other suggestions directly on the relevant lines of code. By providing immediate, visual feedback, the assistant will significantly making the user more productive

IMPLEMENTATION/ HOW IT WORKS

USER SUBMITS CODE

The user writes their code in the web-based editor and clicks the "Analyze Code" button to begin. The frontend then packages this code into a JSON format and sends it to the backend server via an API request.

AI ANALYZES WITH GEMINI API CALL

The backend server receives the code and immediately forwards it to the Gemini AI with a specialized prompt. The AI processes the code and returns a structured JSON array detailing all detected errors and suggestions.

RESULTS ARE DISPLAYED

The frontend receives the JSON analysis back from the server and immediately processes it. It then uses this data to dynamically apply colored highlights and informative tooltips directly onto the code in the editor.

KEY FEATURES

AI-POWERED ANALYSIS

This core feature uses a powerful AI to perform a deep analysis of code, finding issues beyond the scope of traditional tools.

COMPREHENSIVE ISSUE DETECTION

The app identifies everything from critical syntax and logical errors to intelligent suggestions that help improve code quality and efficiency.

INTERACTIVE VISUAL FEEDBACK

It instantly pinpoints the exact location of issues in the editor using colored highlights and provides clear explanations through on-hover tooltips.

IMPACT

The AI Code Debugger enhances development by offering instant, intelligent analysis during coding. This immediate feedback speeds up project timelines and improves code quality, benefiting both beginners and experts.

BENEFITS

For developers and students, the key benefit is a dramatic increase in productivity and learning curve. By spending significantly less time hunting for bugs, they can focus more on building features, all while continuously improving their skills through the AI's smart suggestions and clear explanations.

NOVELTY

The novelty of the AI Code Debugger lies in its fusion of a real-time code editor with the advanced reasoning capabilities of a large language model like Gemini. Unlike traditional linters that only catch syntax errors, this application intelligently detects and explains complex logical errors and bugs where the code runs but produces incorrect results.

TECH STACK

FRONTEND

- FRAMEWORK : REACT
- LANGUAGE : TYPESCRIPT
- STYLING : TAILWIND CSS

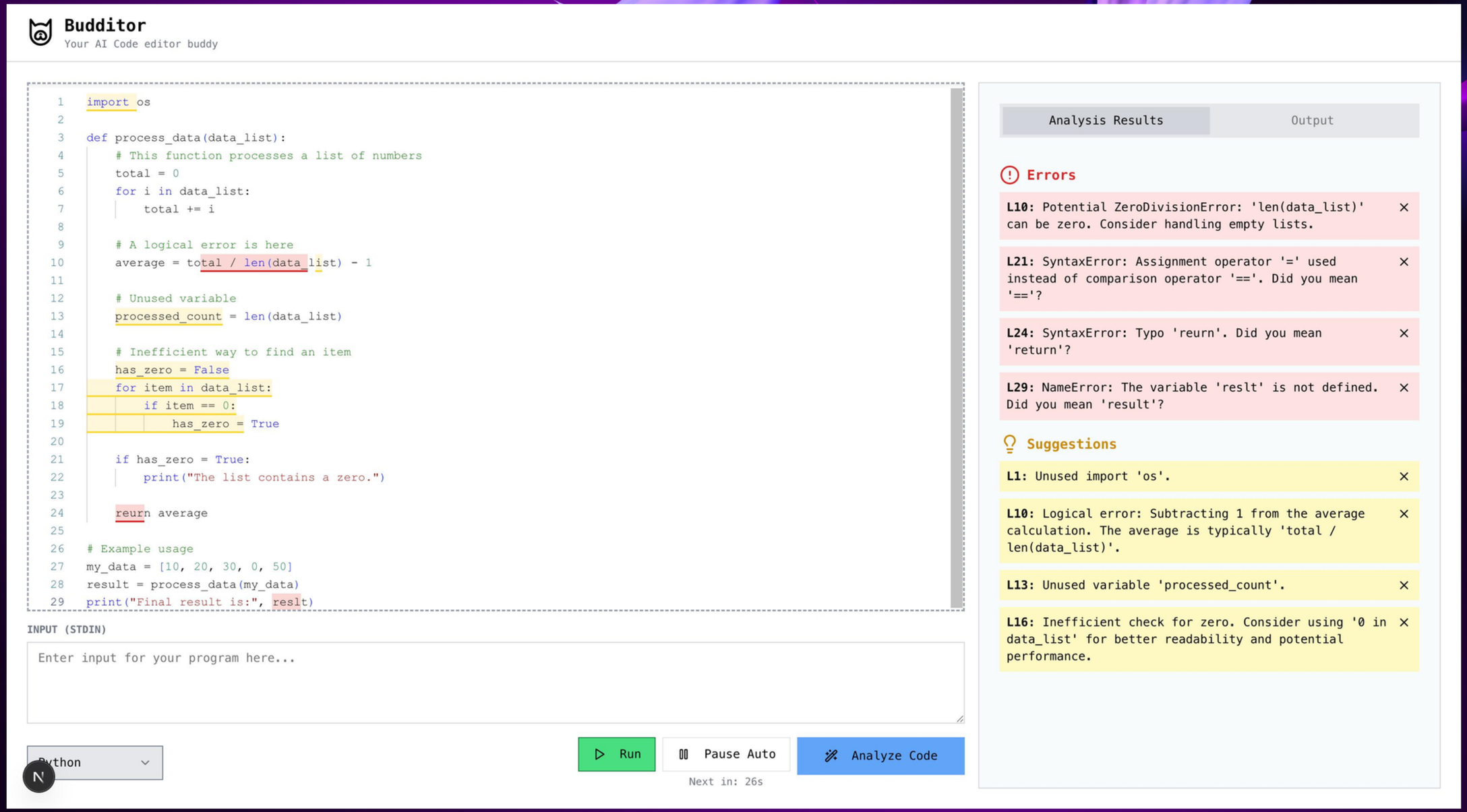
BACKEND

- FRAMEWORK: REACT
- LANGUAGE : PYTHON

AI ENGINE

- MODEL : GEMINI API

OUR MVP DASHBOARD



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THANK YOU

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