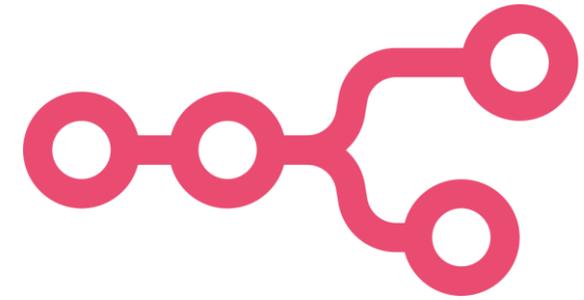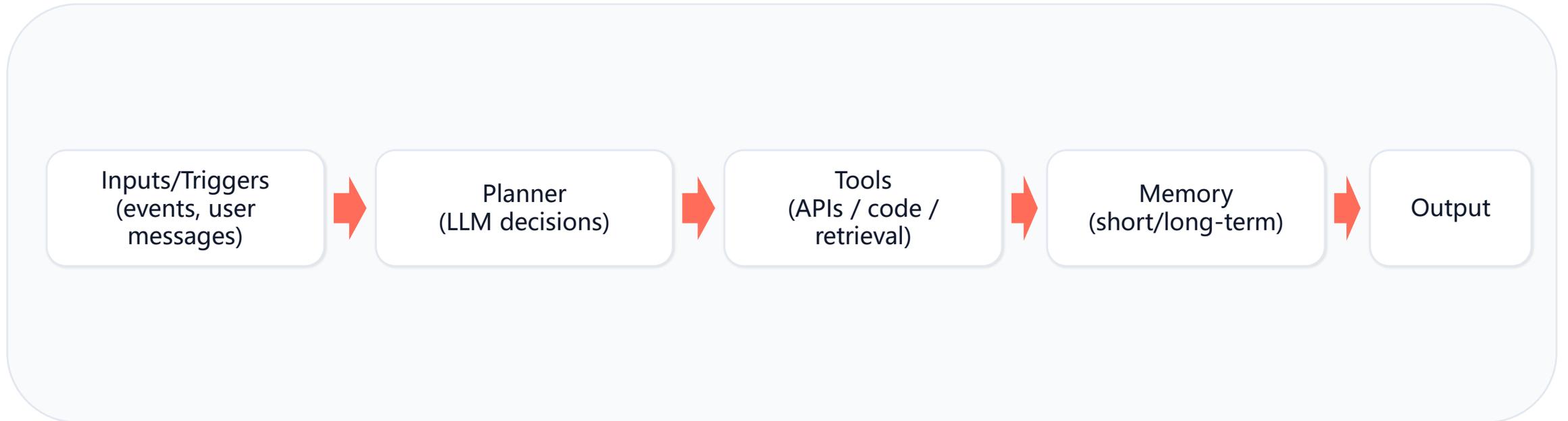# CS4262/5462 Tutorial Agentic Workflows

TA: Tao Wangcheng

Building AI Automation Workflows with n8n

Outline

- Agentic workflows: concepts
- n8n: why it's great for workflow orchestration
- Installing n8n (Docker)
- Demo 1: RSS → LLM summary → report export
- Demo 2: Chat → Analyze Agent → Report Agent
- Submission

What are agentic workflows?

In one sentence: let an LLM decide the control flow under goal constraints, and complete tasks via tools.

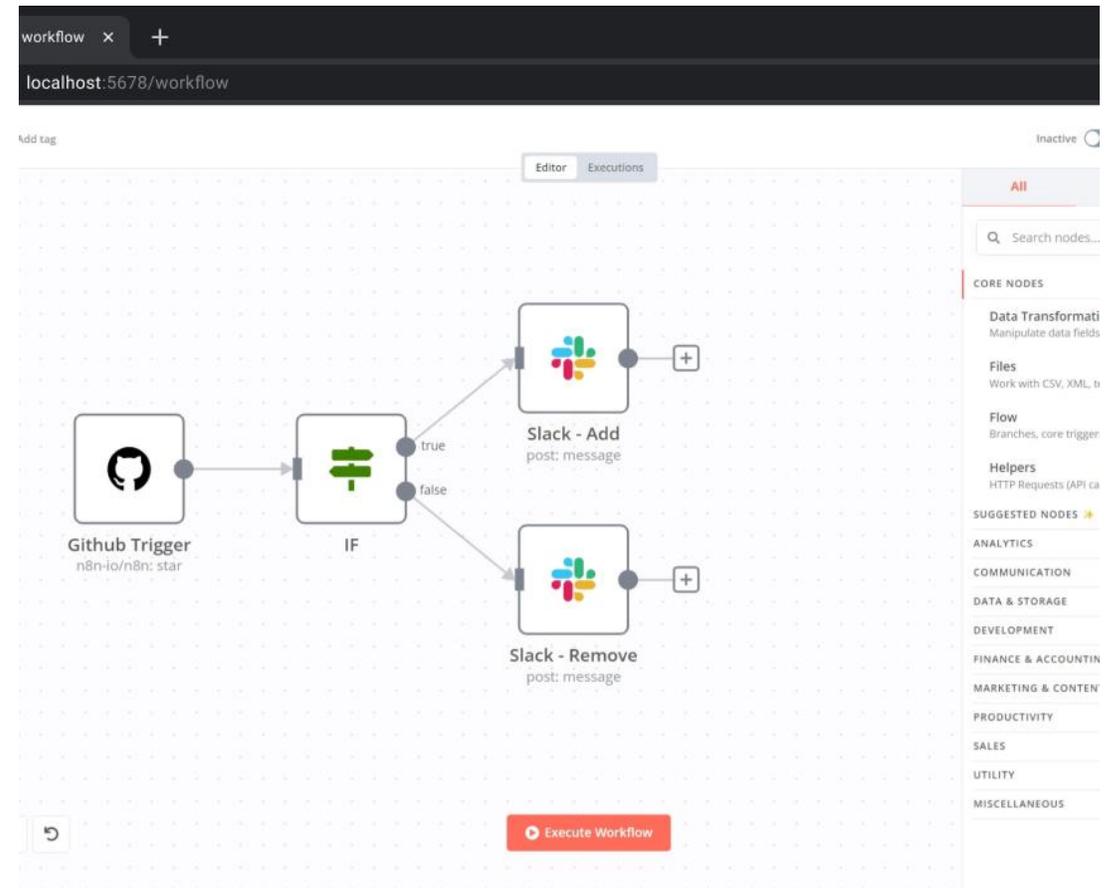| Inputs/Triggers (events, user messages)	→	Planner (LLM decisions)	→	Tools (APIs / code / retrieval)	→	Memory (short/long-term)	→	Output

Characteristics

- Iterative loop: model calls tools → observes results → continue/stop
- Explainable: split "think/act" into auditable steps (e.g., ReAct)

n8n: visually orchestrating a "toolchain"

n8n is a workflow automation platform: use nodes to compose triggers, processing, API calls, branching/merging, exporting, and more.

Why use it for agentic workflows?

- Low-code orchestration: visual dataflow, easy to debug & reuse

- Rich integrations: HTTP, DB, email, cloud drives, webhooks, etc. (claims 400+)

- AI nodes/Agents: package LLMs, tools, and memory into reusable components

- Fast to production: turn prompt prototypes into runnable systems
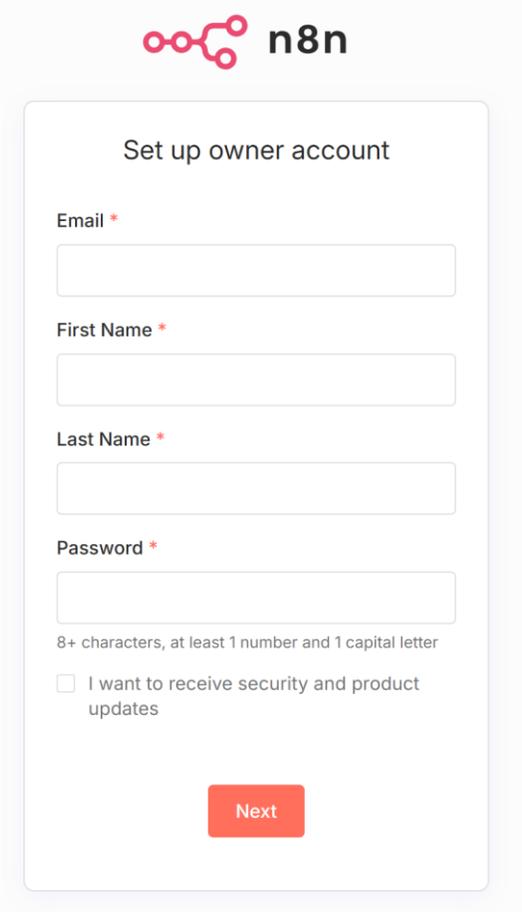
Recommended: Docker Compose

```
1  services:
2    n8n:
3      image: n8nio/n8n
4      ports:
5        - "5678:5678"
6      volumes:
7        - ~/.n8n:/home/node/.n8n
```
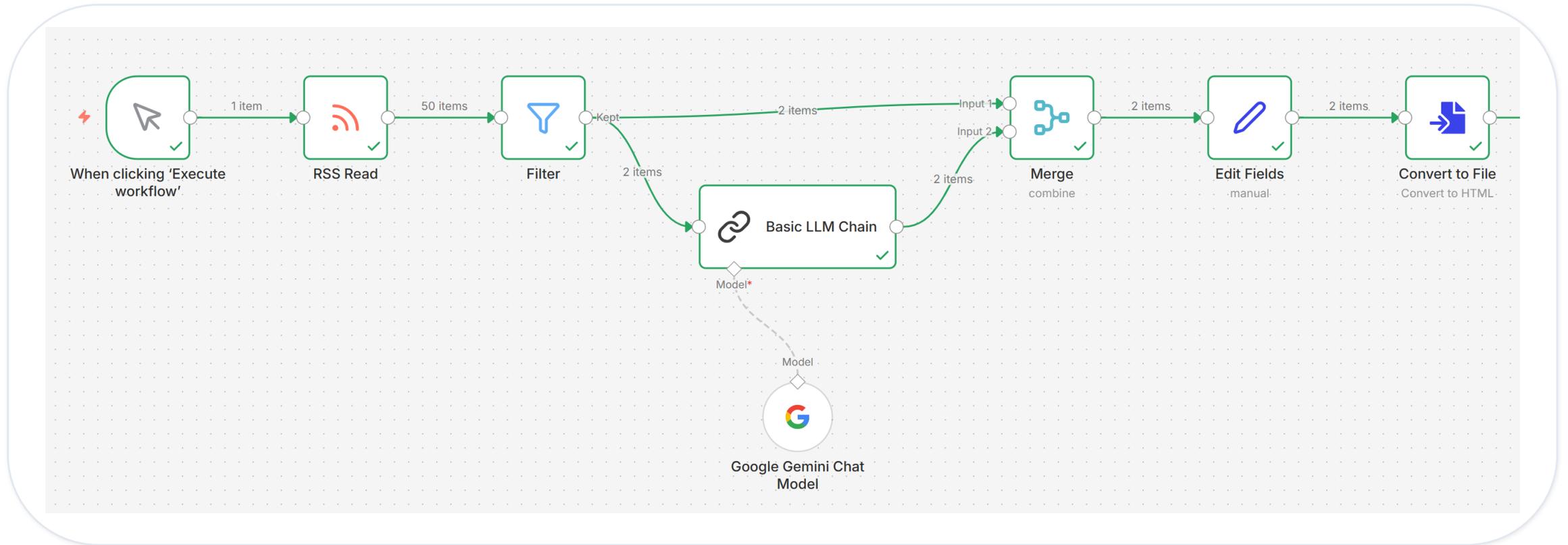
- Prepare Docker
  - Linux Docker Engine:
    https://docs.docker.com/engine/install/
  - Windows/Mac Docker Desktop:
    https://docs.docker.com/get-started/get-docker/
- Create data directory: `mkdir -p ~/.n8n` mount to persist workflows and credentials of n8n
- Run: docker-compose up –d
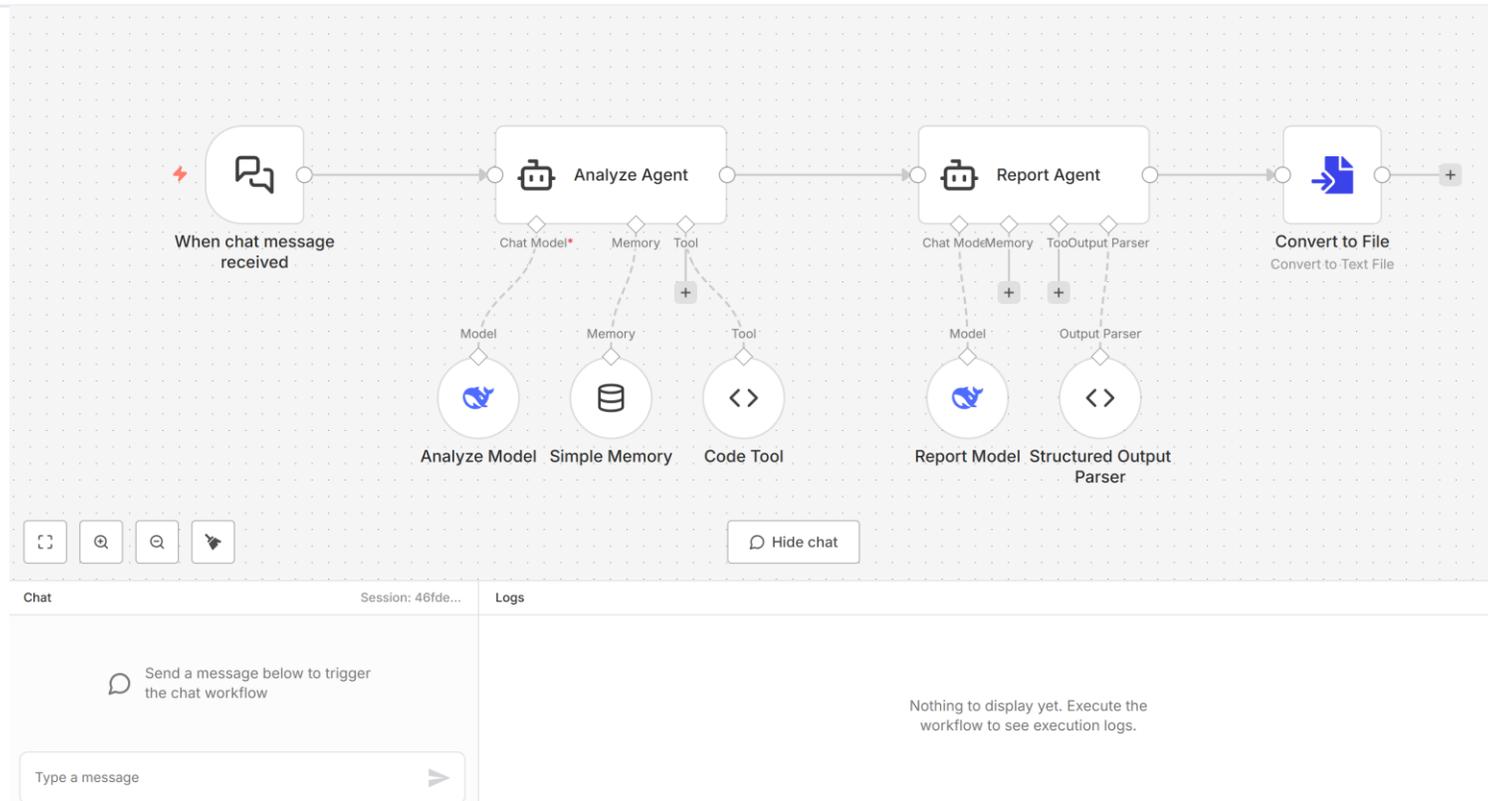 - docker-compose.yml: container configurations

Open: http://localhost:5678
First launch: create an account

Demo 1: Tool-augmented workflow (RSS Reader)

Goal: read NUS News RSS → filter → LLM generates summaries → export an HTML report

- Key nodes: RSS Read / Filter / LLM Chain / Merge / Convert to File

Demo 2: Agentic workflow (NUS News Chatbot)

Goal: user question → Analyze Agent(plans & calls tools) → Report Agent(produces structured/HTML output)

- Split responsibilities: Analyze (planning/retrieval/tools) vs Report (formatting/structured output)

Submission

You need to do

- (Required) Follow the notebook to reproduce Demo 1 and Demo 2, and run them successfully.

- (Optional, bonus) Extensions:
  - Explore more n8n nodes (triggers, data transforms, apps, AI tools, databases, notifications, etc.)
  - Improve the demo workflow or build a brand-new workflow that fits your own use case

Deliverables

- Exported workflow file (JSON)
- README:
  - Briefly describe how you ran the workflow
  - Proof of execution: screenshots or a short screen recording (recommended)
  - Your extension (if any)
  - Exported HTML/PDF/text files
- Submission format: Name_StudentID.zip

Thank you!