✅ **Tech Stack Mapping**

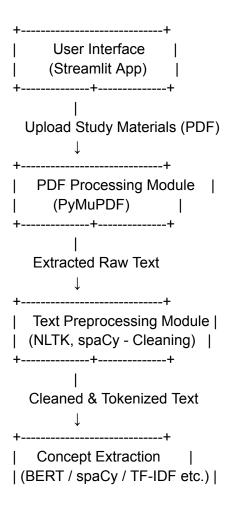| Component	Technology/Library
Frontend	Streamlit
PDF Processing	PyMuPDF
Text Preprocessing	NLTK, spaCy
Concept Extraction	BERT, TF-IDF, spaCy
Question Generation	T5, GPT (Hugging Face Transformers)
Answer Evaluation	Cosine Similarity, BERT Embeddings
Adaptive Feedback & Tracking	Custom Logic, Charts in Streamlit
Database	SQLite or JSON-based storage (local)

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+---------------------------+
|      User Interface       |
|     (Streamlit App)       |
+-------------+-------------+
              |
    Upload Study Materials (PDF)
              ↓
+-----------------------------+
|    PDF Processing Module    |
|        (PyMuPDF)            |
+-------------+-------------+
              |
      Extracted Raw Text
              ↓
+-----------------------------+
|   Text Preprocessing Module |
|   (NLTK, spaCy - Cleaning)  |
+-------------+-------------+
              |
    Cleaned & Tokenized Text
              ↓
+-----------------------------+
|    Concept Extraction       |
| (BERT / spaCy / TF-IDF etc.) |
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        +-------------+-------------+
                      |
          List of Key Concepts/Topics
                      ↓
        +---------------------------+
        |    Question Generation    |
        |  (T5 / GPT via Transformers)|
        +-------------+-------------+
                      |
           MCQs / Short Answer Questions
                      ↓
        +---------------------------+
        |   Student Interaction Layer  |
        |     (Answer Submission)   |
        +-------------+-------------+
                      |
             User Responses / Answers
                      ↓
        +---------------------------+
        |     Evaluation Module     |
        |  (Cosine Similarity + Rules)  |
        +-------------+-------------+
                      |
     Feedback, Scores, Concept Gaps Identified
                      ↓
        +---------------------------+
        |  Adaptive Feedback & Tracker |
        |  (Progress Charts, Weak Areas)|
        +-------------+-------------+
                      |
     Personalized Questions & Revision Path
                      ↓
        +---------------------------+
        |      Database Layer       |
        |    (User Progress, Scores)  |
        +---------------------------+
```