Code Documentation Generator

The Code Documentation Generation Tool is designed to generate documentation for code using advanced AI technologies automatically. The tool leverages Retrieval-Augmented Generation (RAG) to provide accurate and contextually relevant documentation by integrating code parsing, knowledge retrieval, and language generation. The system will have a user-friendly web interface for code input and file upload, with a backend powered by modern AI and retrieval technologies.

The project is divided into 5 phases:

1. Building the Code Parser
2. Building the Knowledge Base
3. Integrating with FAISS
4. Retrieve and Generate
5. Building the User-Interface

**1) Code Parser:**

* Develop a tool to read and understand source code, extracting relevant information like functions, classes, and comments.
* Python’s built-in **Abstract Syntax Tree(AST)** module can be used to parse code structure.
* Functionality:
  + **Function Extraction:** Identify function definitions, their names, parameters, and docstrings.
  + **Class Extraction:** Identify class definitions, their names, attributes, and methods.
  + **Comments Extraction:** Identify comments that provide useful context.
* Format Data: Structure the extracted information in a format suitable for the knowledge base. (e.g., JSON)