Team Details

- ➔ Team name - ByteStrom
- ➔ Team leader name - Devika Polavarapu
- ➔ Problem Statement - A real-timeVS Code assistant that understands how developers code, highlights potential issues early, and provides helpful insights directly insidethe editor.

Brief about the idea

This project is a smart VS Code extension that supports developers as they write code. It observes real-time file changes and provides helpful insights directly inside the editor.

The extension tracks coding activity, analyzes patterns in edits, and highlights areas that may need attention. Instead of waiting for errors during compilation or testing, it offers early guidance within the development environment itself.

The goal is to identify potential issues early, improve code quality, and make development smoother without interrupting the workflow. The prototype is lightweight, practical, and designed to integrate seamlessly into everyday coding practices, focusing on real-time developer assistance.

Opportunities

➔ How different is it from any of the other existing ideas?

Unlike typical coding assistants that respond only to prompts, this extension observes real-time coding activity and provides proactive insights inside the IDE.

➔ How will it be able to solve the problem?

By tracking file changes and coding patterns, it highlights potential issues early, reducing debugging time and improving code quality during development itself.
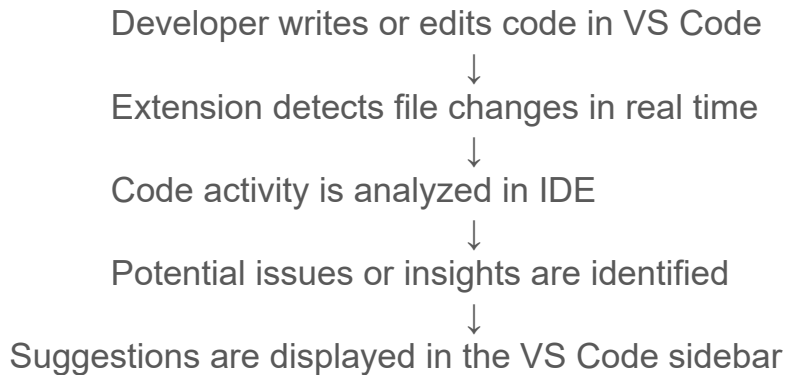
➔ USP of the proposed solution

A lightweight, non-intrusive VS Code extension that works silently in the background and delivers contextual guidance without disrupting the developer's workflow.

List of features offered by the solution

• Real-time file change monitoring

• Context-aware insights inside VS Code

• Early detection of potential code issues

• Lightweight and non-intrusive design

• Interactive sidebar panel for suggestions

• Seamless integration with developer workflow

 • Sacalable architecture for future AI integration

Process flow diagram or Use-case diagram
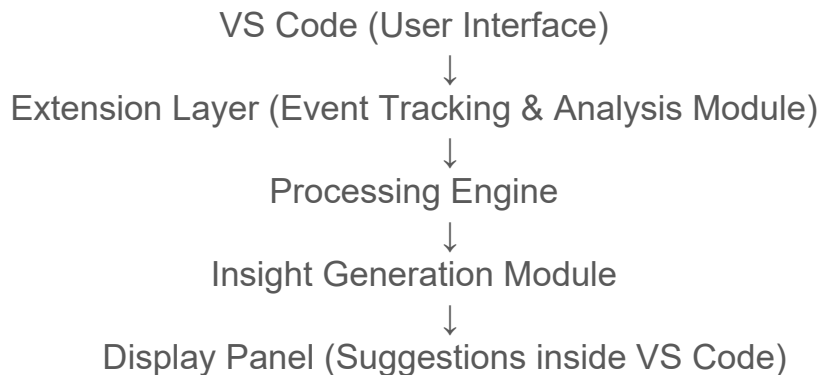
Process Flow:

Developer writes or edits code in VS Code
↓
Extension detects file changes in real time
↓
Code activity is analyzed in IDE
↓
Potential issues or insights are identified
↓
Suggestions are displayed in the VS Code sidebar

Wireframes/Mock diagrams of the proposed solution (optional)

• VS Code sidebar panel displaying insights and suggestions

• Real-time notification prompts inside the editor

• Code health indicator showing basic quality feedback

• Simple dashboard view summarizing developer activity

Architecture diagram of the proposed solution

VS Code (User Interface)
↓
Extension Layer (Event Tracking & Analysis Module)
↓
Processing Engine
↓
Insight Generation Module
↓
Display Panel (Suggestions inside VS Code)

Technologies to be used in the solution

• TypeScript

• VS Code Extension API

• Node.js

• HTML / CSS (for extension UI)

• Python (for backend integration – future scope)

• REST APIs

• AI/ML frameworks (for future scalability)

Usage of AMD Products/Solutions

- Designed to scale with AMD GPUs for faster AI model inference

- Compatible with AMD ROCm for optimized deep learning workloads

- Supports hardware-accelerated processing for future AI enhancements

- Architecture planned to leverage AMD-powered systems for improved performance and efficiency

Estimated implementation cost (optional)

For the prototype, the development cost is minimal since it was built using local systems and open-source tools.

If scaled further, costs would mainly involve backend hosting, deploying AI models, and using AMD GPU-enabled infrastructure for faster processing.

Overall, the solution is designed to remain affordable while allowing flexibility to scale as needed.

Prototype Assets (Optional)

➔ GitHub Public Repository Link

      [Link to Github](#)

➔ Demo Video Link (Max: 3 Minutes)

      [Demo Folder Link](#)

Add as per the requirements of the contest

- A working prototype has been developed and tested within VS Code.

- The solution focuses on practical usability rather than just theoretical design.

- It has clear potential to scale with AI-based enhancements in the future.

- The architecture is flexible and can integrate with AMD hardware for improved performance when expanded.

- The project reflects a balance between innovation and real-world applicability.

Future Roadmap:

- Expand support beyond VS Code to other workspace tools like Notion and similar productivity platforms.

- Integrate lightweight AI models for smarter and more accurate code analysis.

- Introduce advanced code health scoring and deeper pattern detection.

- Enable backend support for team-level insights and collaboration.

- Optimize performance using AMD GPU acceleration for faster and scalable processing.