In large-scale organizations, especially in defense and research domains such as DRDO labs, Software Requirement Specifications (SRS), Software Design Specifications (SDS), and similar documents are critical for project planning and execution. These documents must adhere to standardized templates and be validated against exhaustive checklists to ensure compliance, quality, and future maintainability. However, the manual review process is time-consuming, error-prone, and requires deep domain knowledge to identify inconsistencies, non-compliance with formatting standards, rule violations, or areas of potential risk.  
  
To address this, there is a need to develop an AI-powered Assistant for Intelligent Document Review, which automates the end-to-end review process using predefined guidelines and checklists. This system should include a user-friendly interface that allows authenticated users to upload documents (e.g., SRS, SDS), verifies document conformity with organizational templates (e.g., RCI format), selects appropriate checklists based on the template, and performs intelligent evaluation of the content. The AI assistant will give a proper reason for each checklist item why it passes or fails. There is also category 1-5 to rank , with 1 as a major issue. The user can also click on any reasons and can give a new prompt to justify why it should be true or false.  
  
The system must:  
1. Automatically classify checklist items based on criticality using a color-coded system (Green: Pass, Red: Critical).  
2. Provide detailed reasons for flagged items, such as inaccuracy, insufficiency, redundancy, or violation of established documentation rules.  
3. Enable users to re-submit the document for AI-assisted re-review using an additional prompt.  
4. Generate a comprehensive review report after each evaluation cycle.  
  
This solution aims to significantly reduce manual effort, enhance documentation quality, and ensure standardization across technical documents in compliance-driven environments.

graph TD

A[Authenticated User] --> B{Upload Document: SRS, SDS, etc.};

B --> C{Document Format & Template Validation};

C -- "Check: RCI format adherence, Structure, Layout" --> D{Template Conformance?};

D -- "No (Critical Issue - Category 1)" --> E[Flag Inconsistencies & Formatting Errors];

D -- "Yes" --> F{Select Appropriate Checklists};

F --> G[AI-Powered Content Evaluation];

G -- "Perform Intelligent Analysis:" --> H{Checklist Item Evaluation};

H -- "For Each Item: Accuraccy, Sufficiency, Redundancy, Rule Violation" --> I[Provide Reason for Pass/Fail & Category (1-5)];

I -- "Categorization Logic: e.g., Missing Security Requirement -> Cat 1, Minor Formatting -> Cat 5" --> J[Auto-Classify Criticality & Color-Code];

J -- "Green: Pass, Red: Critical (Category 1)" --> K[Generate Initial Review Report];

K --> L{User Review & Interaction};

L -- "User clicks on flagged item" --> M[Display Detailed Reason & Original Content];

M --> N{User Provides New Prompt/Justification};

N -- "User accepts AI decision or overrides" --> P{Update Review Status};

N -- "User modifies document or requests re-evaluation based on prompt" --> Q[Re-submit Document for AI-Assisted Re-review];

Q --> G;

P --> R[Finalize Review Report];

R --> S[Comprehensive Review Report Generated];

S --> T[End Process / Document Approved/Rejected];

E --> K;

### Flowchart Explanation:

1. **Authenticated User**: The process begins with an **authenticated user** who has the necessary permissions to access the system.
2. **Upload Document**: The user **uploads a document**, such as a Software Requirement Specification (SRS) or Software Design Specification (SDS).
3. **Document Format & Template Validation**: The system first validates the **document's format and checks for adherence to organizational templates** (e.g., RCI format for DRDO). This involves analyzing the document's structure and layout.
4. **Template Conformance?**:
   * **No**: If the document doesn't conform to the template, the system **flags inconsistencies and formatting errors** (often categorized as Critical Issues - Category 1). This leads to the generation of an initial review report highlighting these issues.
   * **Yes**: If the document conforms, the system proceeds to **select the appropriate checklists** based on the identified template type.
5. **AI-Powered Content Evaluation**: This is the core of the intelligent review. The AI assistant begins **evaluating the content** against the selected checklists.
6. **Checklist Item Evaluation**: For each item on the checklist, the AI performs detailed analysis to assess its **accuracy, sufficiency, identify redundancy, and detect rule violations**.
7. **Provide Reason for Pass/Fail & Category (1-5)**: For every checklist item, the AI provides a **specific reason for why it passes or fails**, along with a **criticality category (1-5)**. Category 1 indicates a major issue.
8. **Auto-Classify Criticality & Color-Code**: Based on the assigned category, the system automatically **classifies the criticality** of each finding and **color-codes** it (e.g., Green for Pass, Red for Critical/Category 1).
9. **Generate Initial Review Report**: An **initial comprehensive review report is generated**, summarizing all findings, reasons, and criticality levels.
10. **User Review & Interaction**: The user reviews the report. If they click on a **flagged item**, the system **displays the detailed reason** provided by the AI and the original content from the document.
11. **User Provides New Prompt/Justification**: The user can then **provide a new prompt or justification** if they disagree with the AI's assessment or want to provide additional context.
12. **Update Review Status / Re-submit Document**:
    * If the user accepts the AI's decision or overrides it with a justification that satisfies the criteria, the system **updates the review status**.
    * If the user modifies the document based on the feedback or requests a re-evaluation with their prompt, the document is **re-submitted for AI-assisted re-review**, looping back to the "AI-Powered Content Evaluation" step.
13. **Finalize Review Report**: Once all issues are addressed or justified, the review process is **finalized**.
14. **Comprehensive Review Report Generated**: A **final, comprehensive review report is generated**, documenting the entire process, including any user justifications or modifications.
15. **End Process / Document Approved/Rejected**: The document is then either **approved or rejected** based on the final review outcome.

This flowchart illustrates the interactive and iterative nature of the AI-powered document review process, blending automated intelligence with human oversight to ensure high-quality documentation.

# 

In large-scale organizations, especially in defense and research domains such as DRDO labs, Software Requirement Specifications (SRS), Software Design Specifications (SDS), and similar documents are critical for project planning and execution. These documents must adhere to standardized templates and be validated against exhaustive checklists to ensure compliance, quality, and future maintainability. However, the manual review process is time-consuming, error-prone, and requires deep domain knowledge to identify inconsistencies, non-compliance with formatting standards, rule violations, or areas of potential risk.  
  
 To address this, there is a need to develop an AI-powered Assistant for Intelligent Document Review, which automates the end-to-end review process using a predefined guidelines and checklists. This system should include a user-friendly interface that allows authenticated users to upload documents (e.g., SRS, SDS) for verification, verifies uploaded documents for conformity with organizational templates (CEMILAC, RCI, DGSD), appropriate checklists based on the template, and performs intelligent evaluation of the content for compliance against each checklist item. It should generate a report for the document with compliance against each checklist item. If the document comply with the checklist item, it should report as complied and if it is not, the reason for the non-compliance to be described. For non-compliance the system should report the severity of the non-compliance also on the scale of 1 to 5 where 5 is most severe.  
  
 The system must:

1. Automatically classify checklist items based on criticality using a color-coded system (Green: Pass, Amber: Potential Risk, Red: Critical).  
 2. Provide detailed reasons for flagged items, such as inaccuracy, insufficiency, redundancy, or violation of established documentation rules.  
 3. Enable users to modify flagged checklist items via a side panel and re-submit the document for AI-assisted re-review using a Retrieval-Augmented Generation (RAG) pipeline.  
  
 This solution aims to significantly reduce manual effort, enhance documentation quality, and ensure standardization across technical documents in compliance-driven environments.