

 **Use Case:** Automate the creation of a variance report comparing new system-generated data with existing system data to ensure data quality.

Mindset / Thought Process

1. I'll draft the manual process of creating the Variance report to list the areas of identification.
2. I'll be using ChatGPT or LLM based chatbots as my second brain.
3. I will break down the tasks into smaller chunks and solve them one by one.

Solution Design

The solution involves the following components:

- Something that fetches the csv file attached data via email
- Something that fetches the data from system database
- Something that compares both the data and lists down the variance.
- Something that creates the variance report.

Step-by-Step Execution

Step 0: Research the possibility

Prompt:

I need to create a Variance report for the new system data by comparing them against our old system data, I'm getting the new system data as a csv attachment daily, and I must create this variance report and send it to the same person. Our old system data is in a Postgres DB

And I don't want to apply logic-based comparison, I'm looking for some AI assisted smart way, so if I feed both my data, it should take care of the heavy lifting

Is it possible to automate this using n8n? If yes, provide me the step-by-step approach

Step 1: Triggering the Automation in n8n

- Use **n8n** to handle email-based automation:
 - Set up an **email trigger** to listen for emails containing the **CSV file**.
 - When the email is received, the data is extracted and prepared for comparison.

Step 2: Use the prompt as a guide and set up the core steps

- Extractor: To extract the csv data
- AI Agent System: An autonomous decision-making system which can generate the variance report
 - Define Model (We selected Gemini, use the PDF from download section to setup the google account in case you have not done before)
 - Define Memory – Simple Memory
 - Define Tools – Calculator (to do calculations)

Step 3: Provide input to AI agent

- Set up the source for prompt (“Define Below”)
- Define the user message (This is the key data the model will read to perform the task, it’s best if it is given as a single value i.e. string)
- We were not able to get a single value string from previous steps, so we will do incremental improvements in the flow to get the string

Step 4: Do incremental improvements in the flow

- Add “Aggregate” Node: It combines multiple values to a single list
- Add “Edit Fields” Node since Aggregate node is returning the value as array. It needs to be converted to string.

Step 5: Create “System Message” for the AI Agent

- Use the below prompt to generate the system message for any model of your choice

*Help me with writing a System Message prompt for an AI agent in N8N, which aims to create a Variance report: Here are the details it should do: It will get the mail data as an Input which is coming from a Mail **csv attachment**. It must use the **Postgres DB** tool and query the only required data to compare with the received data and check if the both the data is matching or not at the following level: Total rows, Columns, names, total of numeric column, overall level as well city level and create a variance report in the google docs by creating a new google document and updating the report generated into that and send the doc link as a output*

Step 6: Add remaining tools

- Postgres DB – To connect to the database which must be compared with csv output from email
- Google docs – to create a document
- Google docs – to update the report details in the created document
- Google Drive - to share the file
- Structured output – to structure the output in a specific format

Step 7: Generate Report and Respond to Email

- Set up Gmail Account
- Configure the message

✅ Final Outcome:

- The automation will ensure:
 - Daily data is consistently received and checked.
 - Variance reports are generated automatically without manual input.
 - Teams are promptly notified with a link to the detailed report for necessary actions.

🔑 Key Takeaways

1. Create the flow with core nodes and optimize it incrementally
2. AI agentic workflow is powerful and can make autonomous decisions
3. This use case can be used as a base to automate any kind of ad-hoc analysis