

Process Improvement Report: Automation of Component Grades Extraction

Overview:

In Cambridge exams, "component grades" refer to the individual grades a student receives for each component or paper within a syllabus. However, these grades do not contribute to the overall syllabus grade, which is determined by the total syllabus mark.

Previous Workflow:

The manual process involved receiving 30+ Excel files from the examination board, each containing multiple sheets (typically 15+), with thousands of candidates' data per sheet. To extract component grades for a single candidate, the following steps were required:

1. Open the relevant Excel workbook.
2. Locate and open the appropriate sheet.
3. Apply manual filters to identify the candidate's data.
4. Enter input fields to extract the required information.
5. Copy and paste the output into a new Excel file.
6. Save and share the file with the candidate.

This inefficient process required three resources over a span of 21 days, consuming more than 500 working hours. Additionally, the risk of human error and data breaches was high due to manual handling.

Techniques Used:

- Excel VBA & Macros
 - Data Cleansing
 - Database and Header Creation
 - Nested Lookup Formulas
 - Complex Conditional Formatting
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Process Improvement:

To enhance efficiency and accuracy, I developed an Excel VBA solution that automated the extraction process. Key improvements included:

1. **Data Consolidation:**
 - Appended all sheets from all workbooks into a single dataset.

- Performed data cleansing to remove empty rows and unnecessary information.

2. **Structured Data Organization:**

- Extracted subjects and component headers into separate sheets while maintaining raw data integrity.
- Created multiple concatenated keys to facilitate dynamic data retrieval.

3. **Dashboard Development:**

- Designed a user-friendly interface requiring only two input fields to fetch complete candidate data.
- Implemented locked formulas and cell protection to ensure data integrity and prevent tampering.

4. **Automation & Execution:**

- Developed a macro to input candidate details, process data, and generate individual Excel files in seconds.
- Enabled the bulk creation of 7,000+ candidate files in approximately 30 minutes.

Outcome:

The transition from manual processing to full automation resulted in:

- **Enhanced Efficiency:** Reduction of processing time from 500+ hours to just 7 hours, managed by a single resource.
- **Error Elimination:** Elimination of manual errors, ensuring data accuracy and consistency.
- **Data Security:** No external data sharing, ensuring compliance with governance policies.
- **Scalability:** A streamlined and scalable process capable of handling large datasets efficiently.

This automation not only saved significant resources but also established a robust framework for handling similar processes in the future.