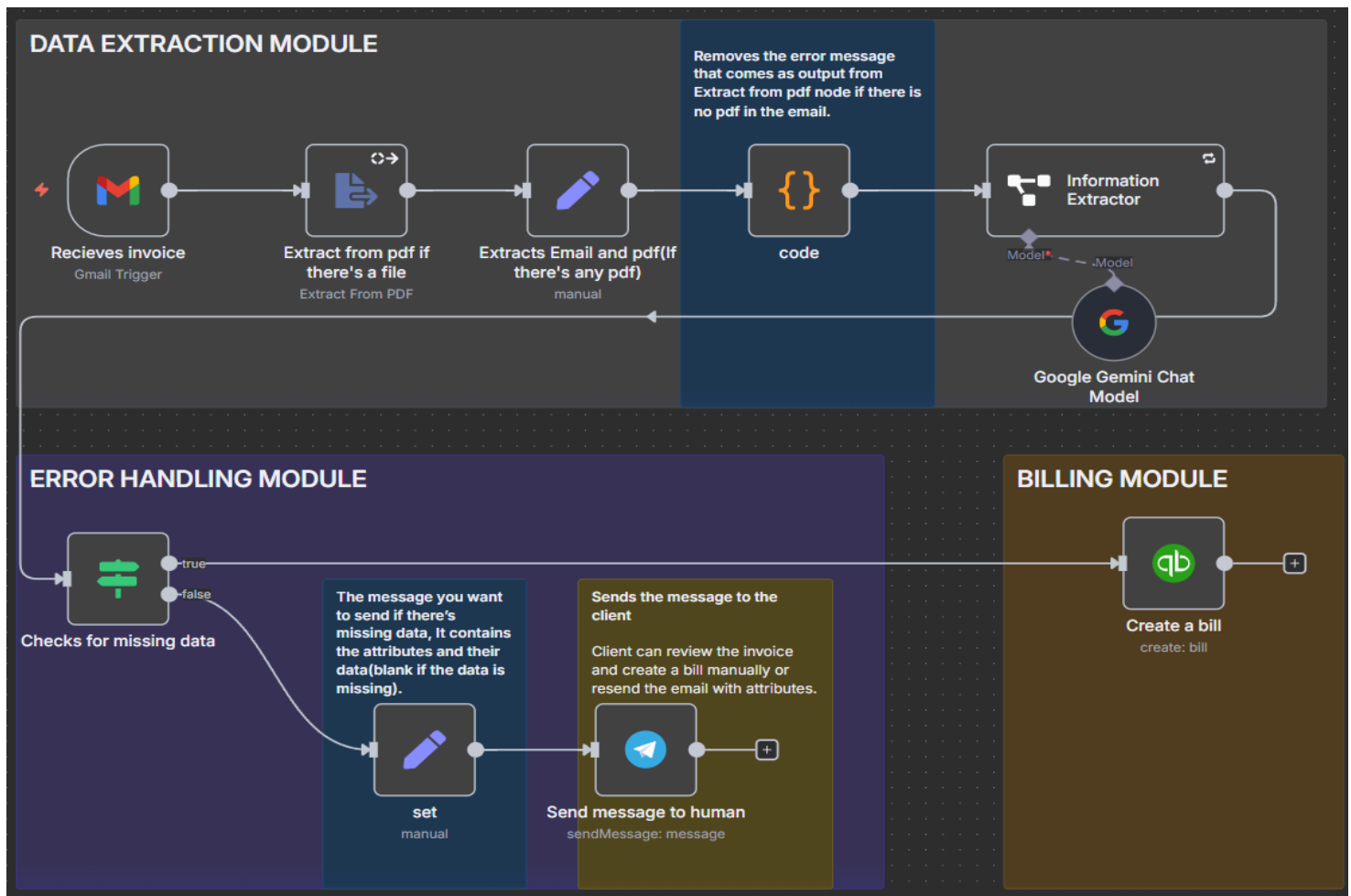


PROTOTYPE



1. Data Extraction Module

- Triggering Mechanism:

- The workflow begins with a Gmail Trigger node that monitors a designated mailbox for new invoice emails.
- This ensures that all invoices, whether embedded in the email body or sent as PDF attachments, are automatically captured

without manual oversight.

- File Processing:
 - If an attachment exists, the Extract from PDF node parses the document.
 - Invoices embedded in the email body are handled by a separate extraction step.
 - This dual-path approach guarantees robustness, covering both traditional PDF invoices and text-based ones.
- Error Sanitization:
 - A Code node is employed to handle potential system errors (e.g., when no PDF is attached).
 - This ensures the pipeline does not break and avoids false error alerts, creating a cleaner data stream for subsequent processing.
- Intelligent Data Extraction:
 - At the core, the Information Extractor node powered by the Google Gemini Chat Model is used to intelligently parse invoice details.

- Key extracted fields include:
 - Invoice Number
 - Vendor Name
 - Date and Due Date
 - Line Items (Description, Quantity, Price)
 - Taxes, Discounts, and Total Amount
 - Unlike rule-based parsing, the Gemini model applies contextual understanding, making it resilient to varying invoice formats.
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2. Error Handling Module

- Validation Checks:
 - Once the invoice data is extracted, it flows into a validation step that checks for completeness and accuracy.
 - Missing mandatory fields such as invoice number, total amount, or vendor details are

flagged.

- Dynamic Error Messaging:
 - A Set node structures error messages that specify which fields are incomplete or ambiguous.
 - This message is designed to be user-friendly, allowing quick identification of the problem.
- Human-in-the-Loop Review:
 - When issues are detected, the system triggers a notification to the client via Telegram.
 - Clients can then:
 - Review the extracted data,
 - Correct missing details, or
 - Resend the email with the corrected attributes.
 - This mechanism ensures that automation does not fail silently and provides a fallback for human oversight.

3. Billing Module

- Seamless Synchronization:
 - Once data passes validation, it is forwarded to the QuickBooks node where a new bill is created automatically.
 - The integration ensures that invoice data is correctly mapped to accounting fields without duplication.
- Financial Accuracy:
 - Bills generated in QuickBooks are tagged with all relevant metadata for audit readiness.
 - The automation reduces the risk of human error in manual entry while ensuring accounting records remain up to date.
- Audit & Traceability:
 - Every transaction processed is logged by n8n, ensuring traceability of invoice flow from intake to accounting entry.