AI Code Learning Companion

SOCRATIX

Learn Logic Behind Everything

Presented By: **SolveX**

SUCHIT PRABU V
SUJIT P
SUDHARSAN R

01

Problem Analysis AI Learning Challenge Socratics Research

PROBLEM WE ARE SOLVING

WHY BEGINNER PROGRAMMERS FAIL TO LEARN LOGIC

Today, Generative AI tools can instantly generate full coding solutions.
While this helps complete tasks faster, it creates a learning problem.
Many beginner programmers stop thinking about logic.
They copy solutions without understanding how or why the code works.

This creates a "Competency Trap". Students can write programs, but cannot solve new problems independently. Over time, this weakens problem-solving ability and reduces real programming skills.

02

Idea Innovation Learning Focus

OUR CORE IDEA

AI THAT TEACHES THINKING, NOT JUST CODING

01 Builds Strong Logical Thinking Skills

Improves problem-solving ability through structured reasoning. Helps students apply concepts to new problems independen

02 Socratic Method Learning Approach

Uses questioning and guided thinking to help students discover answers.
Encourages active learning instead of passive copying.

03 Transparent and Trustworthy AI Learning

Explains how and why errors happen instead of acting like a black box.
Makes learning more transparent.

04 Intelligent Hint-Based Guidance

Provides smart hints and guidance instead of giving full code solutions.
Helps students understand mistakes and learn step-by-step

WRITE. THINK. FIX. LEARN.

SOCRATIX LEARNING MODEL

03

WORKFLOW

1 CODE EXECUTION & ANALYSIS

In the Socratix platform, users write and execute their code while solving problems. The system continuously observes the user's approach, tracks how the problem is solved, and automatically checks for syntax errors and logical mistakes to understand where the user is going wrong.

2 ITERATIVE IMPROVEMENT

Using the hints provided, users revise their code and attempt the problem again. This repeated trial-and-error process improves logical thinking, builds confidence, and allows users to learn through active participation and self-correction.

3 HINT-BASED GUIDANCE

Instead of providing complete solutions, Socratix offers intelligent hints and guiding questions. This approach encourages users to think independently and analyze their mistakes, helping them develop strong problem-solving skills rather than relying on direct answers

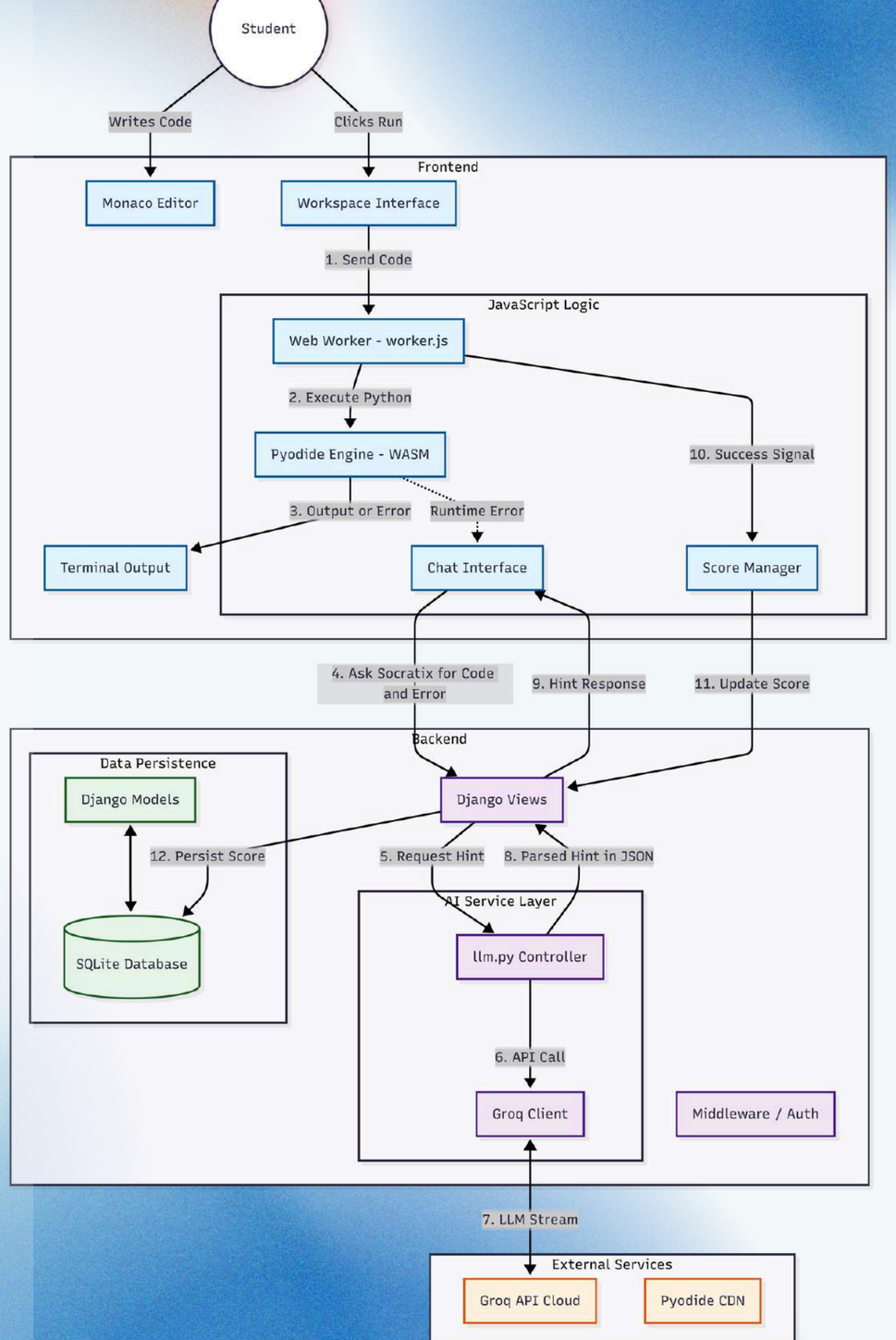
4 CONCEPT UNDERSTANDING

After the problem is successfully solved, Socratix explains the underlying concept in a simple and clear manner. This ensures better understanding, long-term retention, and enables users to apply the learned concept effectively in future coding challenges.

04

ARCHITECTURE

HOW SOCRATIX RUNS



TECHSTACK
SOCRATIX

Frontend Interface

HTML5 CSS JavaScript

Used to build the Socratix user interface and learning environment.

Backend Processing

Django (Python Backend)

Handles user requests, error analysis, and communication with AI model.

Code Editor Engine

Monaco Editor

Provides professional coding experience for users to write and test code smoothly.

AI Intelligence Engine

LLAMA API ACCELERATED BY groq

Llama 3 (via Groq API)

Generates hints, questions, and learning guidance using Socratic method.

In-Browser Python Runtime

Pyodide + WebAssembly

Runs Python directly inside browser safely and fast without installing software.

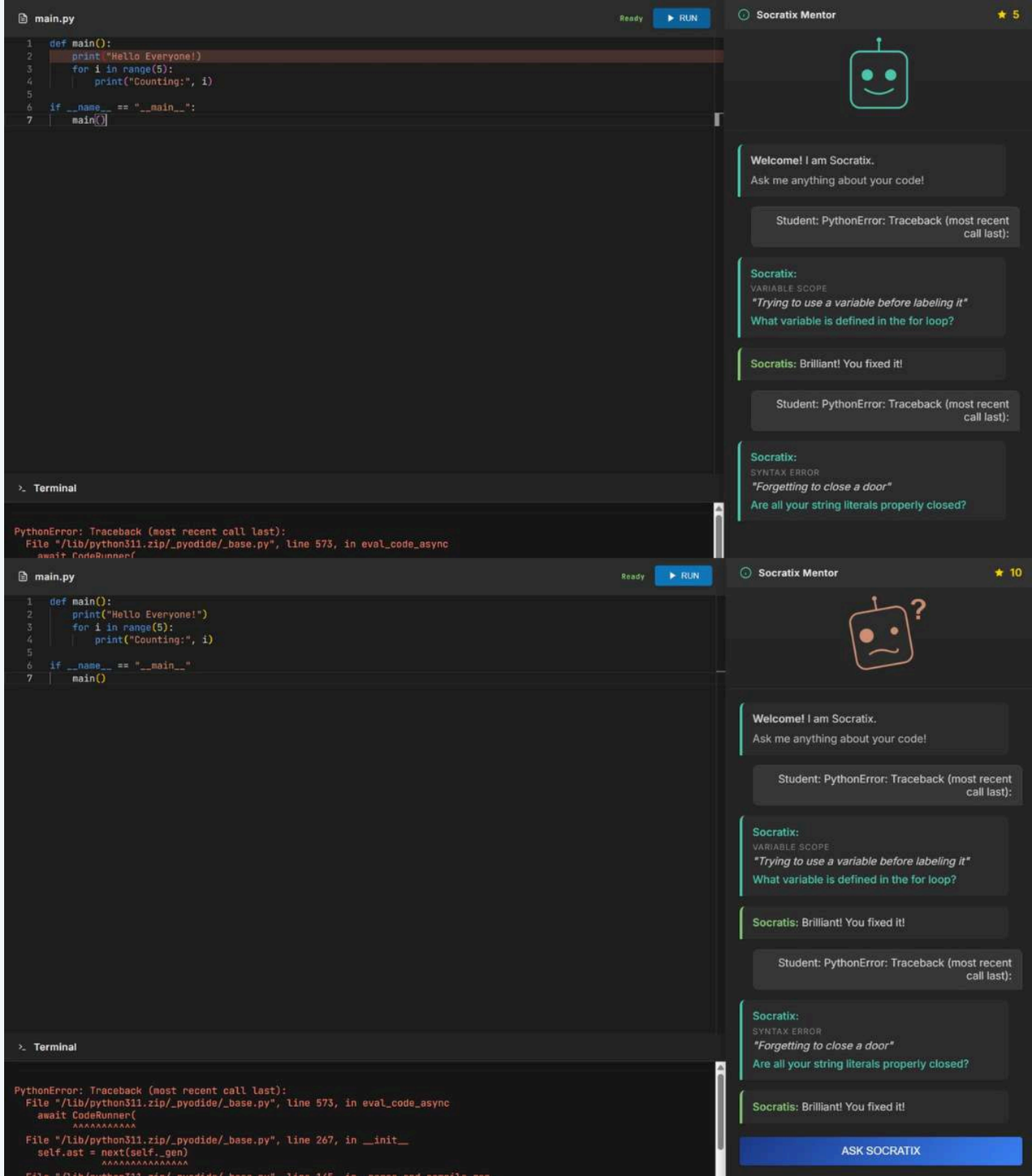
Hosting & Deployment

pythonanywhere

PythonAnywhere + Static Hosting

Ensures system is accessible online and runs reliably.

TESTING PREVIEW



SUSTAINABLE DEVELOPEMENT GOALS

- SDG 4 – **QUALITY EDUCATION**: ENSURES DEEP COGNITIVE LOGIC BUILDING BY REFUSING TO PROVIDE DIRECT CODE SOLUTIONS, FORCING STUDENTS TO THINK THROUGH PROBLEMS.

- SDG 8 – **DECENT WORK & ECONOMIC GROWTH**: COMBATS THE "COPY– EQUIPS BEGINNERS FOR THE DIGITAL ECONOMY BY ENSURING THEY UNDERSTAND UNDERLYING LOGIC RATHER THAN FALLING INTO A "COMPETENCY TRAP".

- SDG 9 – **INDUSTRY, INNOVATION & INFRASTRUCTURE** LEVERAGES SOPHISTICATED HYBRID ARCHITECTURE USING MONACO EDITOR AND PYODIDE FOR SECURE, ZERO-LATENCY CODE EXECUTION

THANK YOU

TEAM SolveX