

# AI automation process with n8n

Let's build 5 practical AI automation workflows in n8n - from email classification to RAG chatbots. Learn about AI agents, memory, vector storage, and MCP in this series!

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## You are automating incorrectly.

Most automation tools provide you with triggers, filters, and conditional logic. That's fine in 2022. But the work you actually want to automate—sorting messy emails, answering questions from your documents, summarizing research across 10 tabs—requires AI, not just logic.

n8n is a unique visual automation platform with over 70 dedicated AI nodes built on LangChain. While Zapier charges on a per-step basis and offers you 6 AI integrations, n8n provides you with AI agents, vector storage, memory, RAG paths, and MCP tools – with a community of over 200,000 users and over 177,000 stars on GitHub.

## What you will learn

1. Building AI automation processes in n8n using triggers, nodes, and connections.
2. Utilize the AI Agent node with system prompts, tools, and LLM providers .
3. Implement persistent memory with PostgreSQL and Redis for conversational-aware agents.
4. Create RAG paths with embedded content, vector archives, and document imports.
5. Implement best practices in manufacturing, including error handling, queuing, and credential management.
6. Design a complete multi-tool AI agent with RAG, memory, and error recovery capabilities.

After this series of lessons, you will be able to:

1. Develop 5 AI production workflows - email classification, chatbot, RAG knowledge base, research agent, and MCP assistant.
2. Replace expensive SaaS automation tools with self-hosted n8n with unlimited executions and over 70 AI nodes.
3. Implementing persistent memory and RAG pathways helps your AI agents recognize context in conversations.
4. Distinguish yourself as an automation and AI engineer by showcasing practical experience in n8n+ AI workflows.

5. Connect your AI assistant to your MCP-based business tools, allowing Claude or ChatGPT to directly call your workflows.

## What you will build

### AI-based email classification process

A practical n8n workflow reads incoming emails, categorizes them by purpose using GPT-4o, automatically labels them, and directs them to the correct group—running automatically.

### RAG Knowledge Base Agent

An AI agent powered by n8n with the ability to receive documents, embed vector archives, and retrieve them—answering questions based on your data with persistent conversational memory.

### Certification of ability to build AI automation processes.

Demonstrate that you can build AI automation processes in n8n, including agents, memory, RAG paths, and MCP tool integration.

## Suitable for this series

1. Non-technical people who want to automate tasks using AI without writing code.
2. Developers are exploring n8n as an AI orchestration layer along with their source code.
3. Self-employed individuals and freelancers need to automate repetitive AI tasks.
4. Zapier/Make users have reached the limits of basic automation features.
5. Anyone curious about AI agents, RAGs, and contextual model protocols.

## Why should you use n8n for AI automation?

Why is n8n the best visualization platform for AI automation - and what will you build in this series?

*You've been copying and pasting between ChatGPT and your other tools. Open a tab, write the question, copy the result, paste it into Gmail, switch to Notion, paste it back. It takes 20 minutes for something that should only take 20 seconds. There's a better way – and it doesn't require writing code.*

### What you will learn

By the end of this series, you will understand why n8n is particularly well-suited for AI automation, how it compares to alternatives, and exactly what you will be building in the eight lessons of this series.

### The problem with "AI automation" today

Most people use AI in one of two ways. They either interact with it manually—copying output between applications—or they connect it through basic automation tools that treat AI as a single "ask ChatGPT" step in a larger workflow.

But the fascinating work of AI isn't a single question. It's a chain of decisions. An AI agent reads an email, decides if it's urgent, drafts a response, checks your calendar for availability, and sends the response—with memory stored in the 50 most recent conversations and access to your company documents. It's not just a single operation. It's coordination.

And that's where n8n comes into play.

## Why choose n8n for AI?

n8n is a visual workflow automation platform – think of Zapier or Make, but it's open source and built to handle complex processes. What makes it different for AI work?

Features	n8n	Zapier	Make
Dedicated nodes for AI	70+ (based on LangChain)	~6 AI integrations	~10 AI integrations
AI agent	A complete Agent framework with tools, memory, and prompts.	Basic "ChatGPT" action	Basic AI actions
Vector repositories	Supabase, Pinecone, Qdrant, Chroma, 12+ options	Are not	Are not
Memory	Simple, PostgreSQL, Redis, Window Buffer	Are not	Are not
MCP support	Server Trigger + Client Tools	Are not	Are not
Execution price	One workflow run = one execution.	1 step = 1 task	1 operation per step
Self-hosting option	Free, unlimited	Are not	Are not

**The key number** : One execution. A Zapier process with 15 steps takes 15 tasks. The same process in n8n takes only one execution. For AI processes that combine multiple LLM calls, this number increases rapidly.

? **Quick check** : If you build an n8n process with 20 nodes including 3 AI calls, how many executions does one run take?

**Answer** : One. Each process run is always equivalent to one execution, regardless of the number of nodes or AI calls.

## What you will build in this series

This series is project-based. Each lesson ends with something you can use immediately:

Lesson	What you build	Key concept
1	Your n8n account + first trial process	Foundation orientation
2	An operational data processing procedure	Triggers, nodes, connections, expressions
3	<b>AI email classification tool</b>	Basic LLM string, prompt template, output parsing
4	<b>Multipurpose research agent</b>	Node AI Agent, system prompt, tool connection

Lesson	What you build	Key concept
5	<b>Chatbots have memory.</b>	Long-term memory, conversational context
6	<b>RAG Knowledge Base Bot</b>	Embedded libraries, vector repositories, document import
7	Production-ready versions are in your workflow.	Error handling, authentication, monitoring
8	<b>Complete the AI ??assistant</b> (final project)	They are all combined into one system.

By the end of the series, you'll have a versatile AI agent capable of remembering conversations, retrieving information from your documents, skillfully handling errors, and can be invoked from Claude Desktop via MCP.

## Getting Started: Setting up your n8n account

Before lesson 2, you need a working n8n installation. There are two options:

1. **Option A** : n8n Cloud (recommended for beginners)
  1. Visit [n8n.io](https://n8n.io) and start your free trial.
  2. The Starter package (24 EUR/month after the trial) gives you 2,500 runs.
  3. No setup required, no servers needed, everything is managed for you.
2. **Option B** : Self-hosting (free, unlimited)
  1. Execute `commanddocker run -it --rm --name n8n -p 5678:5678 n8nio/n8n`
  2. Open `http://localhost:5678` in your browser
  3. Create an owner account

Both options fit this series. Cloud is easier to use. Self-hosting will be free.

You will also need an OpenAI API key (or a key from any LLM provider – Anthropic, Google, Groq all work). Most lessons use OpenAI because it has the broadest n8n integration capabilities, but you can change providers at any time.

## Key points to remember

1. n8n's AI capabilities are built on LangChain – providing you with agents, memory, RAG, and vector storage in an intuitive interface.
2. The one-run model (one run = one execution) makes n8n significantly more cost-effective than Zapier for multi-step AI workflows.
3. n8n is a free, self-hosted application with unlimited executions - Cloud version starts from 24 EUR/month.
4. This course builds five practical workflows, not just illustrative examples.

1. Question 1:

The execution pricing of n8n operates differently from Zapier. Why?

1. A. n8n charges per node - the more nodes, the higher the cost.
2. B. One workflow run is equivalent to one execution, regardless of how many nodes it contains.
3. C. n8n only charges for AI nodes, not regular nodes.

EXPLAIN:

This is a huge cost advantage. A Zapier workflow with 10 steps uses 10 tasks. The same workflow in n8n only requires one execution. A 50-step workflow in n8n still only costs one execution. Self-hosted n8n has unlimited executions for free.

## 2. Question 2:

You want to build a chatbot that answers questions from your company's documents. Which AI capabilities of n8n allow this?

1. A. Node that activates the webhook
2. B. RAG (Retrieval-Augmented Generation) with vector storage and data embedding
3. C. Node HTTP Request directly calls OpenAI

EXPLAIN:

RAG allows you to embed your documents into vector repositories, then retrieve relevant data pieces when users ask questions. LLM generates answers based on your actual data—not imaginary ones. n8n has dedicated nodes for data embedding, vector repositories, and document loaders, making this a visual workflow instead of custom code.

## 3. Question 3:

What makes n8n different from Zapier or Make in terms of AI workflow?

1. A.n8n has more built-in integrations than any other platform.
2. B.n8n has over 70 dedicated AI nodes built on LangChain, including agents, vector storage, and memory.
3. C.n8n is the only automation tool that supports webhooks.

EXPLAIN:

While Zapier has a higher total number of integrations (over 6,000), n8n's differentiating factor for AI is its depth: over 70 nodes dedicated to AI, encompassing agents, memory, RAGs, embedded content, and vector repositories—all built on LangChain. Zapier and Make provide fundamental AI actions, rather than a comprehensive AI orchestration framework.

Submit your work

**Training results**

You have completed **0** questions.

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