Customizing Copilot

SOFTWARE DEVELOPMENT WITH GITHUB COPILOT

Thalia Barrera

AI Engineering Curriculum Manager, DataCamp

datacamp

How can I configure GitHub Copilot?

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You can teach it how you want code to be written in your project, and it will remember.

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How is this possible?

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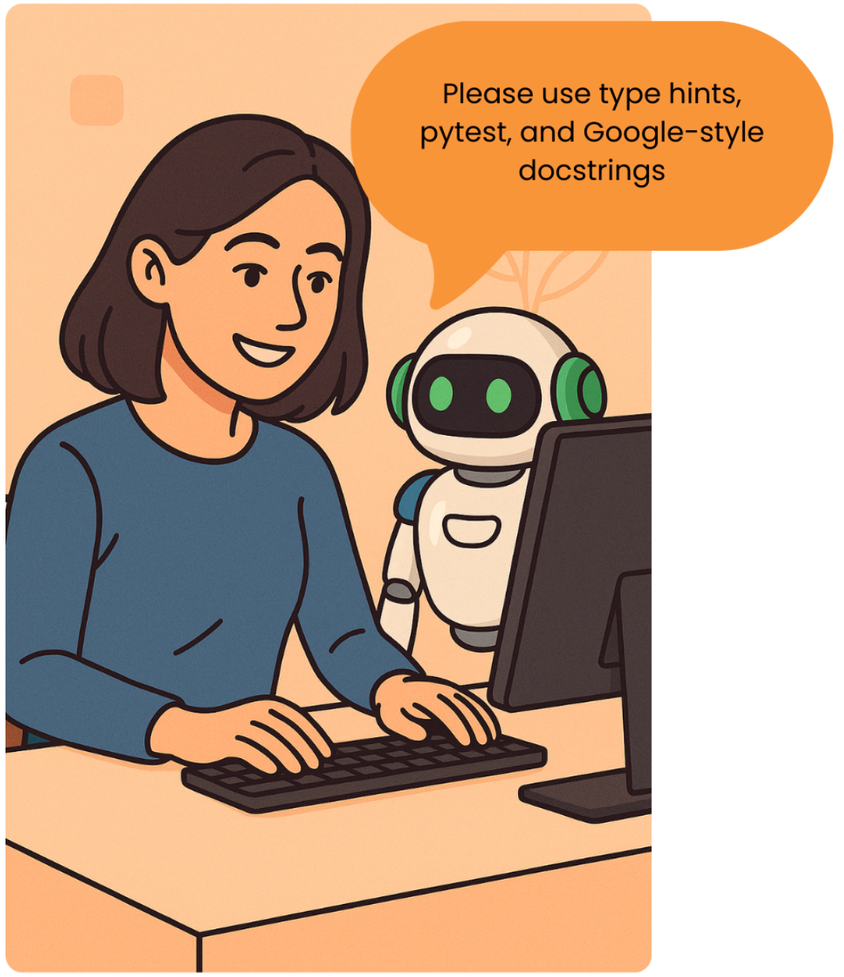
How is this possible?

Through custom instructions.

How custom instructions work

Define:

- Coding conventions
- Tool preferences
- Project context



How custom instructions work

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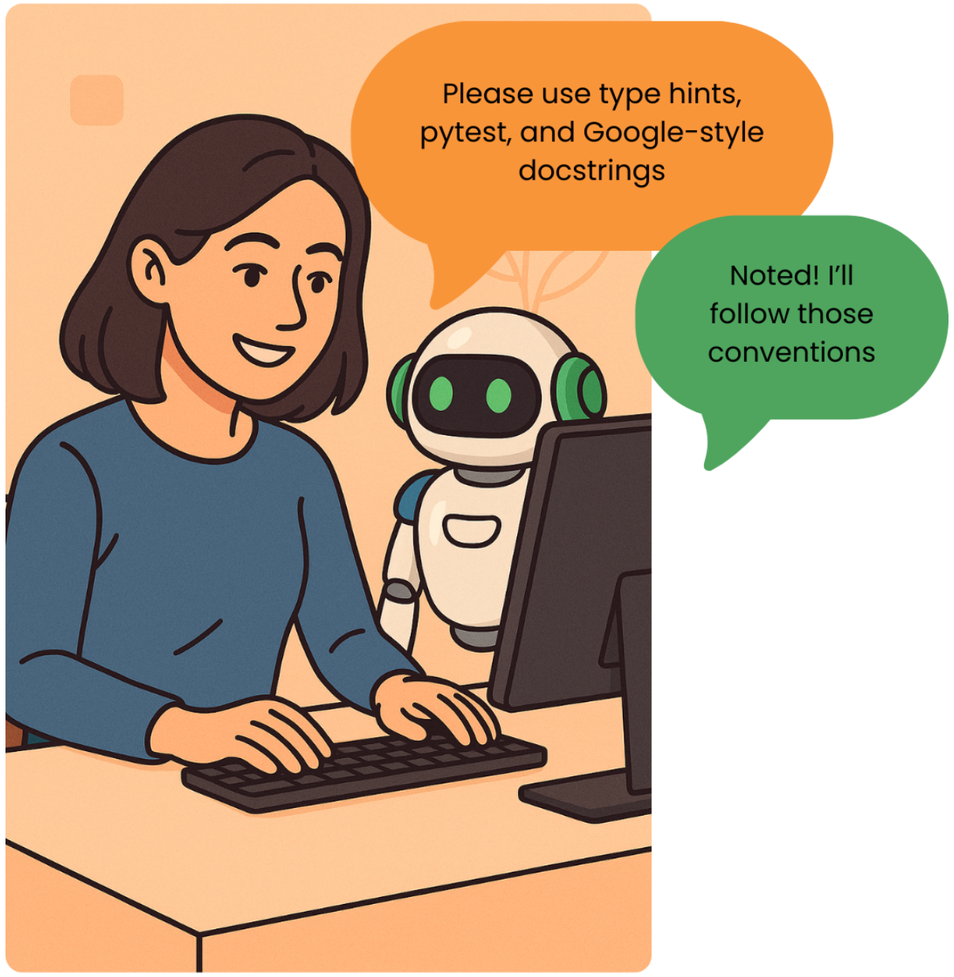


How to define custom instructions

Include them in: `.github/copilot-instructions.md`

```
## Project context
Python project for processing data pipelines with Airflow.

## Coding style
- Use type hints for all functions
- Follow PEP8
- Use snake_case naming
- Write Google-style docstrings

## Testing
- Use pytest
- Include one test per function

## More instructions...
```

What makes an effective instruction

Effective instructions:

- Short and specific
- Self-contained
- Add context or relevant information

Ineffective instructions:

- External documents or repositories
- Specific tone or writing style
- Limit on detail or formatting

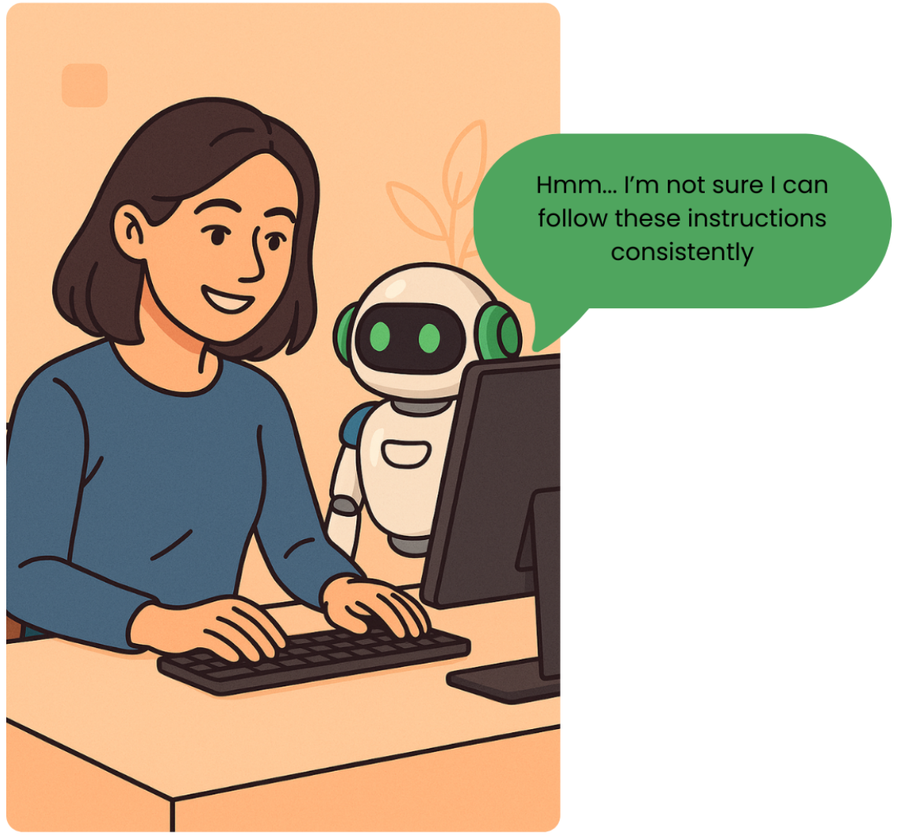
[1] https://docs.github.com/en/copilot/how-tos/configure-custom-instructions/add-repository-instructions

```
## Style guidelines

- Conform to the coding styles defined
in styleguide.md in repo my-org/my-repo

- Answer in the style of a friendly
colleague, using informal language

- Answer in fewer than 1,000 characters
```



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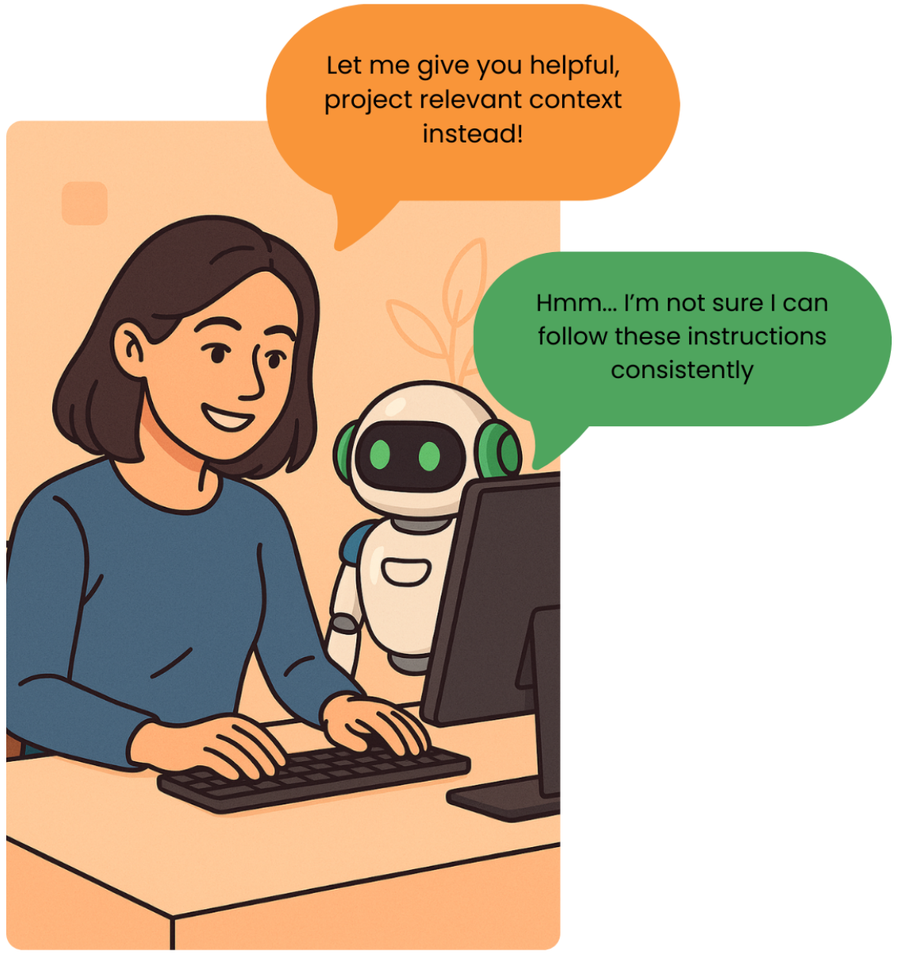
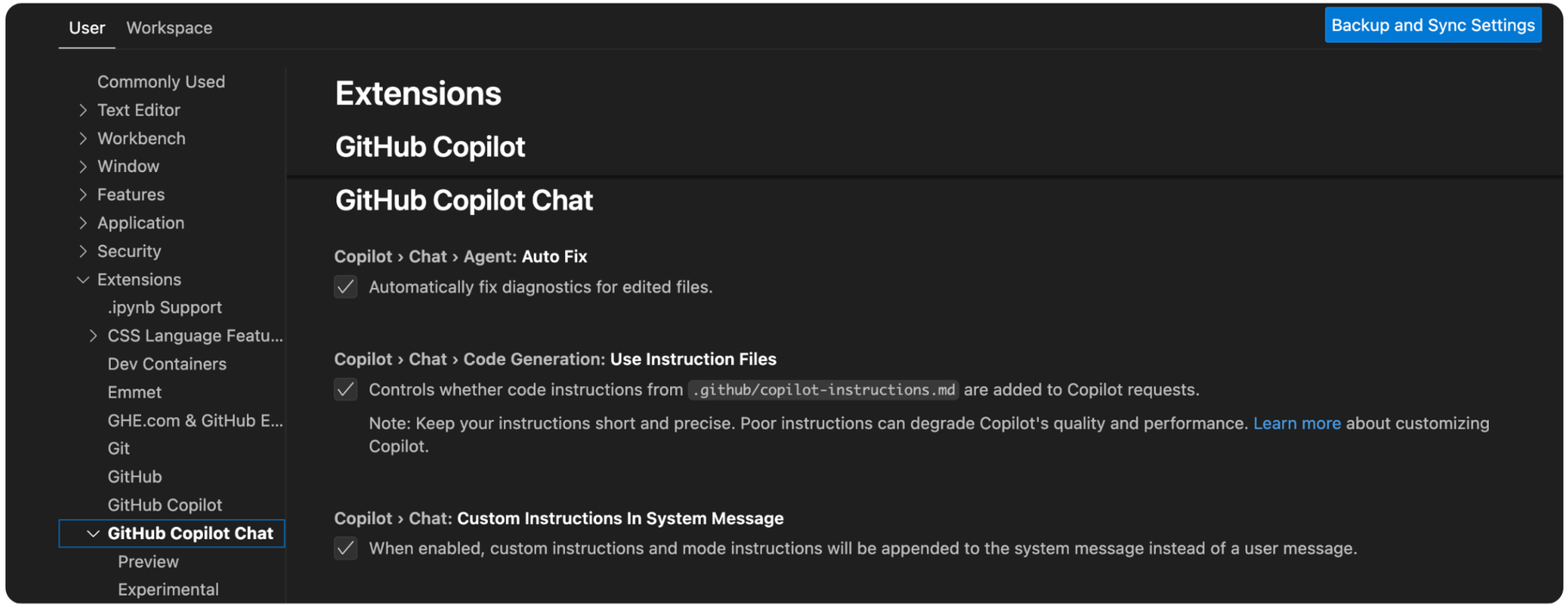


How to enable custom instructions

- Save the `copilot-instructions.md` file
- It will be automatically included in your prompts



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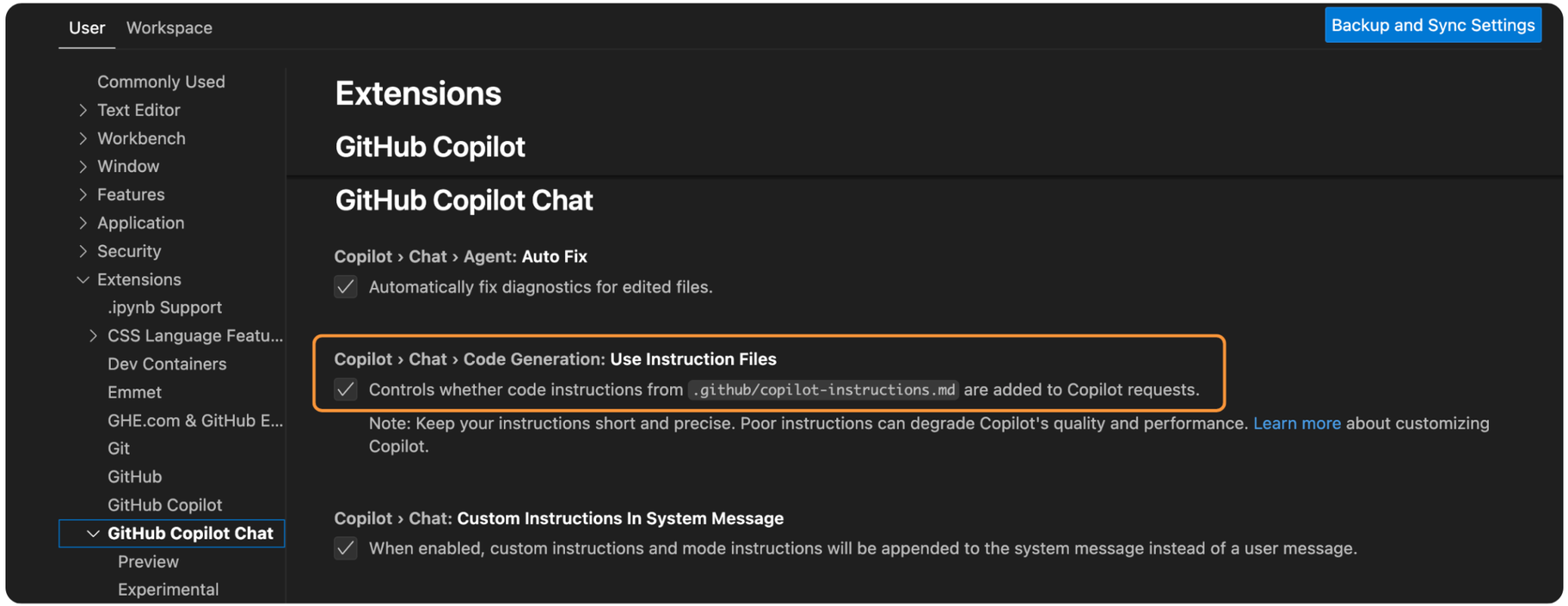

Using multiple instruction files

```
myproject/
├── api/
│   ├── handlers.py
│   └── utils.py
├── tests/
│   ├── test_handlers.py
│   └── test_utils.py
├── core/
│   ├── models.py
│   └── service.py
└── .github/
    └── instructions/
        ├── python_core.instructions.md
        ├── api_instructions.instructions.md
        └── tests_instructions.instructions.md
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        └── tests_instructions.instructions.md
```

api.instructions.md U

.github > api.instructions.md

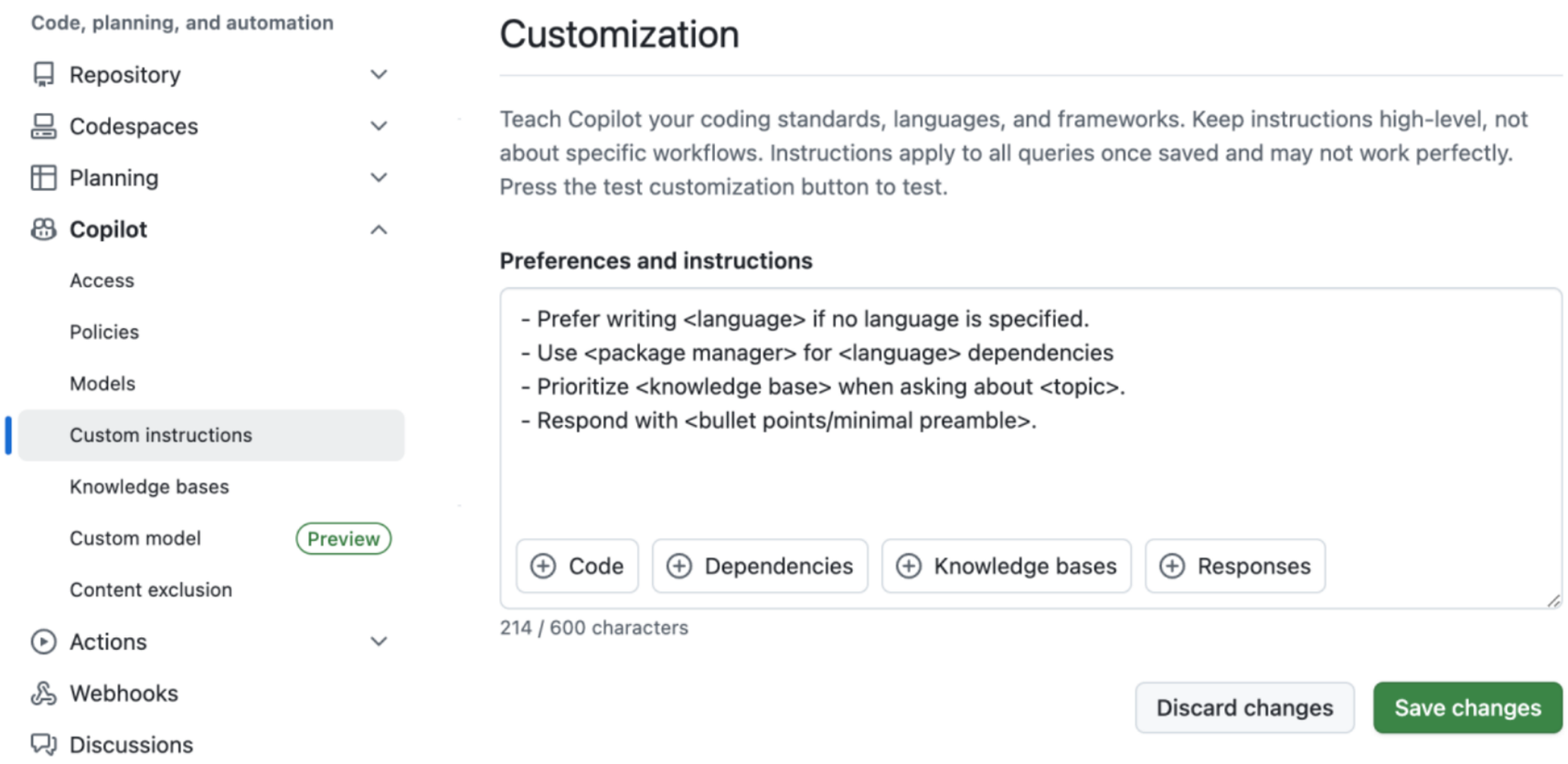
```
1  ---
2  description: “API layer rules”
3  applyTo: "api/**/*.py"
4  ---
5
6  # API Layer Guidelines
7
8  - Validate inputs early.
9  - Return JSON consistently.
10 - Don’t include heavy business logic here — call into core / services.
```

tests.instructions.md U

.github > tests.instructions.md

```
1  ---
2  description: “Testing rules”
3  applyTo: "tests/**/*.py"
4  ---
5
6  # Test Guidelines
7
8  - Use `pytest` style.
9  - Mock external dependencies.
10 - Name tests clearly, e.g. `test_xxx_returns_yyy`.
```

Setting organization-level instructions

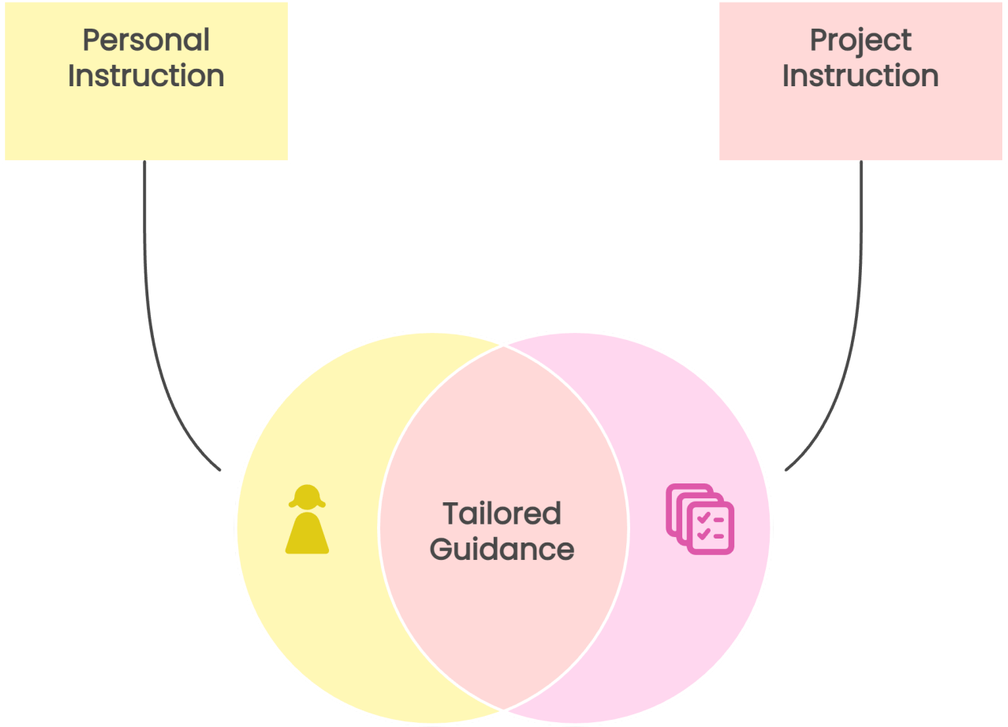


Setting organization-level instructions

Examples of company-wide rules:

- Use internal tools
- Enforce specific libraries
- Apply consistent style
- Warn on deprecated patterns

Multi-level instructions priority



Scope	Priority
Personal instructions	Highest
Project instructions	Medium
Organization instructions	Lowest

Example prompt: *"Write a function that calculates the average of a list of numbers."*

```python
def calculate_average(numbers: List[float]) -> float:
    """Calculate the average of a list of numbers.

    Args:
        numbers (List[float]): A list of numbers to average.

    Returns:
        float: The average value of the numbers.

    Raises:
        ValueError: If the list is empty.
    """
    if not numbers:
        raise ValueError("The list of numbers cannot be empty.
    return sum(numbers) / len(numbers)
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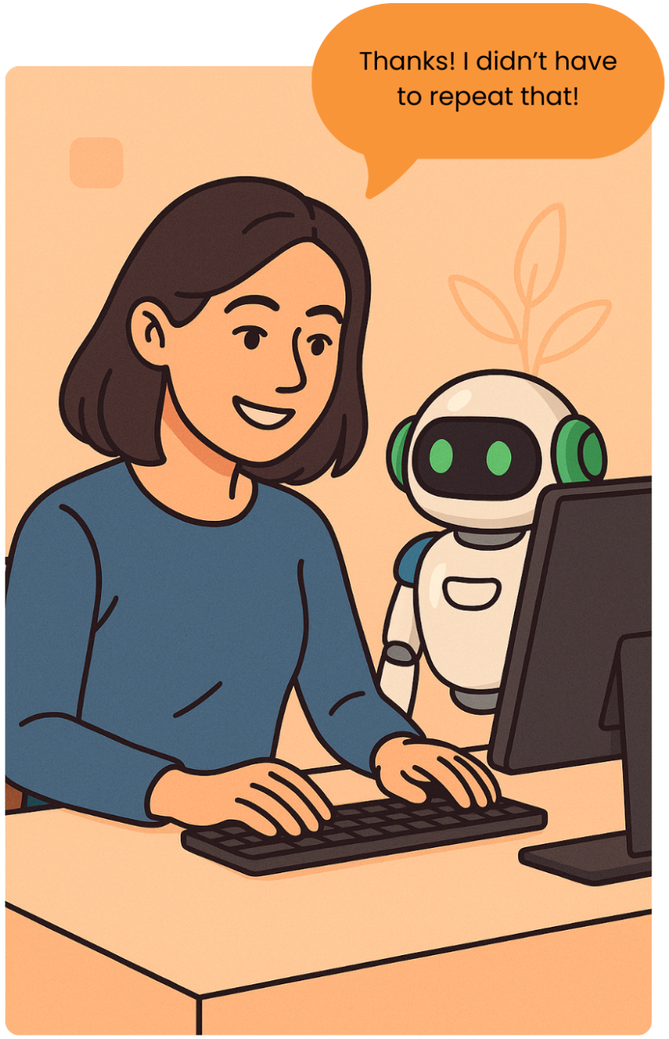

Let's practice!

SOFTWARE DEVELOPMENT WITH GITHUB COPILOT

Selecting and switching models

SOFTWARE DEVELOPMENT WITH GITHUB COPILOT

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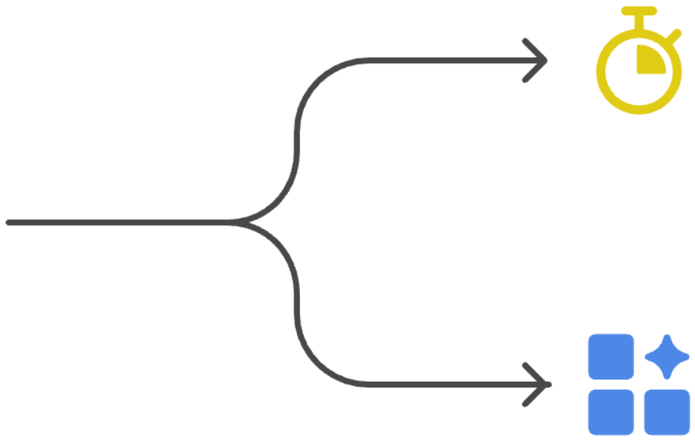
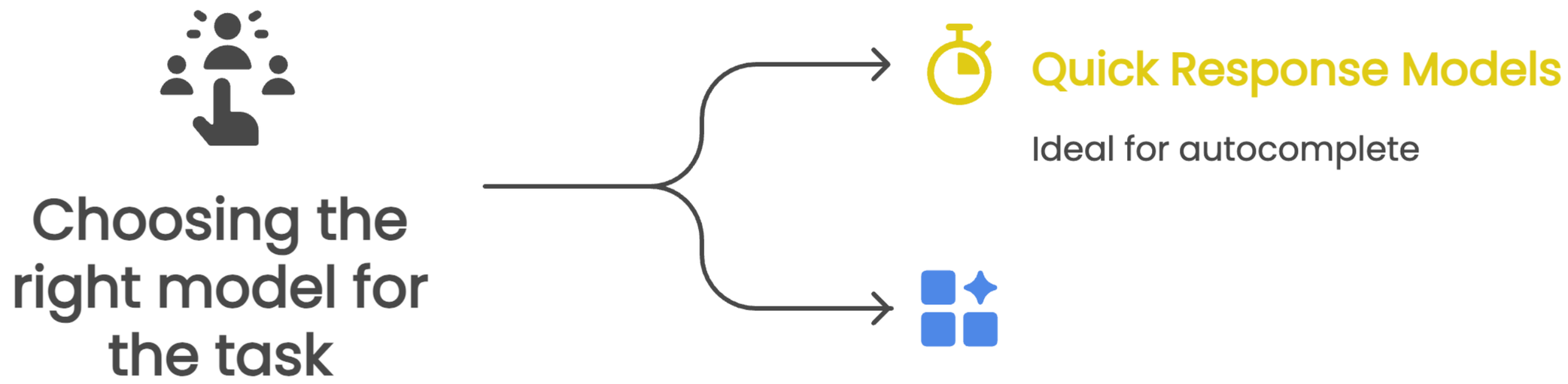
datacamp

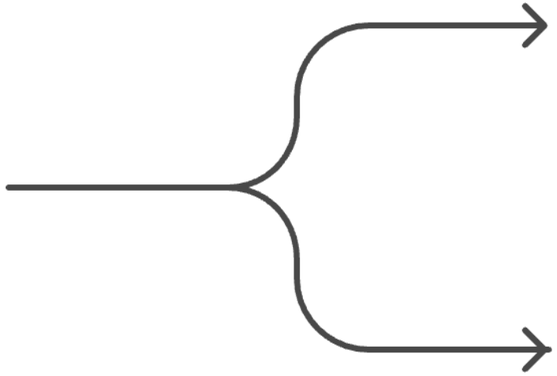

AI

Choosing the right model for the task




Choosing the right model for the task
Quick Response Models
Ideal for autocomplete

Choosing the right model for the task



Quick Response Models

Ideal for autocomplete

Reasoning Models

Best for refactoring, debugging or planning

Not all models are created equal

Model name	Provider	Release status	Agent mode	Ask mode	Edit mode
GPT-4.1	OpenAI	GA	✓	✓	✓
GPT-5-Codex	OpenAI	Public preview	✓	✓	✓
GPT-5 mini	OpenAI	GA	✓	✓	✓
GPT-5	OpenAI	GA	✓	✓	✓
o3	OpenAI	Closing down: 2025-10-23	✗	✓	✓
o4-mini	OpenAI	Closing down: 2025-10-23	✓	✓	✓
Claude Opus 4.1	Anthropic	GA	✓	✓	✓
Claude Opus 4	Anthropic	Closing down: 2025-10-23	✗	✓	✓

[1] https://docs.github.com/en/copilot/reference/ai-models/supported-models

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o4-mini	OpenAI	Closing down: 2025-10-23	✓	✓	✓
Claude Opus 4.1	Anthropic	GA	✓	✓	✓
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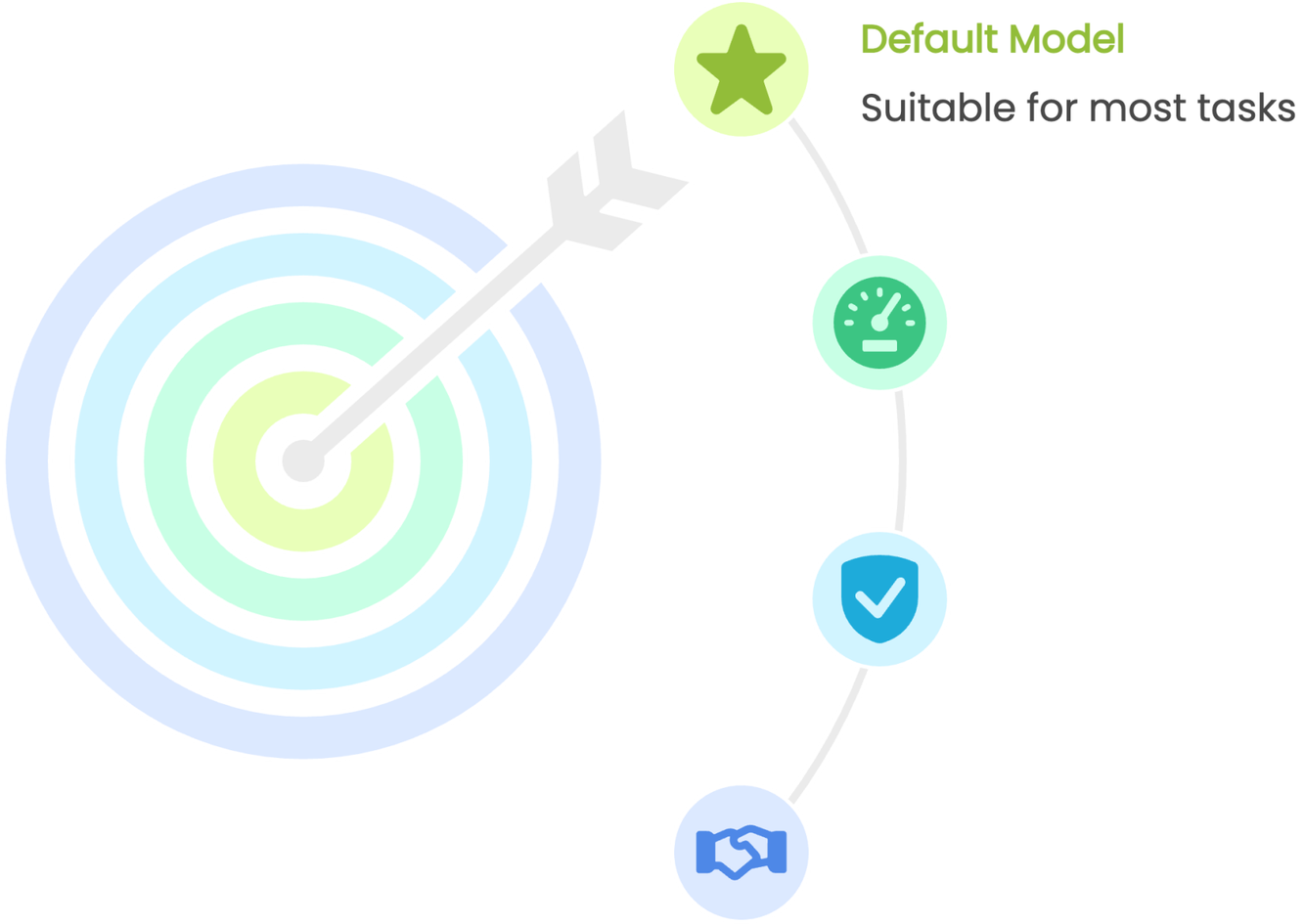
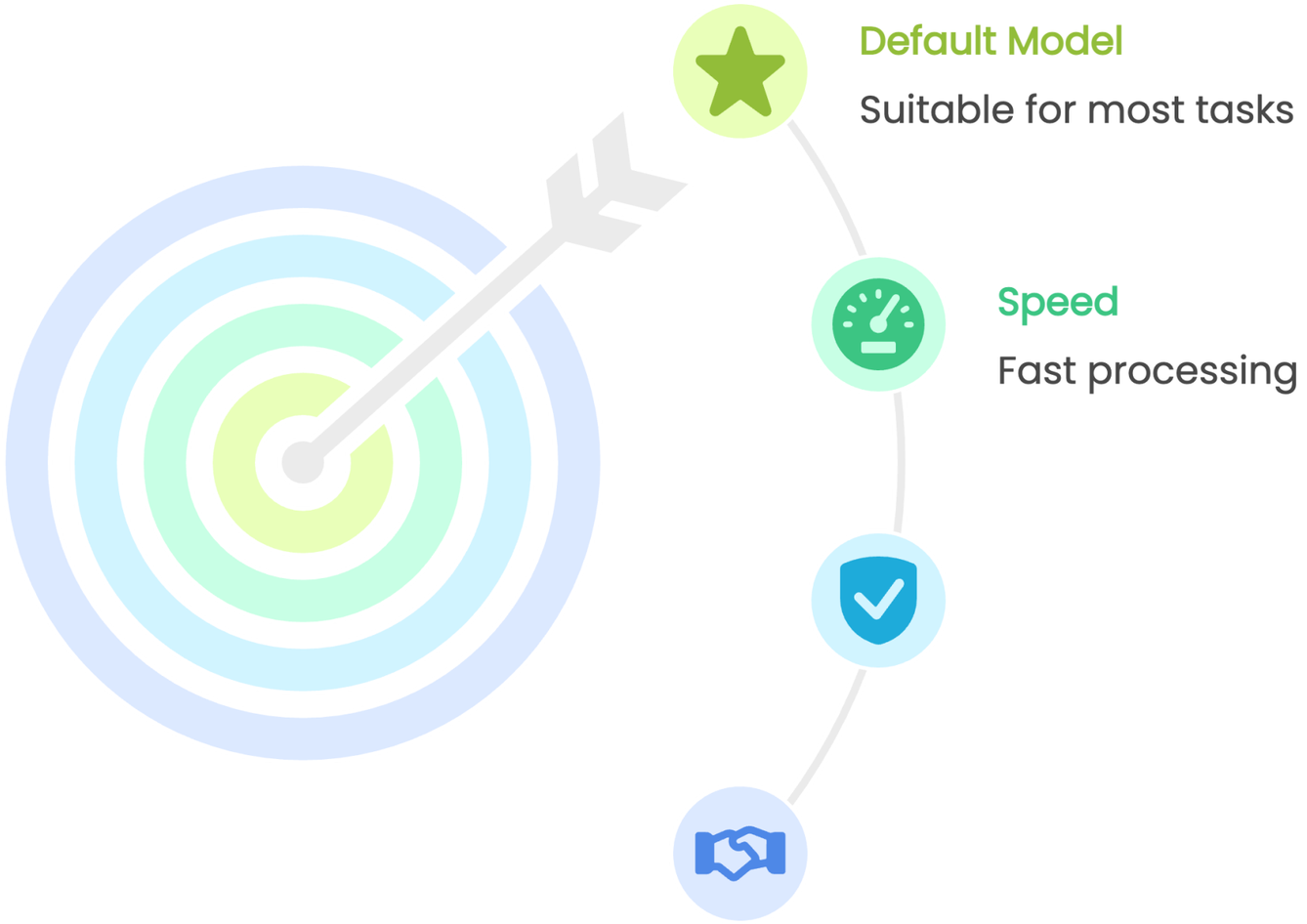

Default Model
Suitable for most tasks


Default Model
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Speed
Fast processing

Default Model

Suitable for most tasks

Speed

Fast processing

Reliability

Reliable performance

Default Model

Suitable for most tasks

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Fast processing

Reliability

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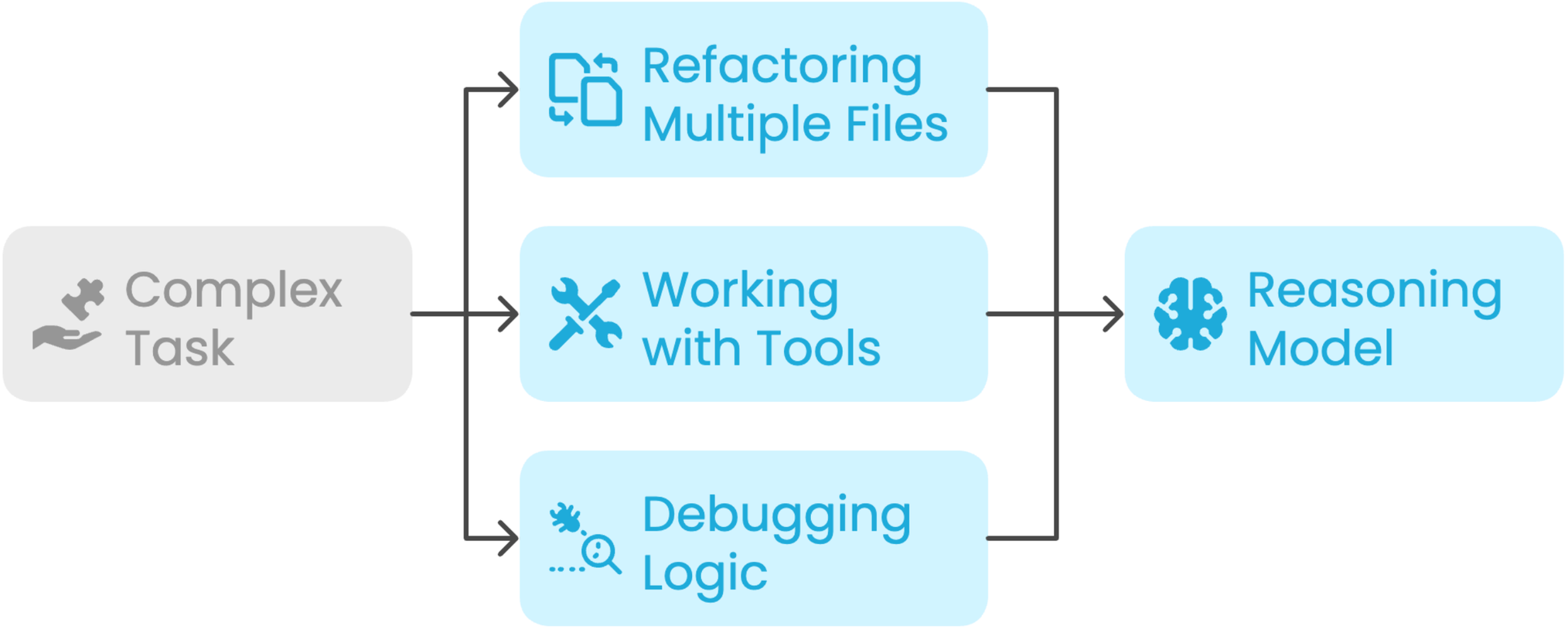
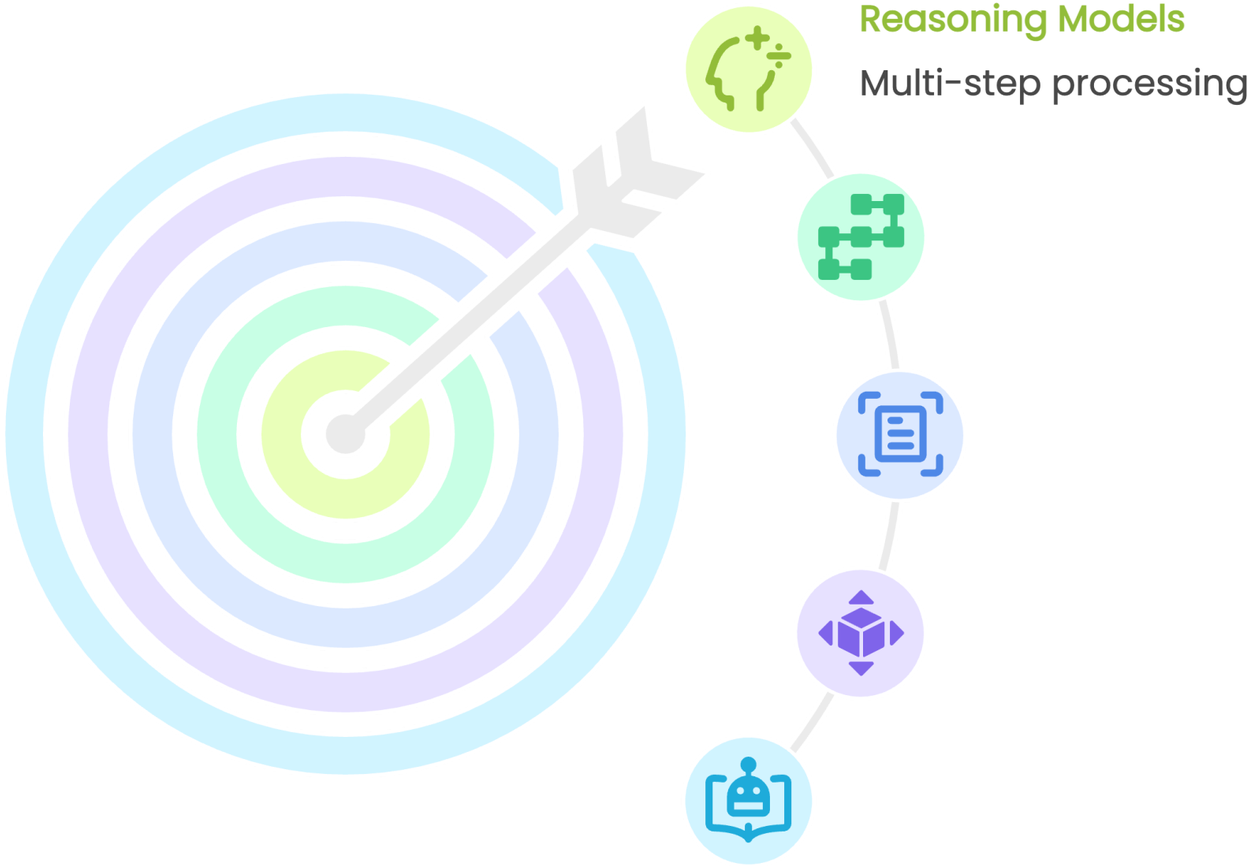
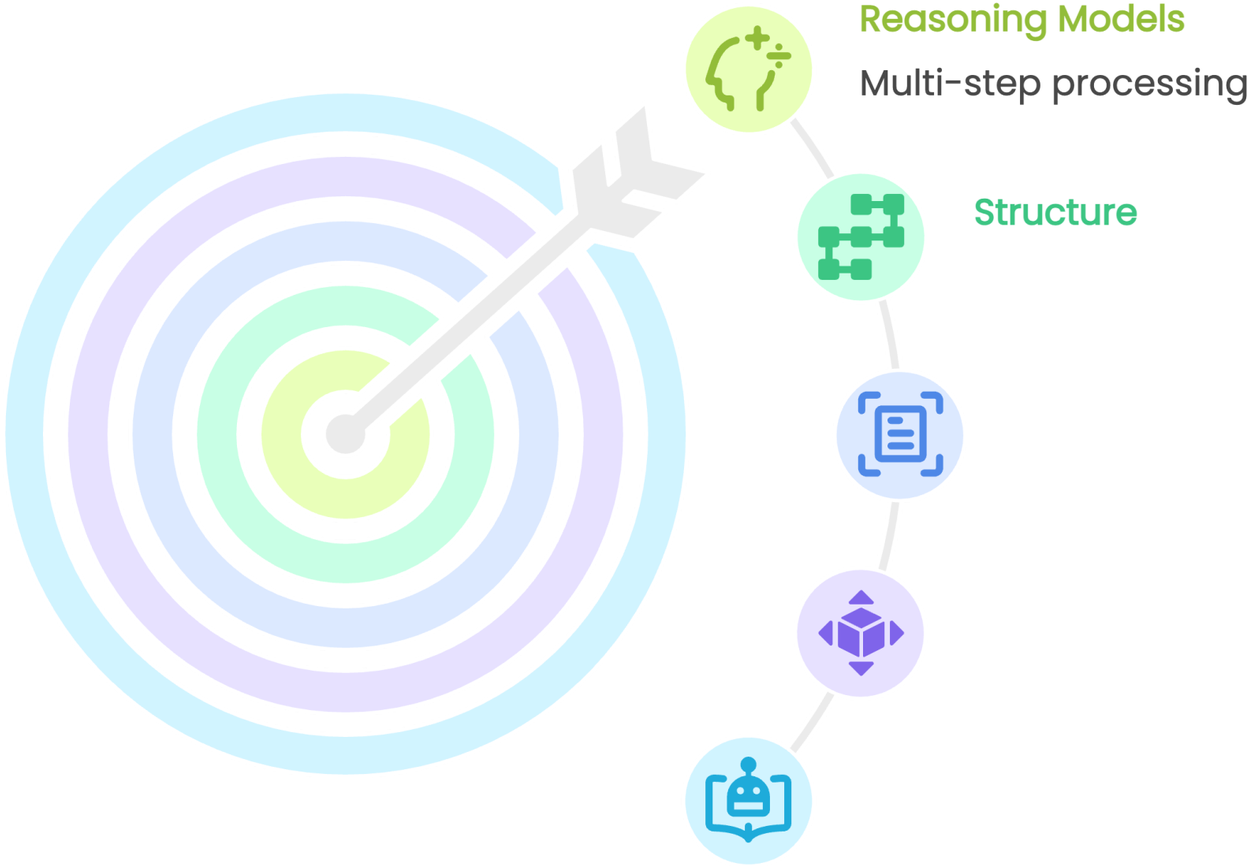
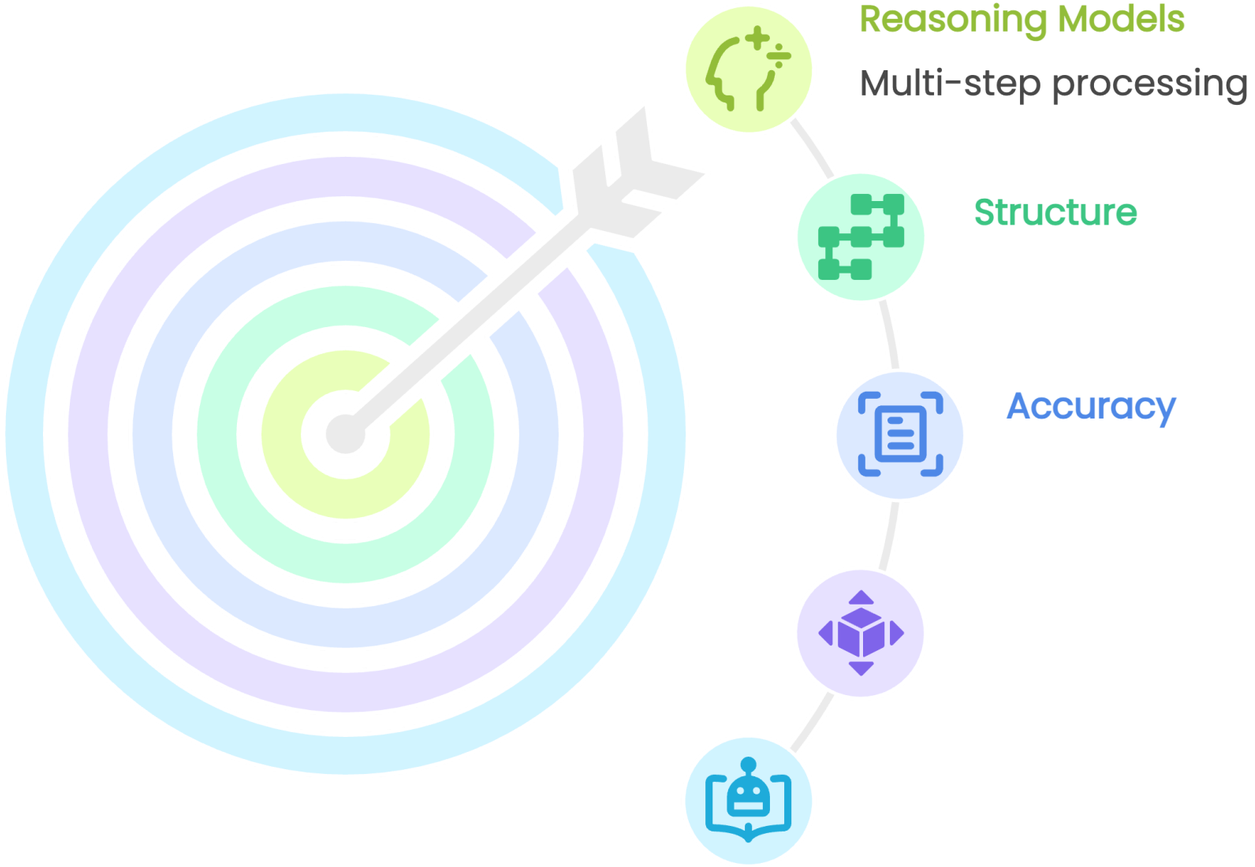
Modes

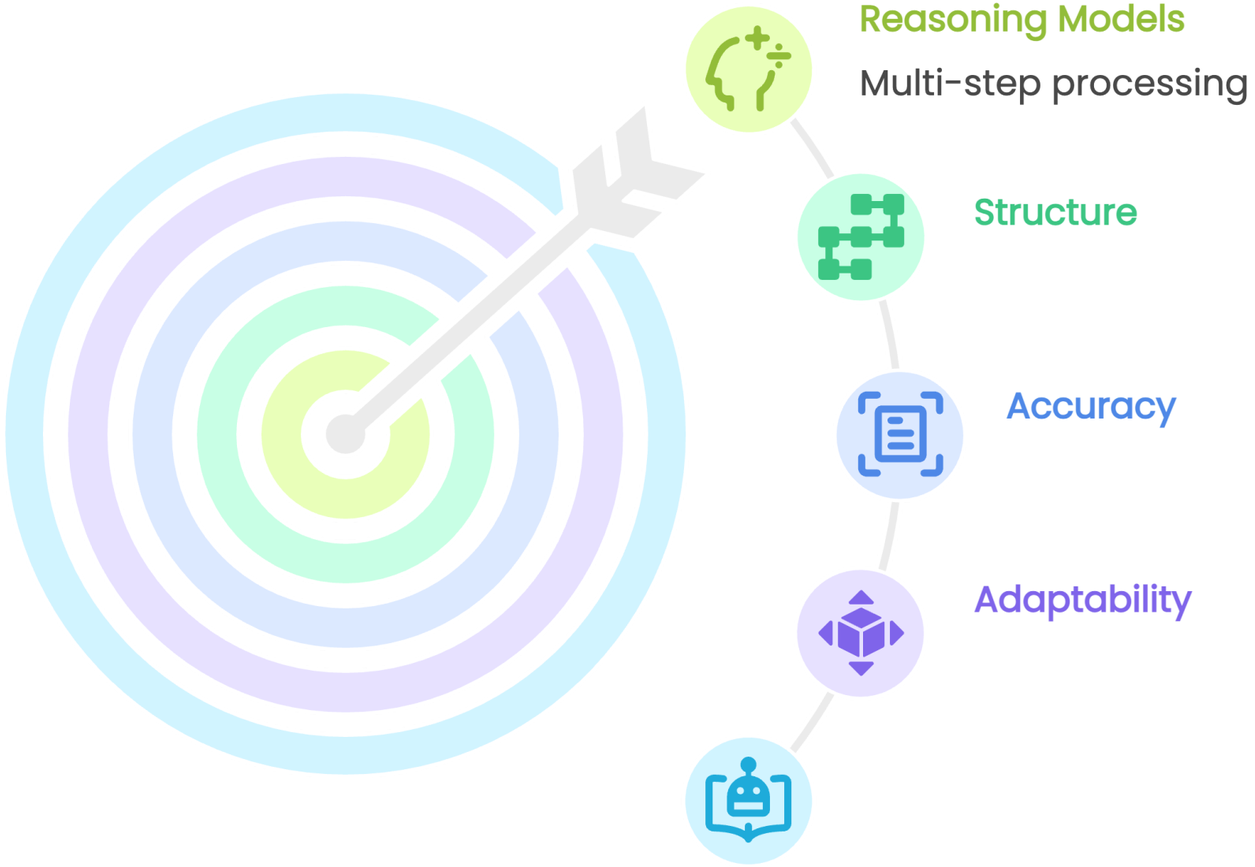
Works across all modes


Complex Task
Refactoring Multiple Files
Working with Tools
Debugging Logic
Reasoning Model


Reasoning Models
Multi-step processing


Reasoning Models
Multi-step processing
Structure


Reasoning Models
Multi-step processing
Structure
Accuracy


Reasoning Models
Multi-step processing
Structure
Accuracy
Adaptability

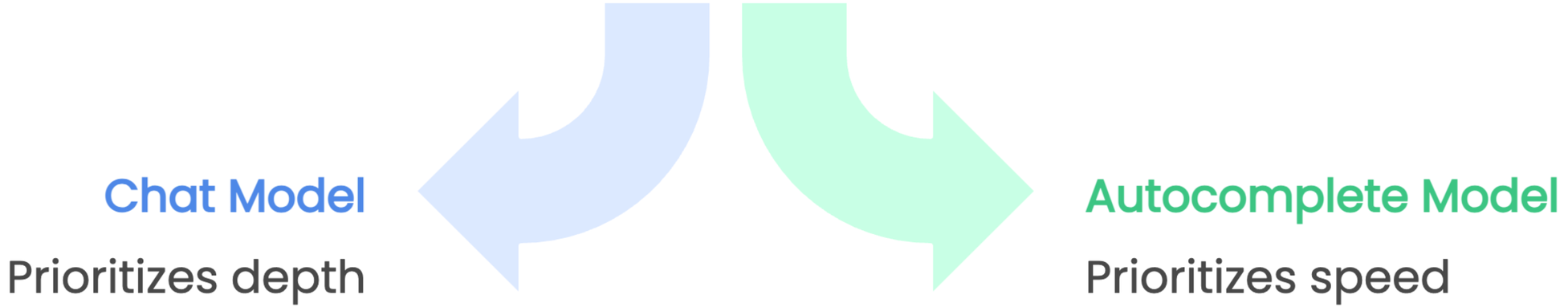

Reasoning Models
Multi-step processing
Structure
Accuracy
Adaptability
Agent Mode

Choosing the right model for the interface

Chat Model

Prioritizes depth

Choosing the right model for the interface



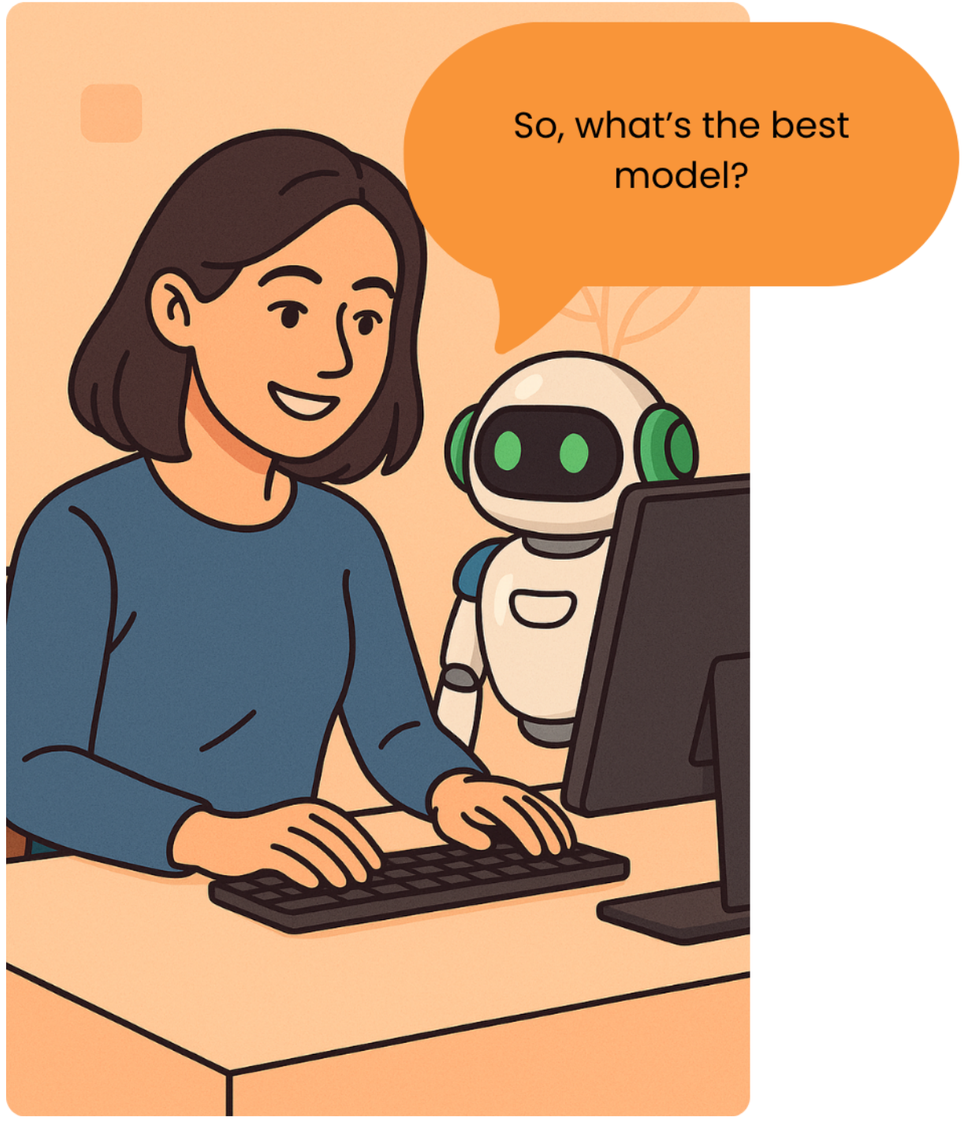
Bring your own API key

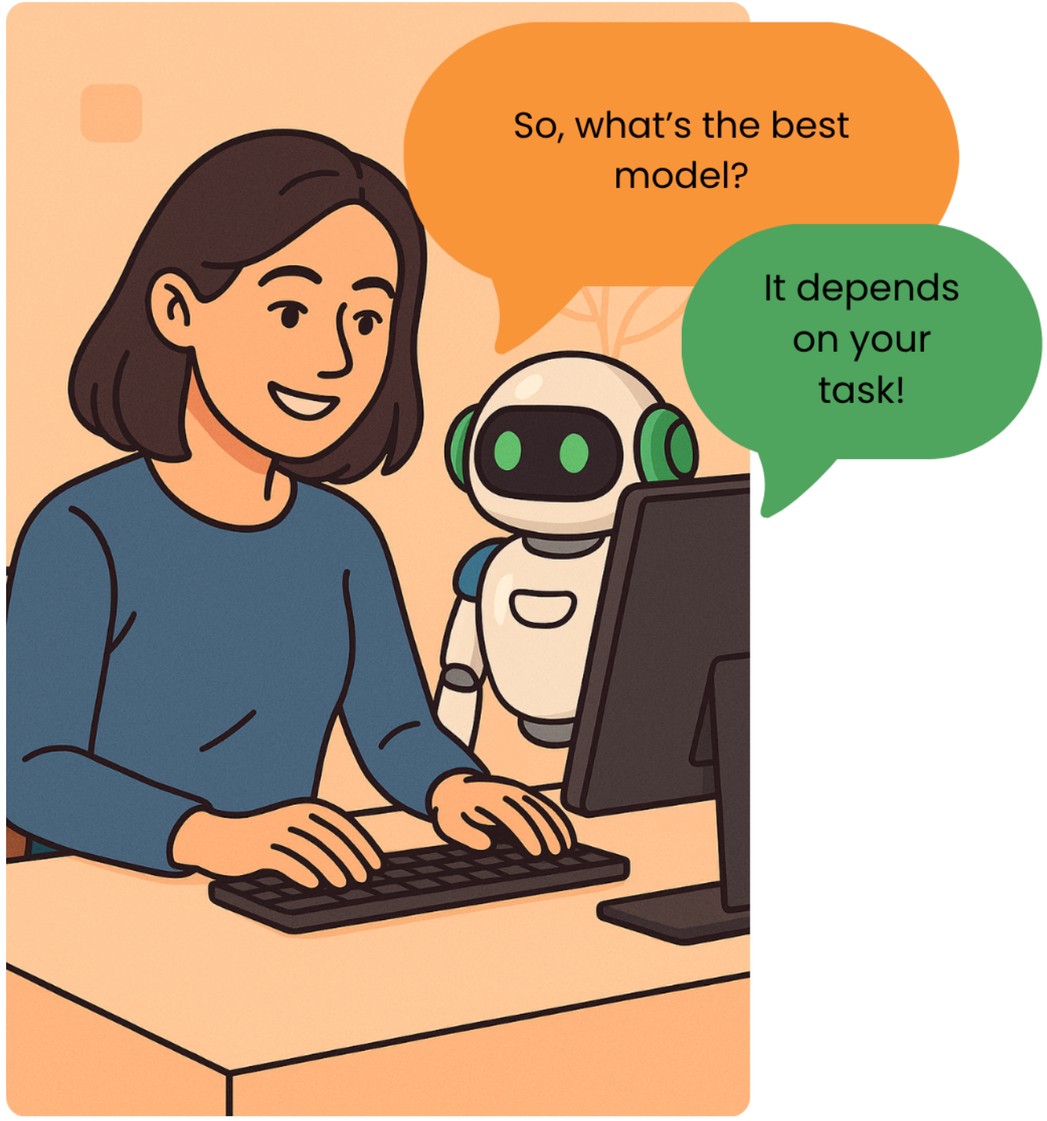
- **Test** newer models
- Use **local** or **private** deployments
- **Bypass** rate limits
- Explore **advanced use cases**

Note: Only available to individual users

Bring your own API key: limitations

- Only applies to **chat** (not completions or commit messages)
- May lack **features:** tool support, vision, syntax awareness
- Copilot relies on its own systems for **indexing**


So, what's the best model?


So, what's the best model?
It depends on your task!

Let's practice!

SOFTWARE DEVELOPMENT WITH GITHUB COPILOT

Extending Copilot with MCP tools

SOFTWARE DEVELOPMENT WITH GITHUB COPILOT

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datacamp

What is MCP?

What is MCP?

MCP is an open-source standard that allows Copilot to use external tools and services through a unified interface.

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MCP is an open-source standard that allows Copilot to use external tools and services through a unified interface.

Can you explain it in simpler terms?

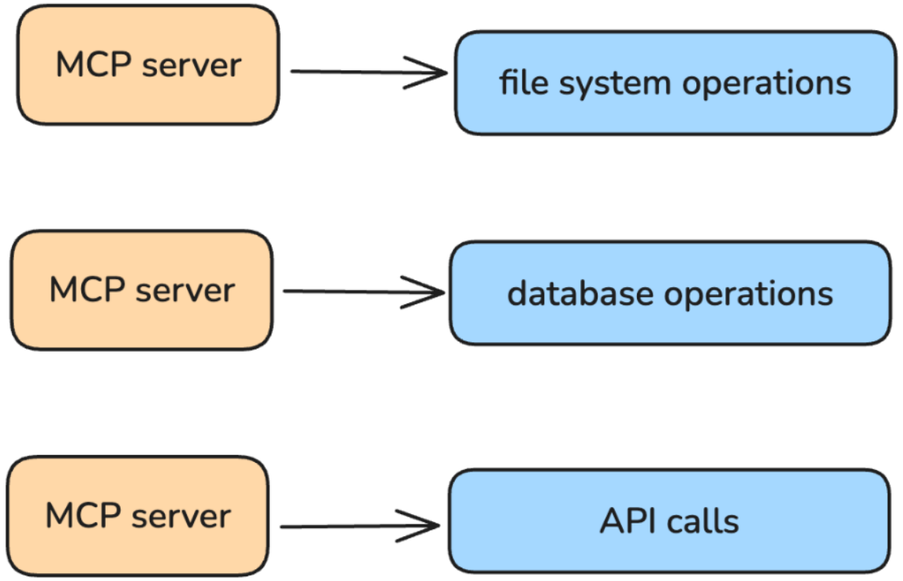
What is MCP?

MCP is an open-source standard that allows Copilot to use external tools and services through a unified interface.

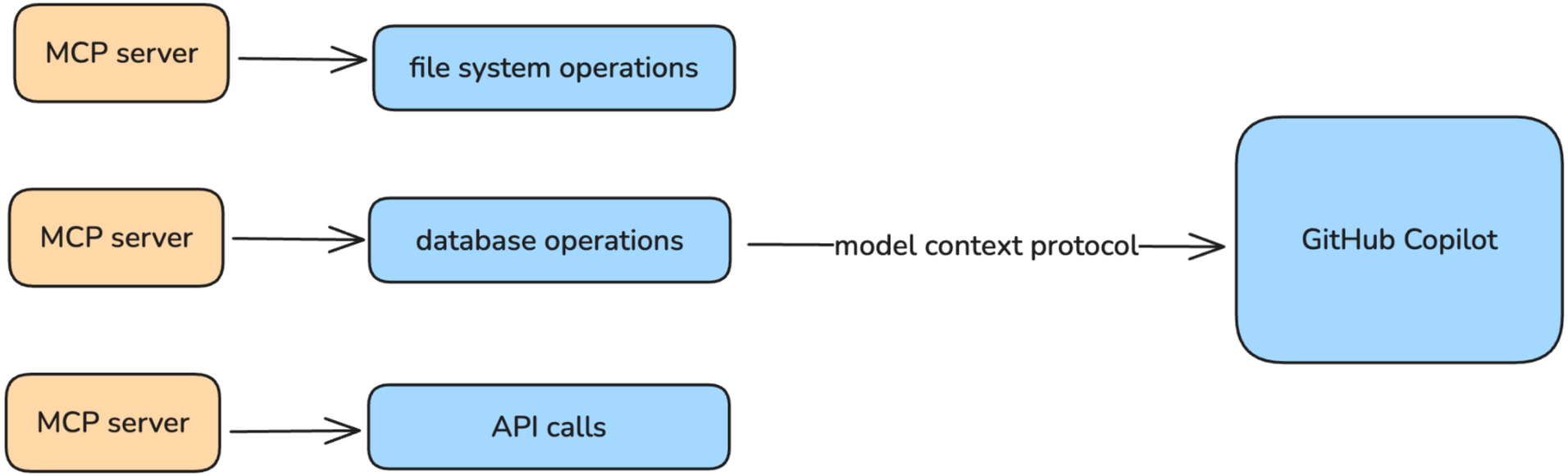
Can you explain it in simpler terms?

Think of it as a bridge between AI agents, like GitHub Copilot, and the outside world.

How MCP servers work



How MCP servers work



How the MCP works with GitHub Copilot

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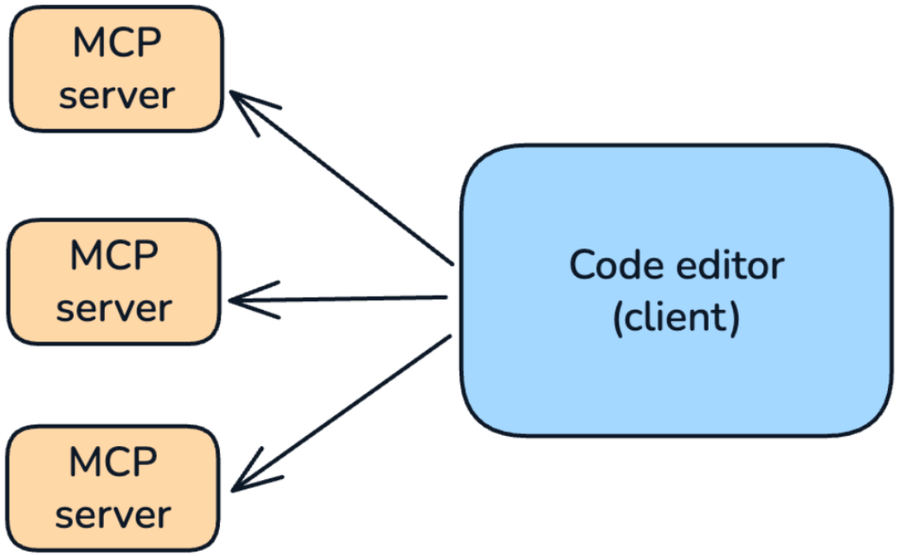

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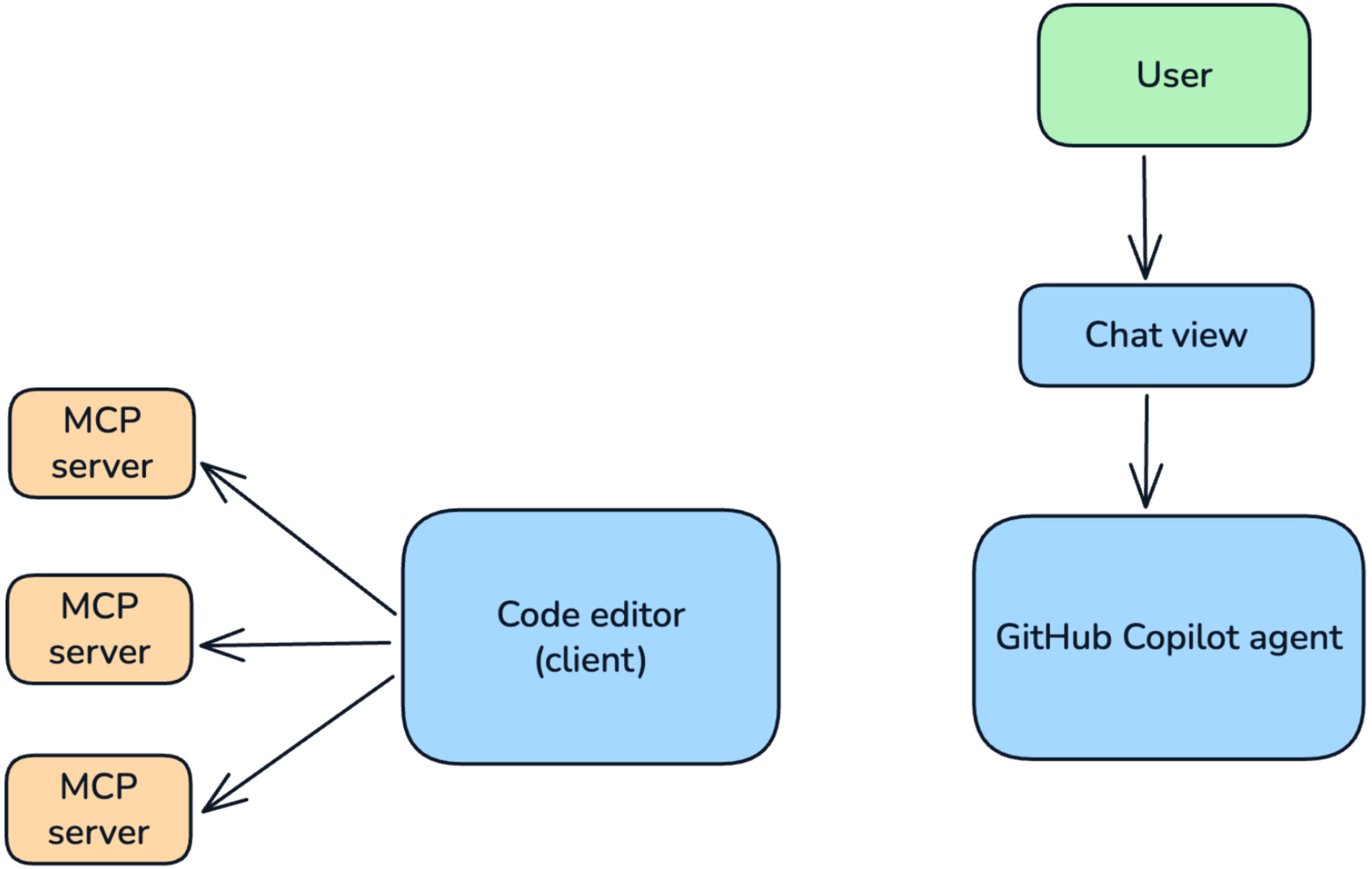

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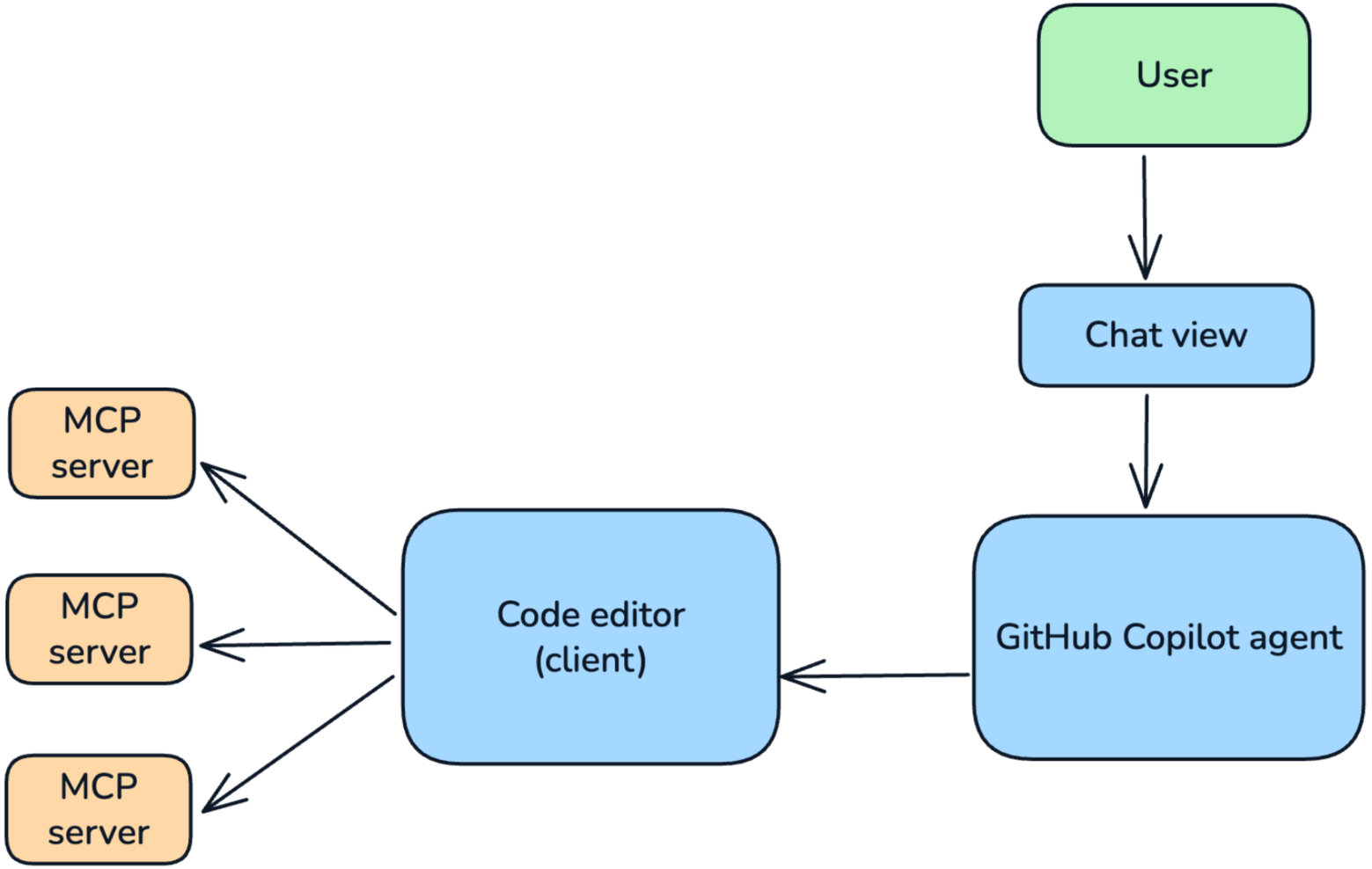

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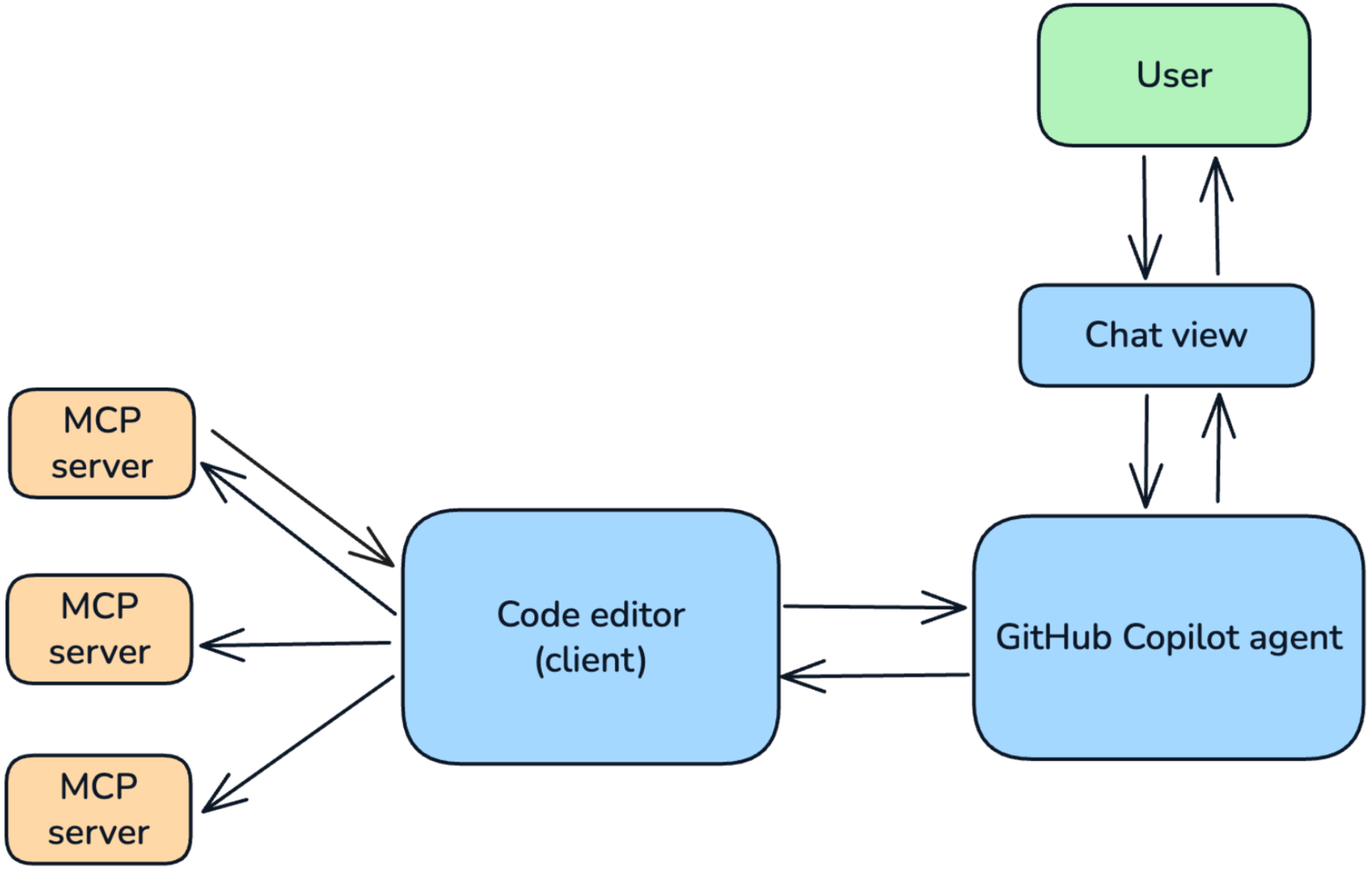

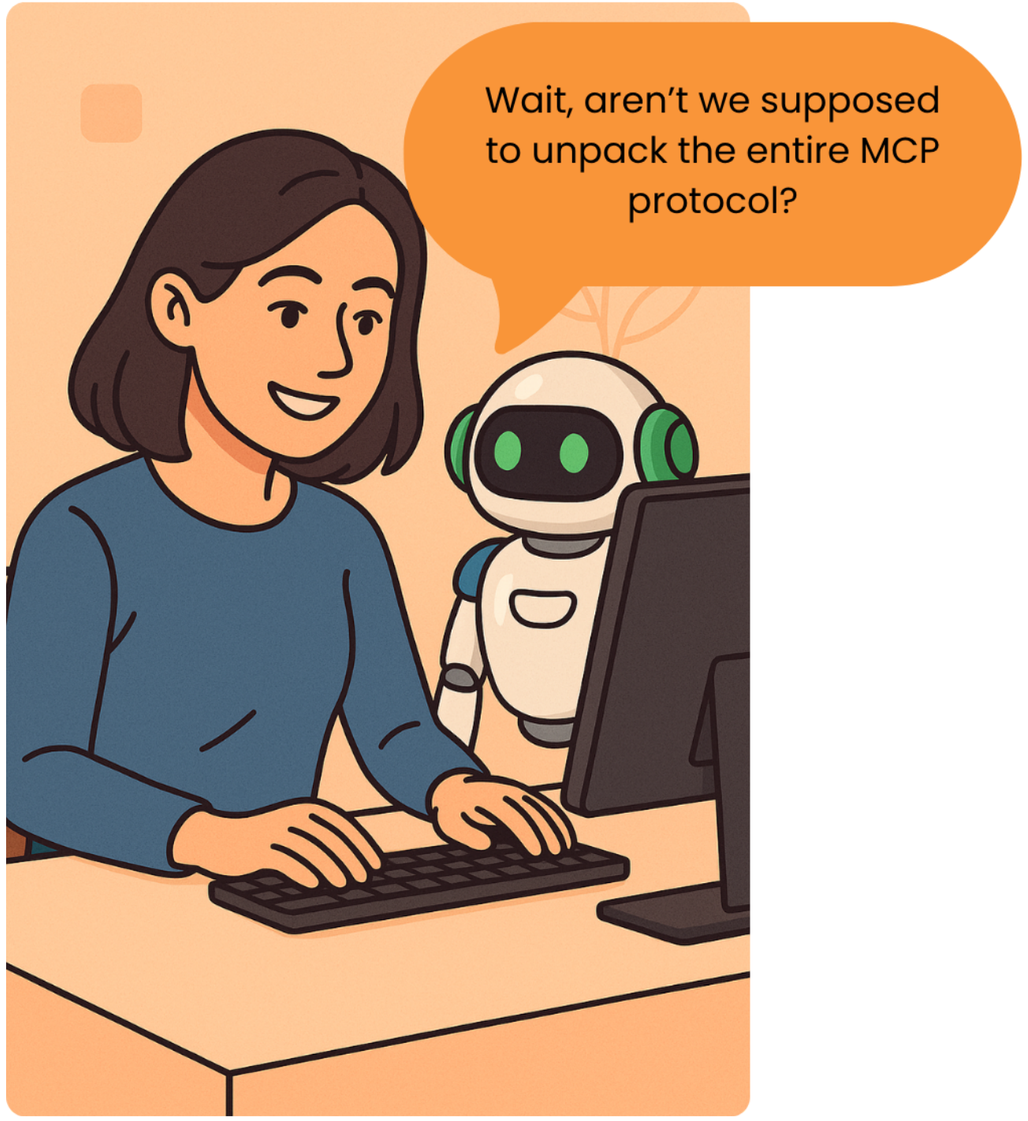
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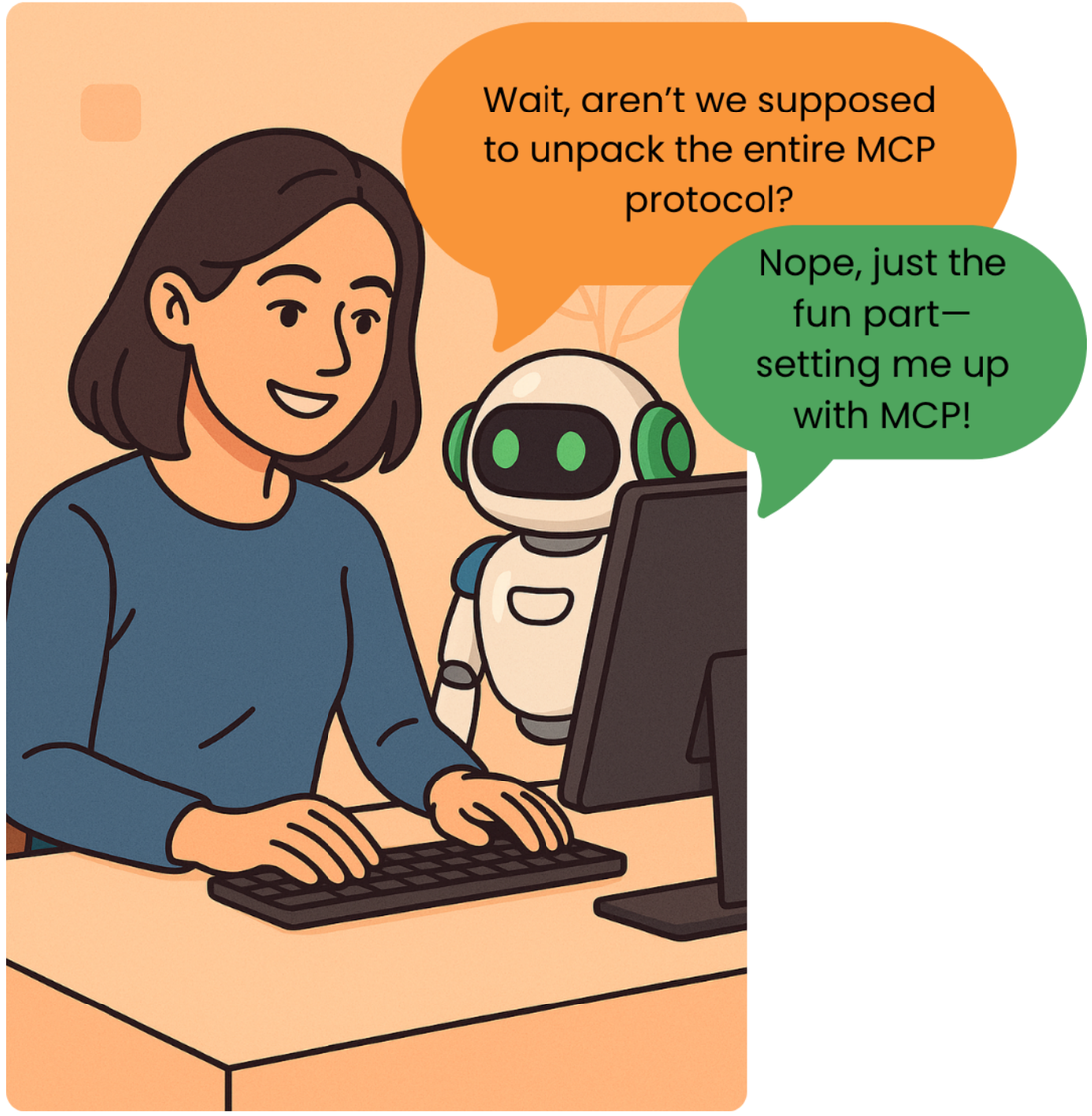
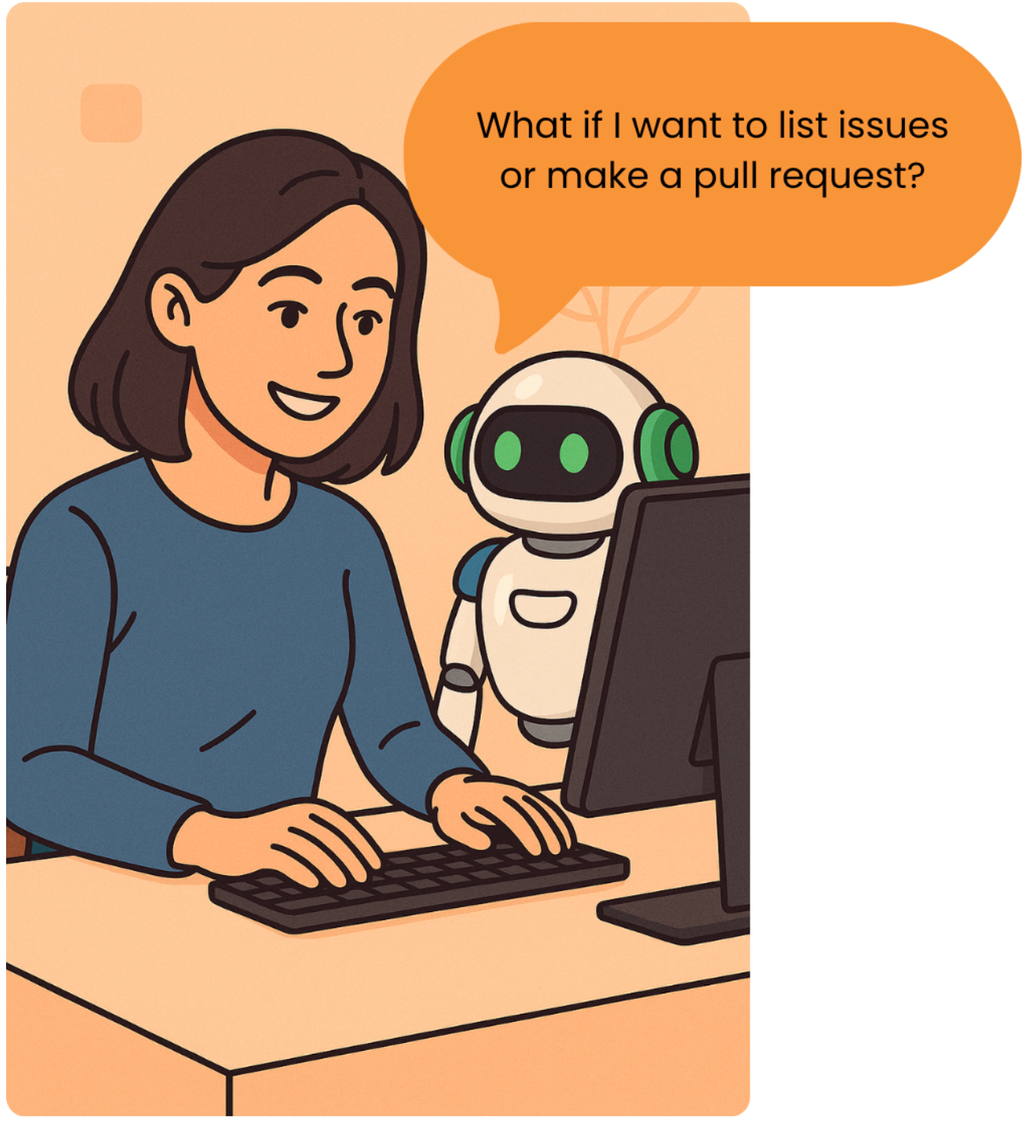

Wait, aren't we supposed to unpack the entire MCP protocol?
Nope, just the fun part—setting me up with MCP!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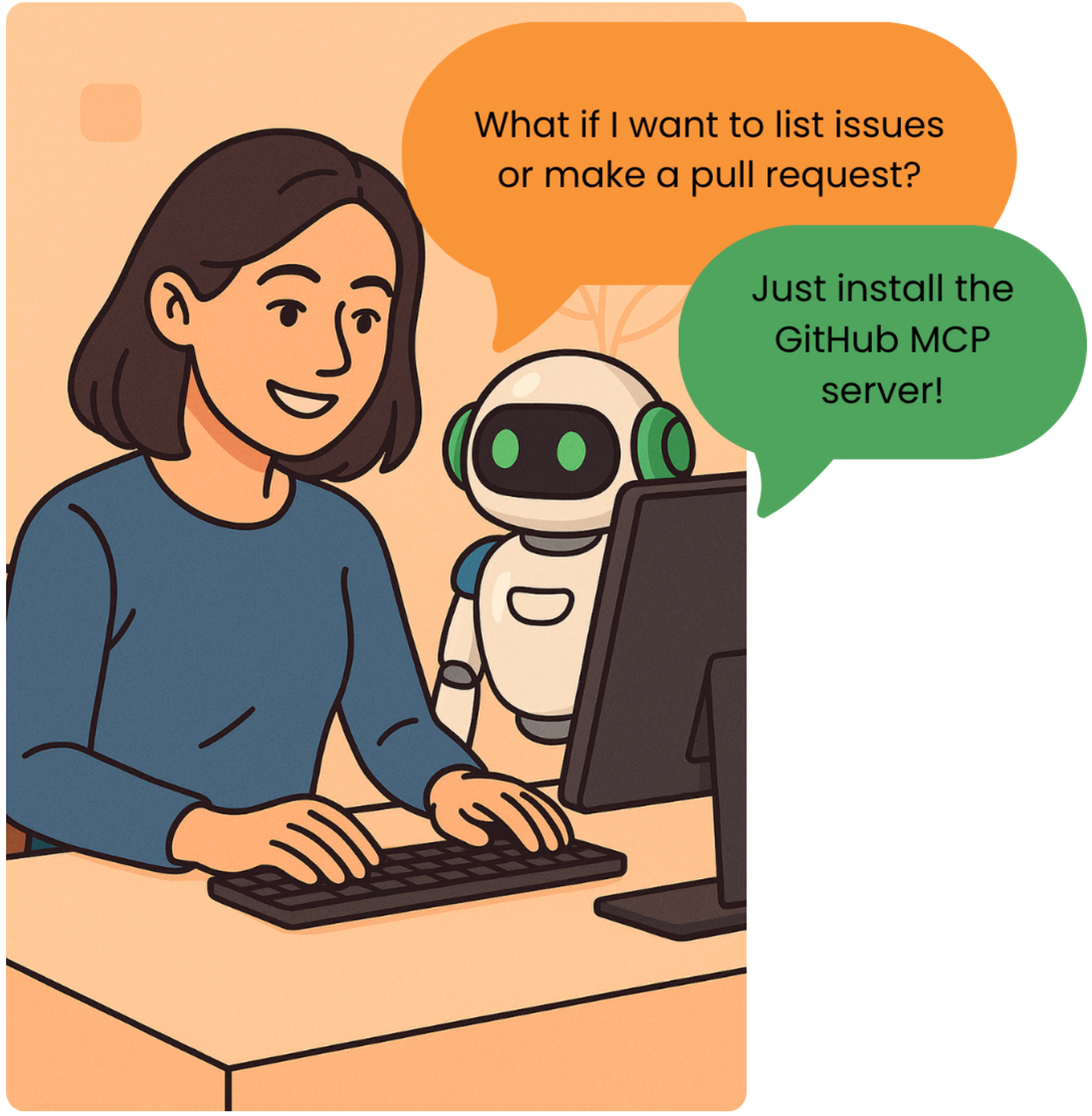
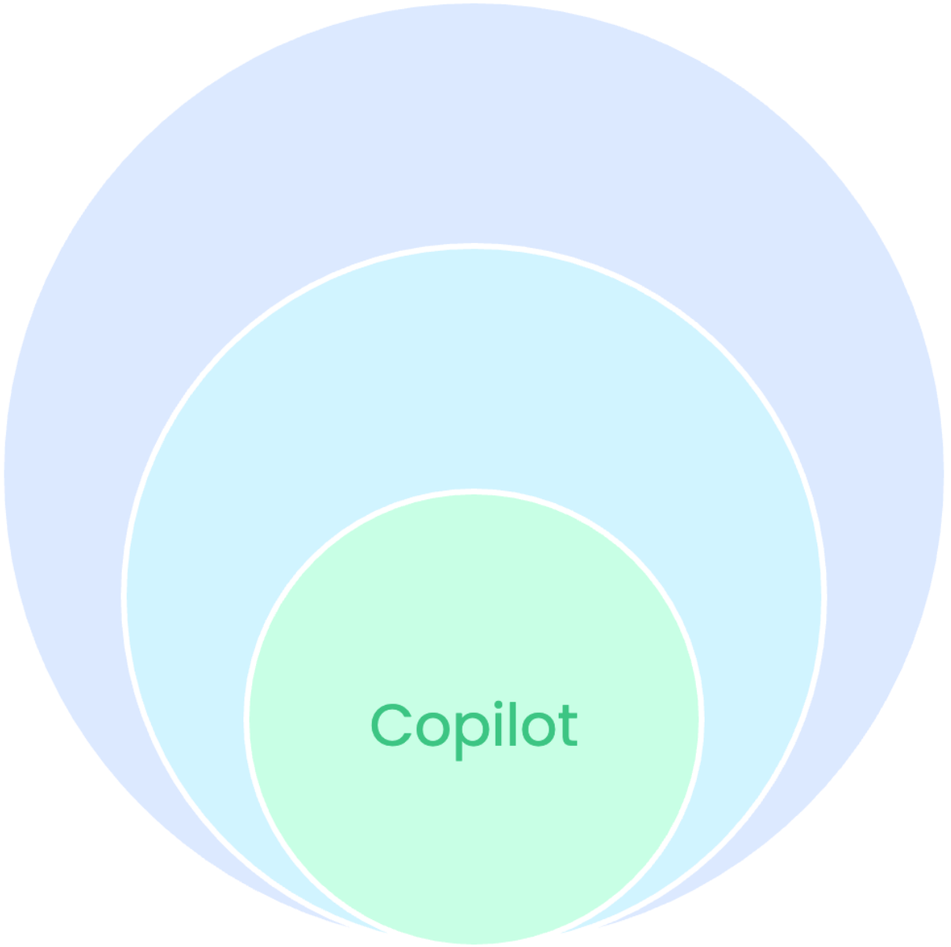
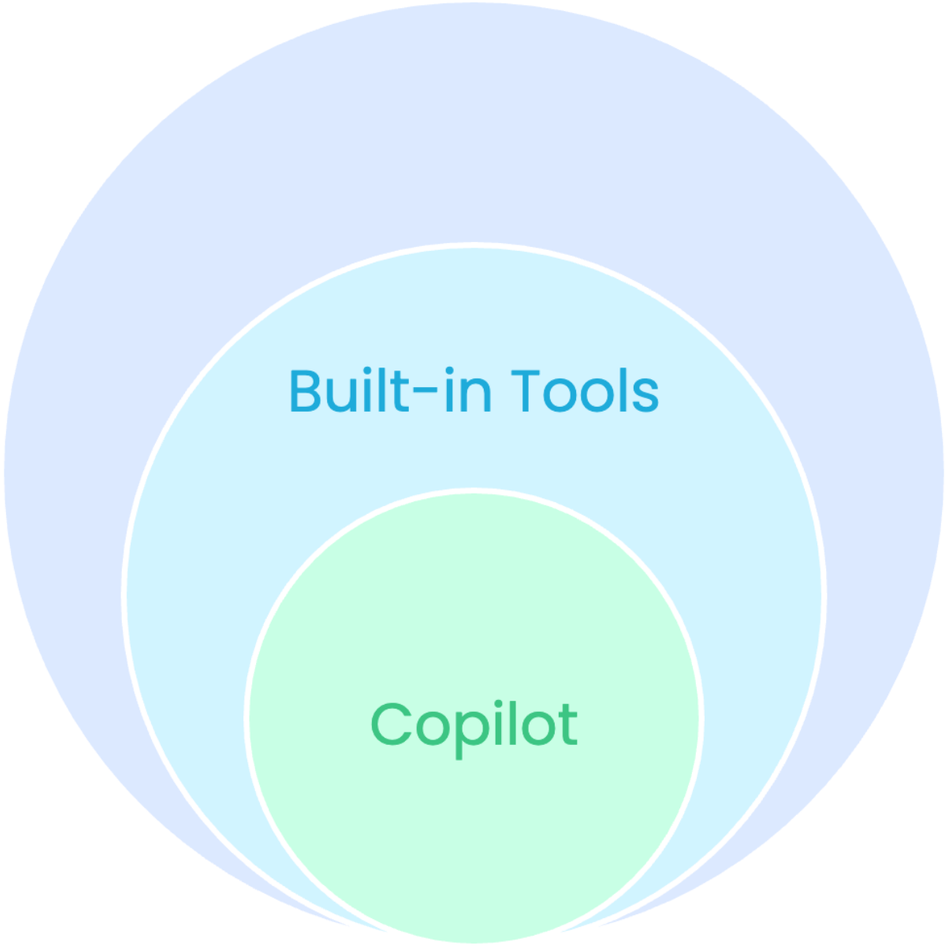

What if I want to list issues or make a pull request?
Just install the GitHub MCP server!

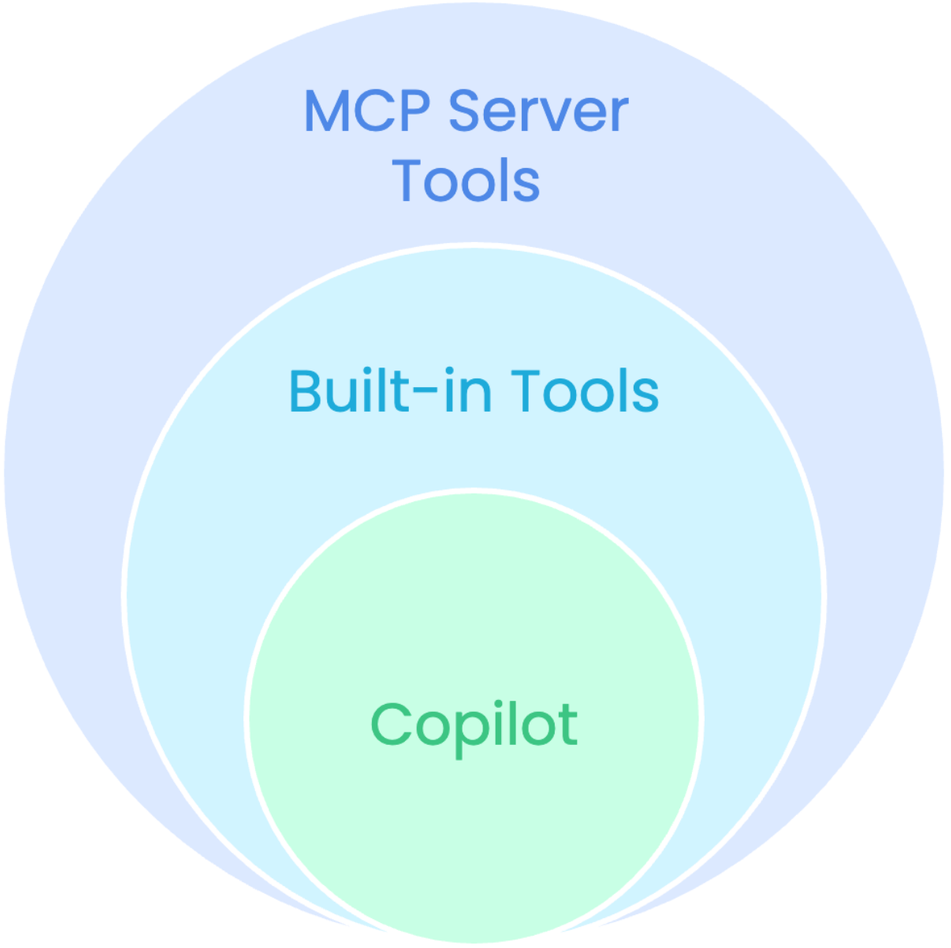
MCP servers extend Copilot's toolset



MCP servers extend Copilot's toolset

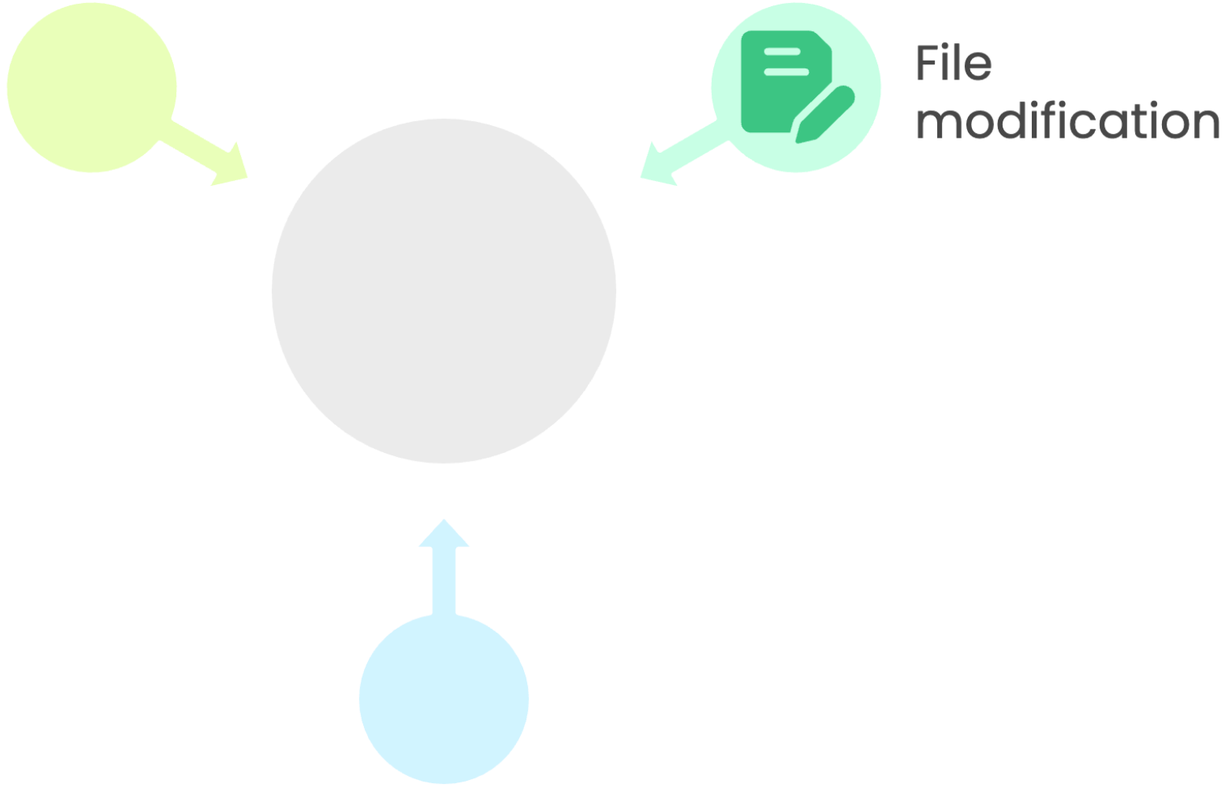


MCP servers extend Copilot's toolset

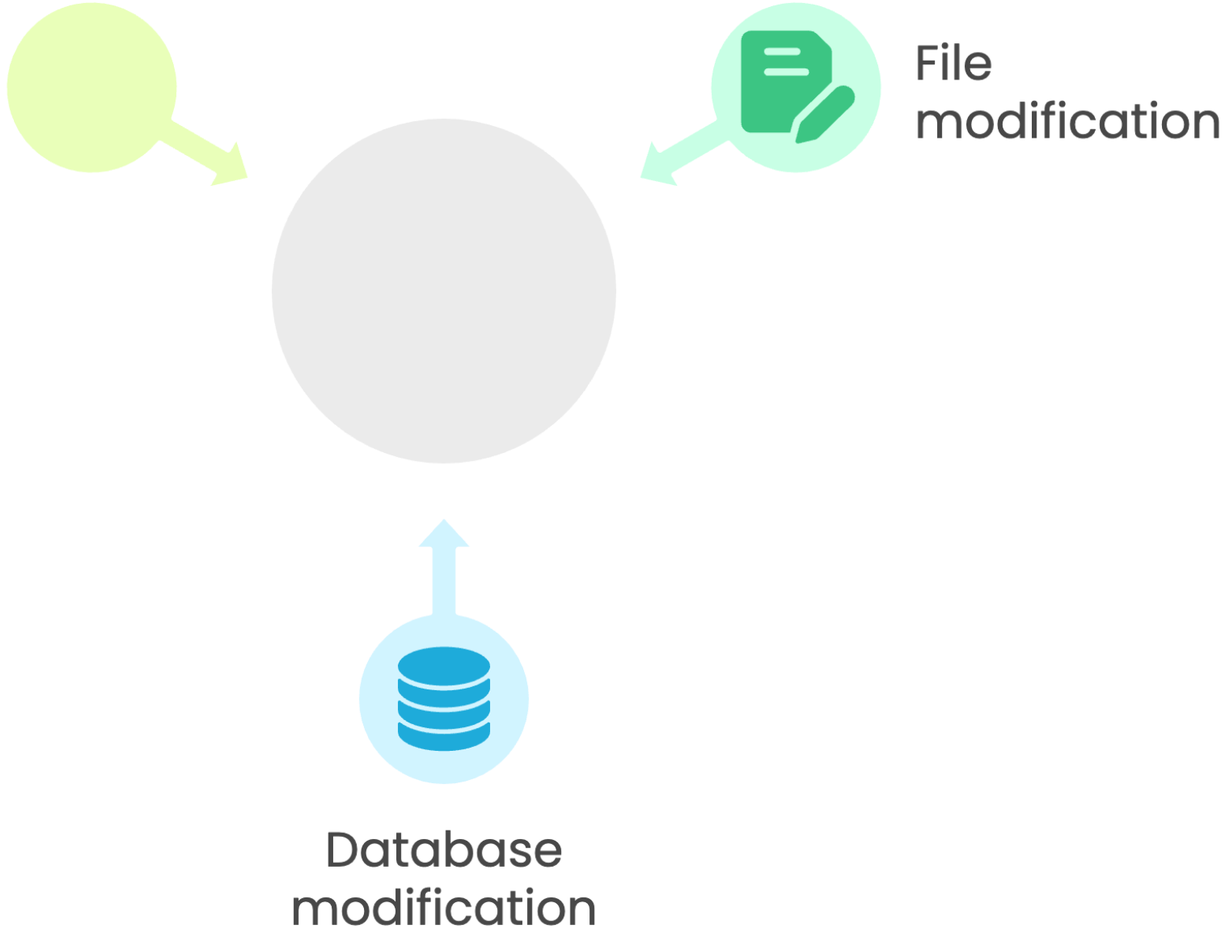


MCP security considerations

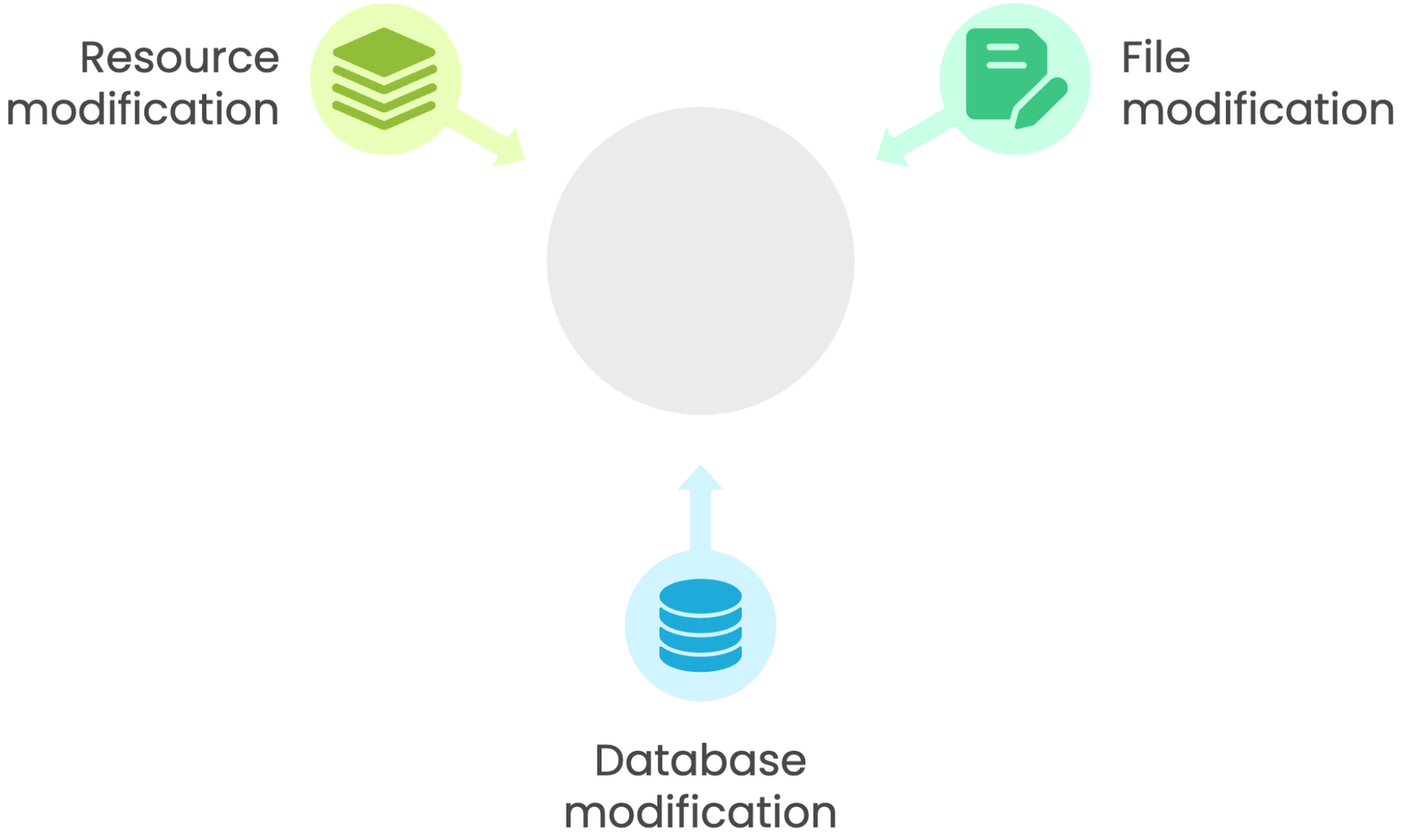
MCP security considerations



MCP security considerations



MCP security considerations



MCP security considerations

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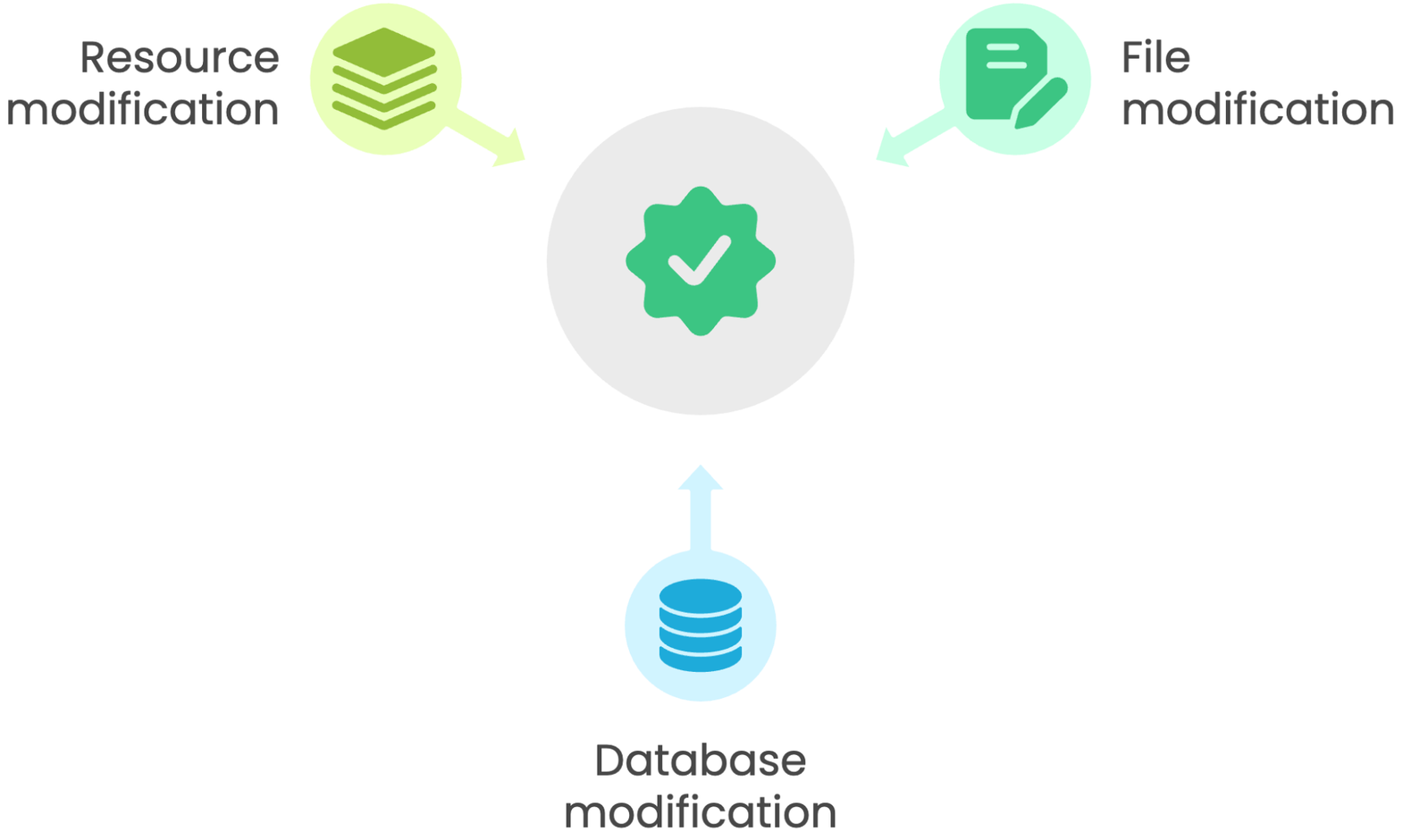


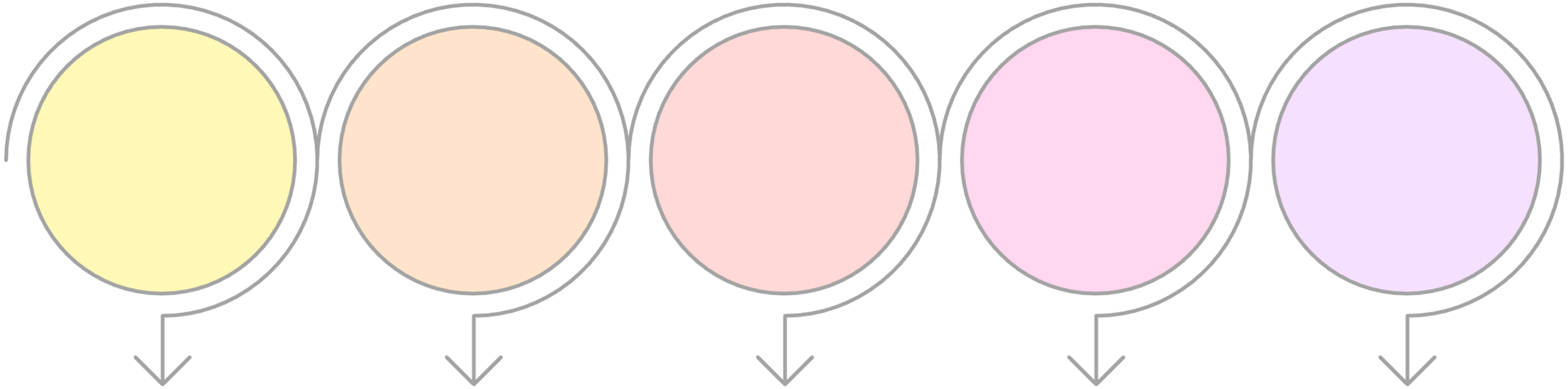
Let's practice!

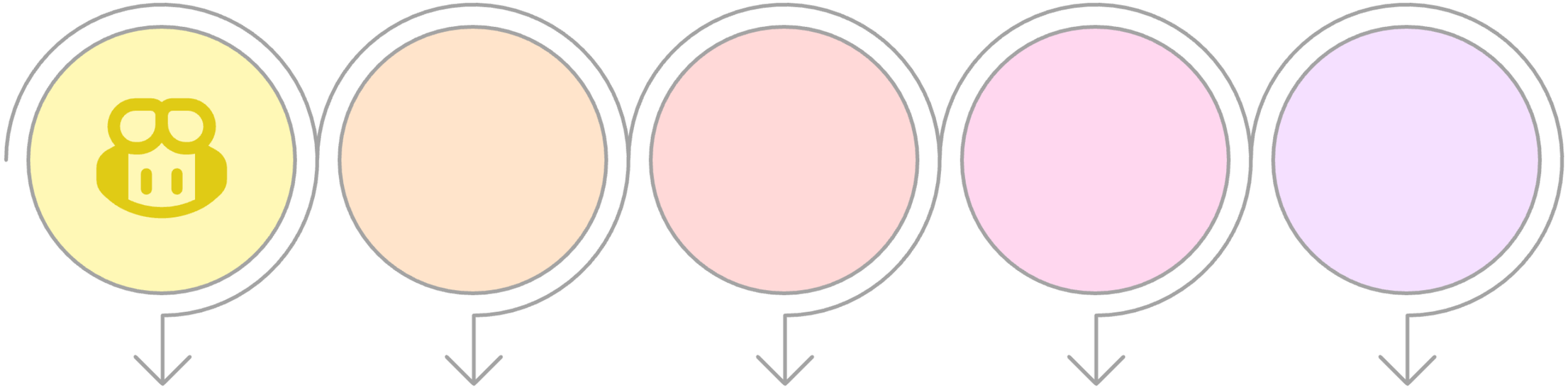
SOFTWARE DEVELOPMENT WITH GITHUB COPILOT

Congratulations!

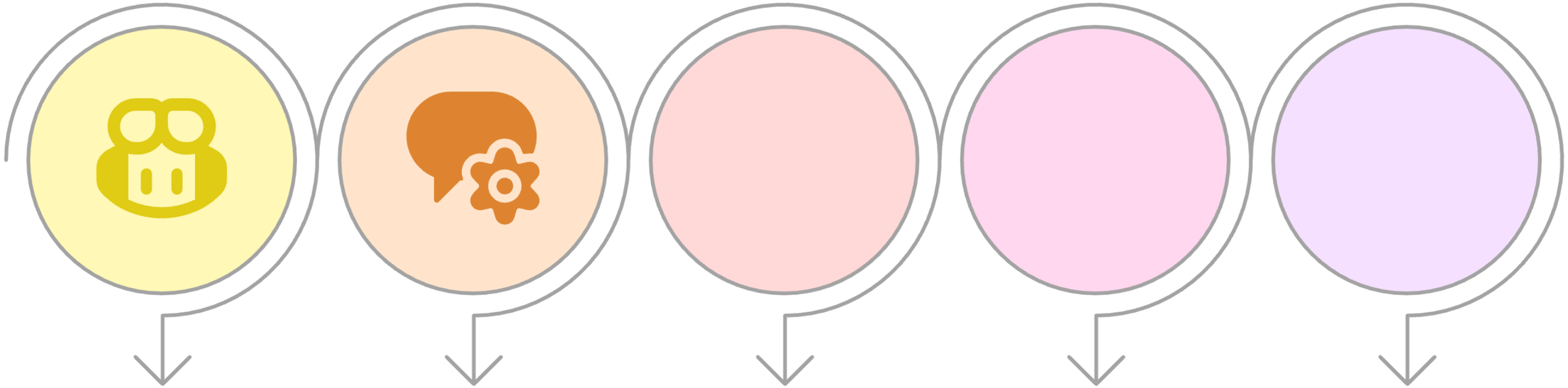
SOFTWARE DEVELOPMENT WITH GITHUB COPILOT

Thalia Barrera
AI Engineering Curriculum Manager, DataCamp



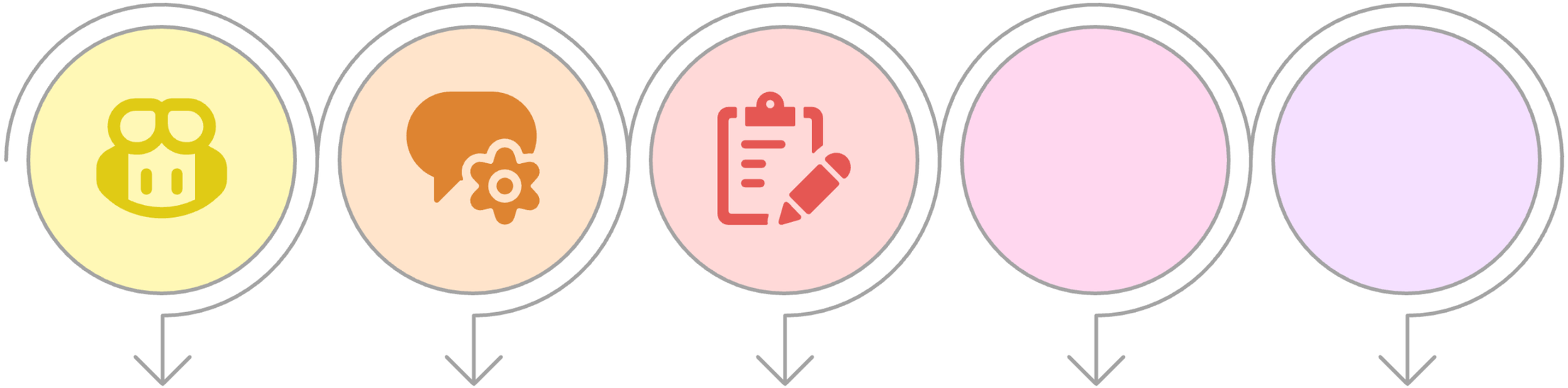


Copilot Introduction



Copilot Introduction

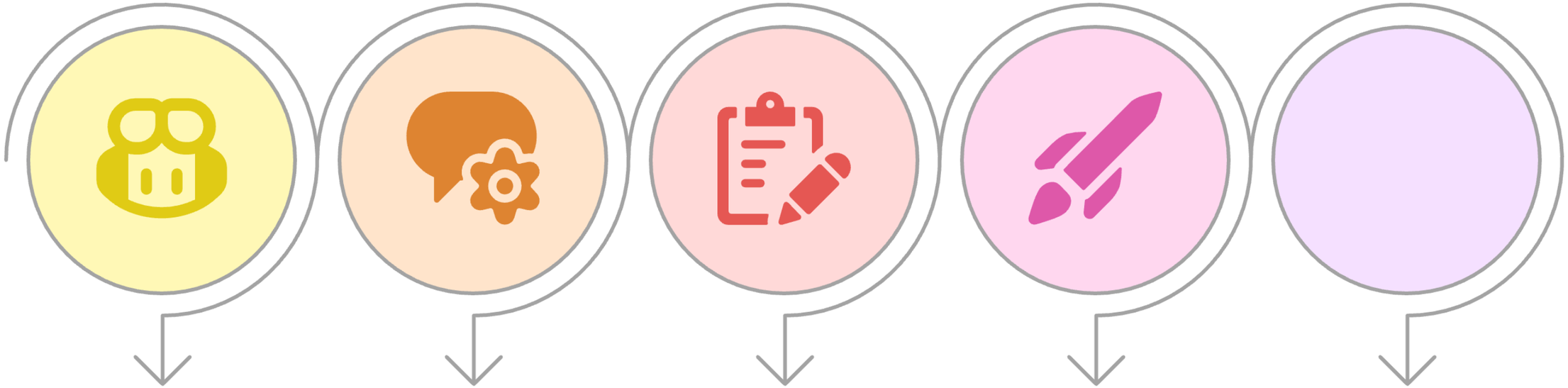
Interacting with Copilot



Copilot Introduction

Interacting with Copilot

Providing Context

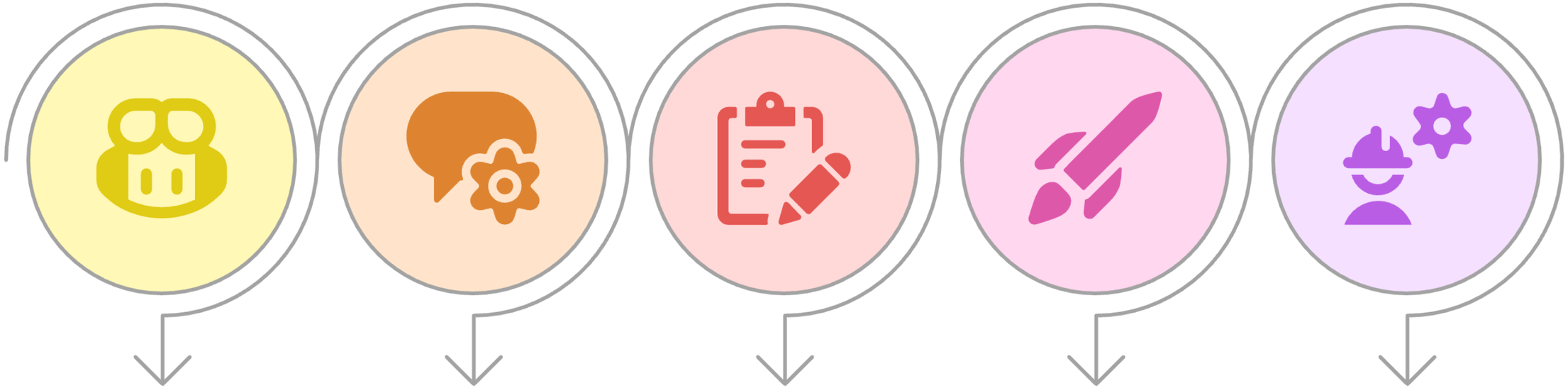


Copilot Introduction

Interacting with Copilot

Providing Context

Productivity Features



Copilot Introduction

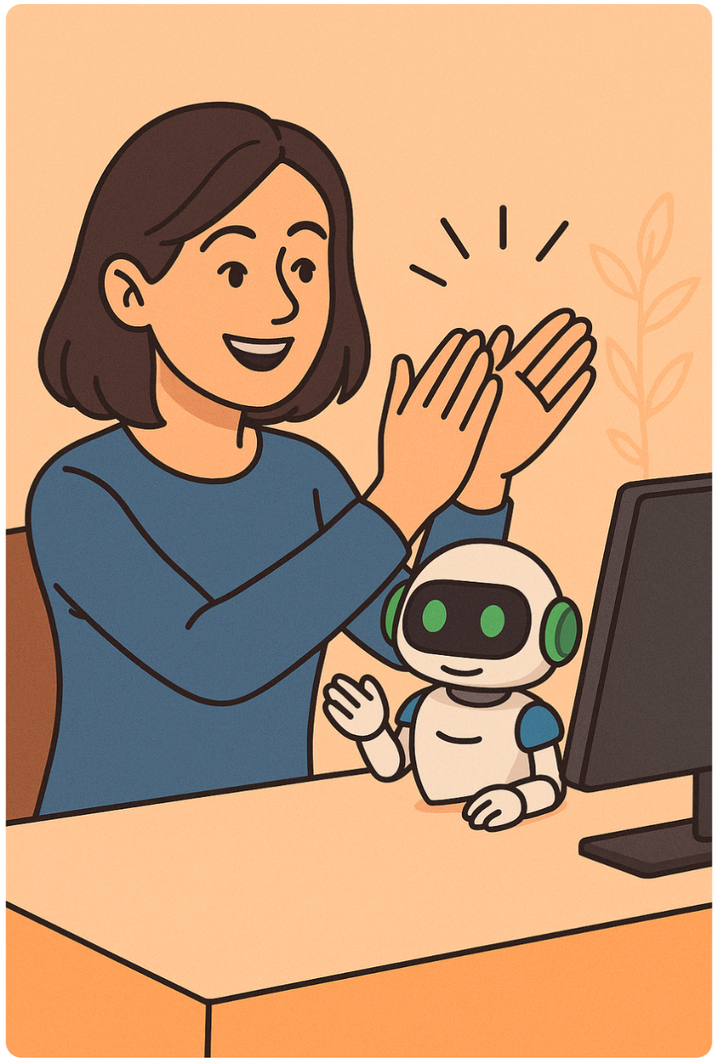
Interacting with Copilot

Providing Context

Productivity Features

Customization and Extension

It's your turn!



Keep building!

SOFTWARE DEVELOPMENT WITH GITHUB COPILOT