### **Main Application Source Code Overview**

This document, based on the **main code file.txt**, describes the core React component that powers the SynapseRead application. It's a comprehensive single file (or what would be the main App.js/App.tsx component in a larger project) that orchestrates the entire user experience.

**Key Functionalities Implemented in this Code:**

* **Main Application Logic (SynapseReadApp):** Manages global states for file content, reading settings, security status, and all LLM-powered feature results.
* **Error Handling (ErrorBoundary):** A crucial component that catches JavaScript errors within the app, logs them to the console (and to Firestore if configured), and displays a user-friendly fallback UI to prevent app crashes.
* **Firebase Integration:** Initializes Firebase services (Authentication and Firestore) and manages user authentication, including anonymous sign-in and custom token sign-in for seamless integration within the Canvas environment. It also handles logging of application errors to a dedicated Firestore collection.
* **Secure File Importer (SecureFileImporter):**
  + Provides a drag-and-drop interface and a file input for uploading text, PDF, and DOCX files.
  + Includes robust **security validations** for file size (max 500MB) and type.
  + **Parses content** from TXT, PDF (using dynamically loaded pdf.js), and DOCX (using dynamically loaded mammoth.js) files.
  + **Sanitizes extracted text** to remove potentially harmful HTML tags or scripts.
  + Communicates security status and errors to the main app.
  + Includes a placeholder for Google Drive integration, noting current limitations in a client-side demo.
* **Enhanced Settings Panel (EnhancedSettings):**
  + Allows users to customize Bionic Reading parameters: speed (for chunk mode), fixation (bolding intensity), saccade (visual jump influence), opacity (text visibility), maxWordsPerChunk (for chunk mode), and readingMode (chunk or paragraph).
  + Includes an **Accessibility Panel** with presets for dyslexia and ADHD.
* **Enhanced Reader (EnhancedReader):**
  + Displays the Bionic Reading formatted text, adapting to chosen readingMode (chunk-by-chunk or full paragraph).
  + Automatically advances text in 'chunk' mode based on speed settings.
  + Provides **play/pause** and **reset** controls for reading.
  + Offers **paragraph navigation** (next/previous) for 'paragraph' reading mode.
  + Tracks and displays **reading statistics** (Words Per Minute, words read, time elapsed, progress).
  + **Text Selection Handling:** Detects selected text, enabling contextual LLM features.
* **LLM-Powered Features (Integrated via Gemini API calls):**
  + **Summarize Text:** Generates a concise summary of the entire uploaded document.
  + **Explain Selection:** Provides simple explanations for selected text/concepts.
  + **Build Vocabulary:** Offers definitions, synonyms, antonyms, and example sentences for selected words (structured JSON output).
  + **Generate Study Questions:** Creates multiple-choice and open-ended study questions from selected text (structured JSON output).
  + **Simplify Text:** Rewrites selected text for easier comprehension.
  + **Rephrase Selected Text:** Rewords a selected passage for clarity.
  + **Translate Selected Text:** Translates selected text into a user-specified language.
  + **Analyze Sentiment:** Determines the dominant sentiment/tone of selected text with justification (structured JSON output).
  + **Get Contextual Info:** Provides brief background information for selected terms.
  + **Generate FAQs:** Creates frequently asked questions and answers based on the entire document (structured JSON output).
  + **Generate Key Takeaways:** Extracts crucial insights from the entire document (structured JSON output).
  + Each LLM feature includes loading indicators and error handling.
* **Security Status Component:** Visually displays the security status of file processing and any detected issues.
* **Error Log Viewer:** Fetches and displays error logs from Firestore, allowing tracking and marking errors as fixed.

This code represents the interactive front-end of the SynapseRead application, bringing together UI, file processing, reading enhancement, and AI-powered learning tools.