

Understanding async python: The foundation for OpenAI Agents SDK:

**Asyncio** : for asynchronous python, basically for multiple threading

Multi threading

Parallel programming

It is lightweight alternative to threading or multi processing.

Multithreading is at OS level, but asyncio ...

Functions defined with **async def** are called **coroutines**, they are special functions that can be paused and resumed.

Calling a coroutine doesn't execute it immediately – it returns a corouting object.

TO actually run a coroutine, you must **await** it, which schedules it for execution within an **event loop**.

While a coroutine is waiting(e.e. for I/O) the event loop can run other coroutines.

```
1. import asyncio
2. import random
3.
4. 1. async def work(name: str):
5.     2.     delay = random.uniform(0.2, 1.0)
6.     3.     await asyncio.sleep(delay)           # non-blocking wait
7.     4.     return f"{name} done after {delay:.2f}s"
8. 5.
9. 6. async def main():
10.    7.    tasks = [work(f"task{i}") for i in range(5)]
11.    8.    results = await asyncio.gather(*tasks) # run tasks concurrently
12.    9.    print("Results:", results)
13. 10.
14. 11. # run the coroutine from sync code
15. 12. asyncio.run(main())
```

Richer example with coroutine:

```
1. import asyncio
2.
3. # Define an async function (a coroutine)
4. async def fetch_weather_data() -> str:
5.     print("Fetching data...")
6.     await asyncio.sleep(1) # Simulate a non-blocking I/O operation
7.     return "🌤️ Weather data received!"
8.
9. # Running the coroutine returns a coroutine object
10. weather_task = fetch_weather_data()
11.
12. # Awaiting the coroutine executes it and retrieves the result
13. result = await weather_task
14. print(result)
15.
```

### Introducing Open AI Agents SDK:

- Lightweight and flexible
- Stays out of the way
- Makes common activities easy

Documentation 1: <https://openai.github.io/openai-agents-python/>

Documentation 2: <https://openai.github.io/openai-agents-python/quickstart/>

Keys: <https://platform.openai.com/api-keys>

Create org - vnrTraining

Create Project and generate key:

Projects: <https://platform.openai.com/settings/organization/projects>

Traces: <https://platform.openai.com/logs?api=traces>

### OPEN AI TERMINOLOGY:

- **Agents:** represents LLMs
- **Handoffs** represent interactions
- **Guardrails** represent controls

### Three steps:

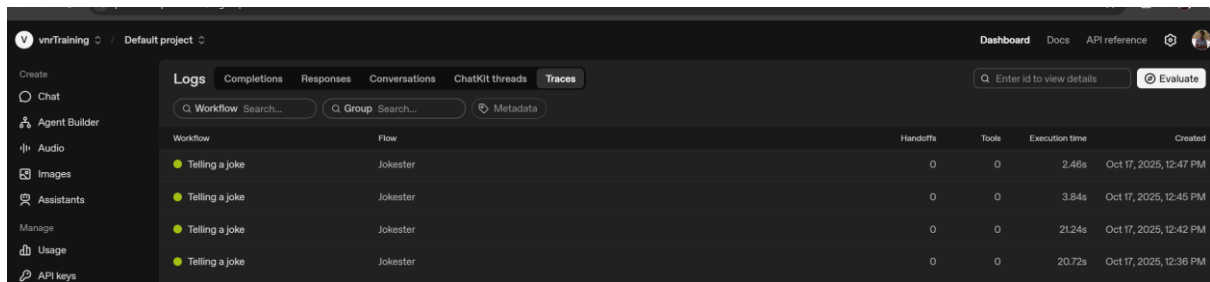
- Create instance of **Agent**
- Use with **trace()** to keep track of agent
- Call **runner.run()** to run the agent

## LAB 5 – lab-5-openai-sdk ....

### Vibe Coding: 5 essential tips for efficient code generation with LLMs:

1. Good vibes – prompt well – ask for short answers and latest APIs for today's date
2. Vibe but verify – ask 2 LLMs the same question
3. Step up the vibe – ask to break down your request into independently testable steps
4. Vibe and validate – ask an LLM then get another LLM to check
5. Vibe with variety – ask 3 solutions to same problem, pick the best.

Validate the traces:



The screenshot shows the 'vnrTraining' interface with the 'Traces' tab selected. The table displays workflow logs with columns for Workflow, Flow, Handoffs, Tools, Execution time, and Created. The data shows four instances of 'Telling a joke' by 'Jokester', each with 0 handoffs and 0 tools, and execution times of 2.46s, 3.84s, 21.24s, and 20.72s respectively.

Workflow	Flow	Handoffs	Tools	Execution time	Created
Telling a joke	Jokester	0	0	2.46s	Oct 17, 2025, 12:47 PM
Telling a joke	Jokester	0	0	3.84s	Oct 17, 2025, 12:45 PM
Telling a joke	Jokester	0	0	21.24s	Oct 17, 2025, 12:42 PM
Telling a joke	Jokester	0	0	20.72s	Oct 17, 2025, 12:36 PM

## Lab6: handoffs:

a sales development rep – automated sales outreach

- Workflow of agent calls
- Agent that can use a tool
- An agent that can call on other agents – tools vs handoff

Create send grid account: <https://sendgrid.com/en-us> And generate Api key.

Then create new account.

console.twilio.com/user/unified-account/details?source=account-switcher

Create new account

Enter account details — Review

### Account details

Create a new account within your Organization

• Account friendly name

vnrtraining

• What will this account be used for?

☒ Twilio  
SMS, Voice, Verify, Lookup

☐ Flex  
Digital engagement center for support and sales

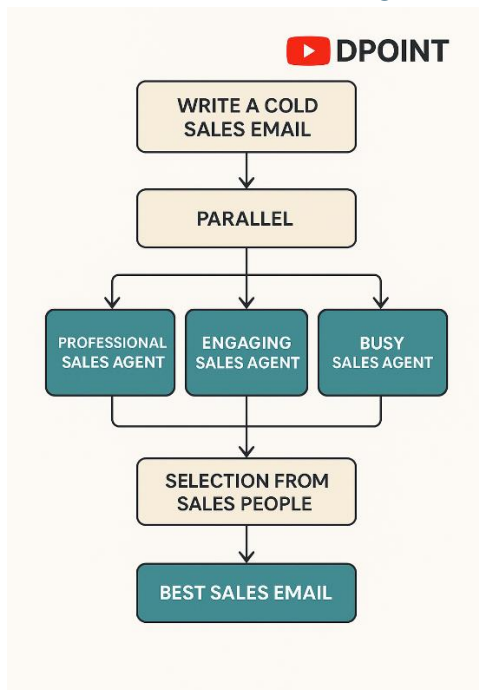
Continue →

Go to menu > Email > Over > sendgrid console

For api keys in sendgrid console:

Settings > API Keys >

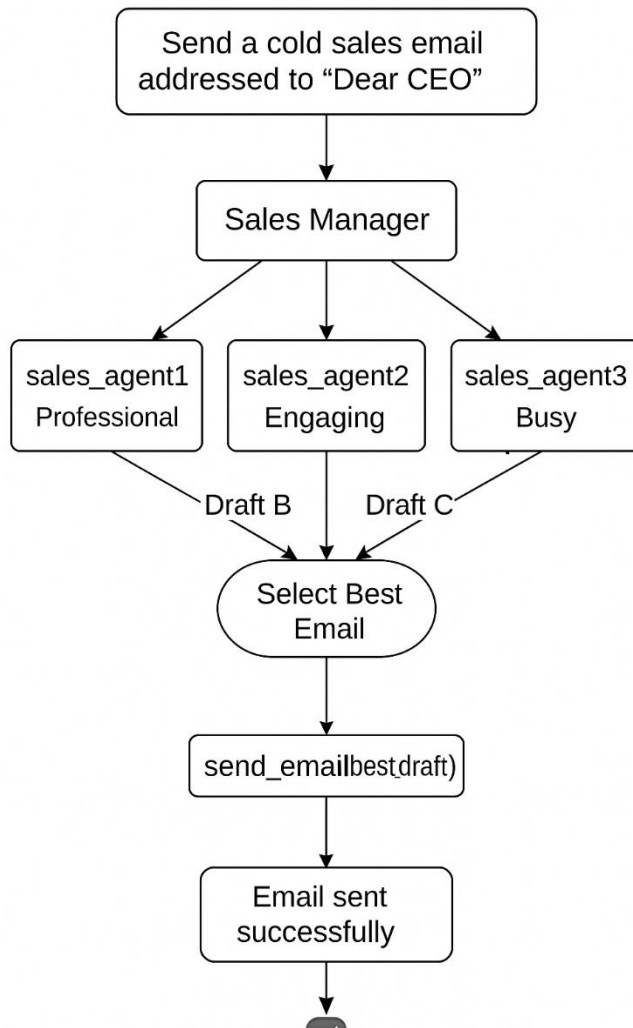
## Lab 6 - exercise 1: sales agent manual LLM



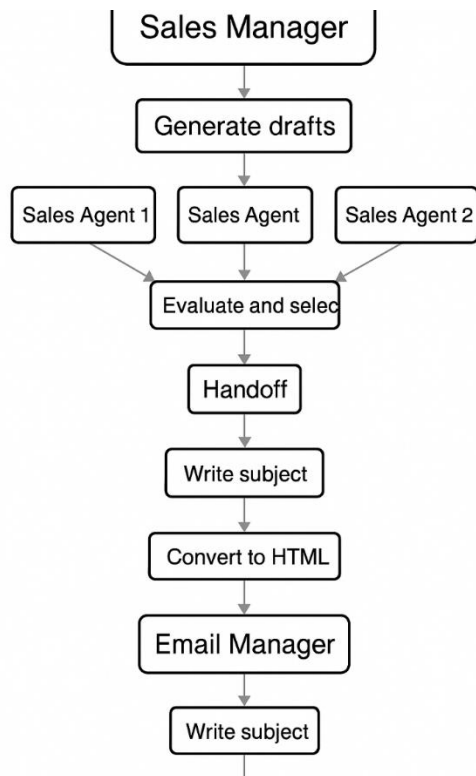
### Learned:

- Tools – call to other agent.
- Agents as tools,
- handoffs – giving over control to other agent

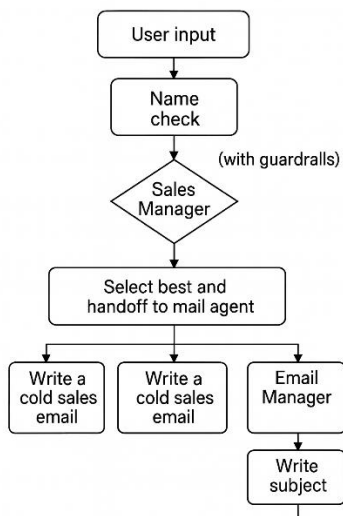
### Lab 6 - Exercise 2: sales agent with tools



### Lab 6 – Exercise3: tools and handoffs



### Lab7: guardrails, tools, handoffs, all in 1



### Lab8: Research Project :

Making use of SendGrid, WebSearchTool, tools, hallucination, and tracing to create a research assistant.

Implementing OpenAI's Web Search Tool