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Build Your 1st Agent in JavaScript With Azure AI Agent Service

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In partnership with Microsoft Reactor

Agenda

Understanding the Basics of AI Agents

Exploring Azure AI Agent Service Features

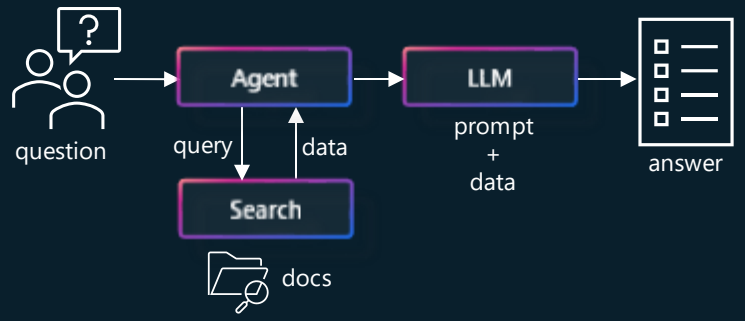
Step-by-Step Guide to Creating Agents

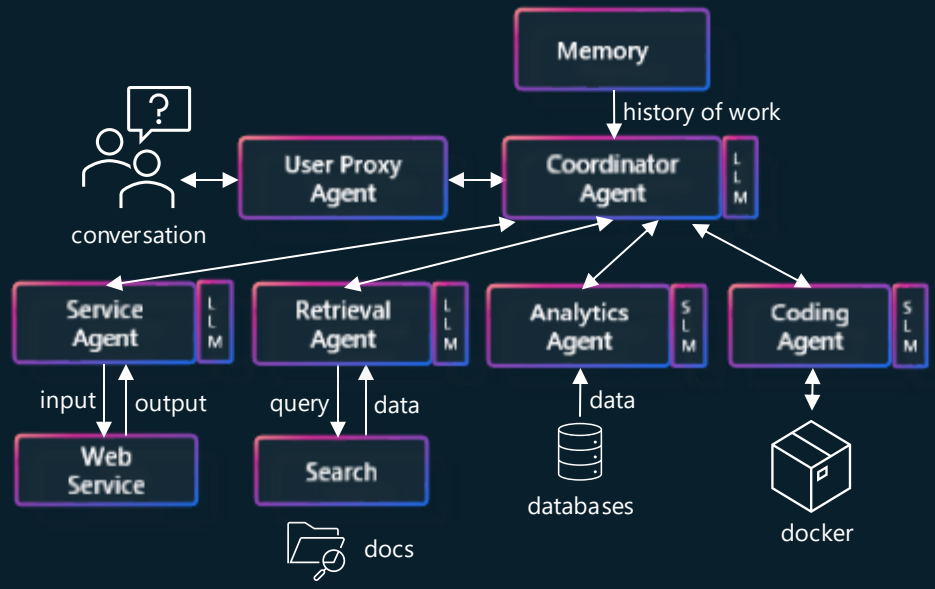
Hands-On Labs for Practical Experience

Code and demos

aka.ms/azure-ai-agents-javascript

Evolution of LLM-based Solutions





No Agent

Very narrow one shot task

Ex: log to JSON

Single Agent

Very clearly scoped iterative task

Ex: providing an answer with supporting evidence to a complex question

Multi-agent Systems

Wide scope complex use case requiring diverse skills

Ex: Propose 2 Instagram marketing campaigns including assets that would leverage the top 2 recent trends in our past quarter US Sales to boost our mailing list user base and predict the impact of each campaign

VALUE

An agent needs to accomplish 3 things:

Reason over a provided business process

Retrieve context to complete the process

Perform an action for the end-user

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Demo

Agents built with the Azure AI Agent Service

```
Available prompts:
----------------------
1. 🧱 Solve Equation: I need to solve the equation `3x + 11 = 14`. Can you help me?
2. 💾 Local Cpus Usage: What is the average CPUs usage on my local machine?
3. 💻 Code Generator: Write a function that finds prime numbers
4. 📊 Data Visualization: Create visualizations from the car_sales.csv data. Include charts for:
        - Sales by Region
        - Relationships between Price, Mileage, and Year.
        - Sales by SalesPerson.
        - Sales by Make, Model, and Year for 2023.
5. 🏨 Hotel Reviews: Tell me about the hotel reviews in the hotel_reviews_data.csv.
6. 🏥 Insurance Coverage: What are my health insurance plan coverage types?
7. 👋 Exit
```

Azure AI Foundry

Public Preview

Azure AI Agent Service

Securely build, deploy, and scale AI agents with ease

Rapid development and automation | Extensive data connections | Flexible model selection | Enterprise-grade security

ai.azure.com

Enterprise-grade security

Tracing and monitoring

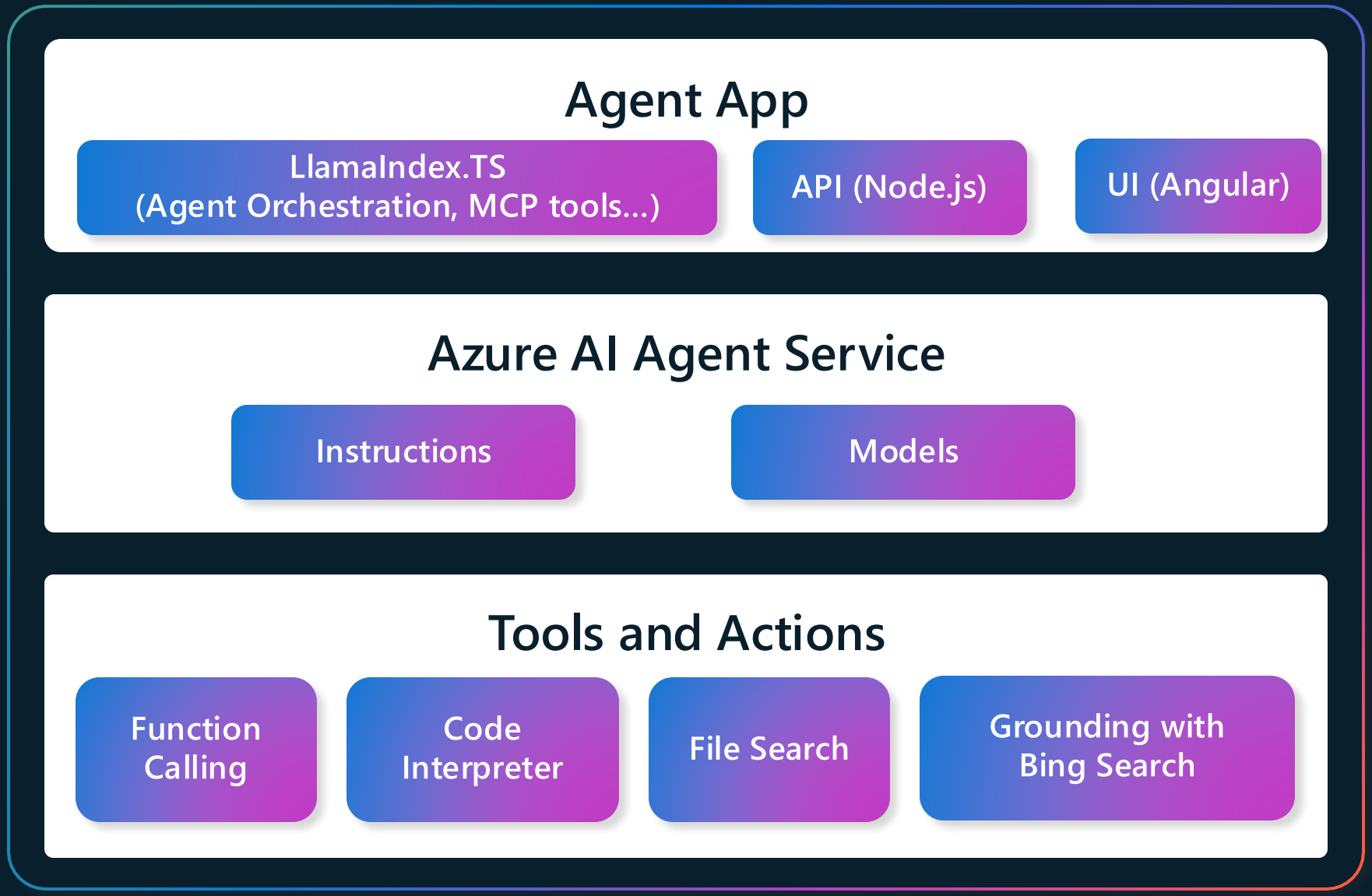
Content filters

Bring your own storage and search

Private virtual network support

Keyless setup and authentication

Solution Architecture



AI Agent Service in Action

Step 1:
Create an Agent

Step 2:
Create a Thread

Step 3:
Run the Agent

Step 5:
Check the Run status

Step 6:
Display the Agent's Response

Agent
Specialized Agent

Instructions: You are a math genius and a coding expert, specilizing in assisting with code generation

Model

Your data (optional)
- Azure AI Search
- Files (local or Azure Blob)

Tools (optional)
File Search
Code Interpreter
Function Calling
Bing Search
Microsoft SharePoint
Microsoft Fabric
Azure AI Search
Azure Logic Apps
Azure Functions
OpenAPI 3.0 specified tools

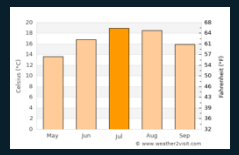
Thread
Sales analysis

User's message
Tell me the total sales by region

Agent's message
Weather is 22 degrees In Paris

User's message
Show as a chart

Agent's message



Run 1
1. Function Calling Tool
FunctionName
2. Create message

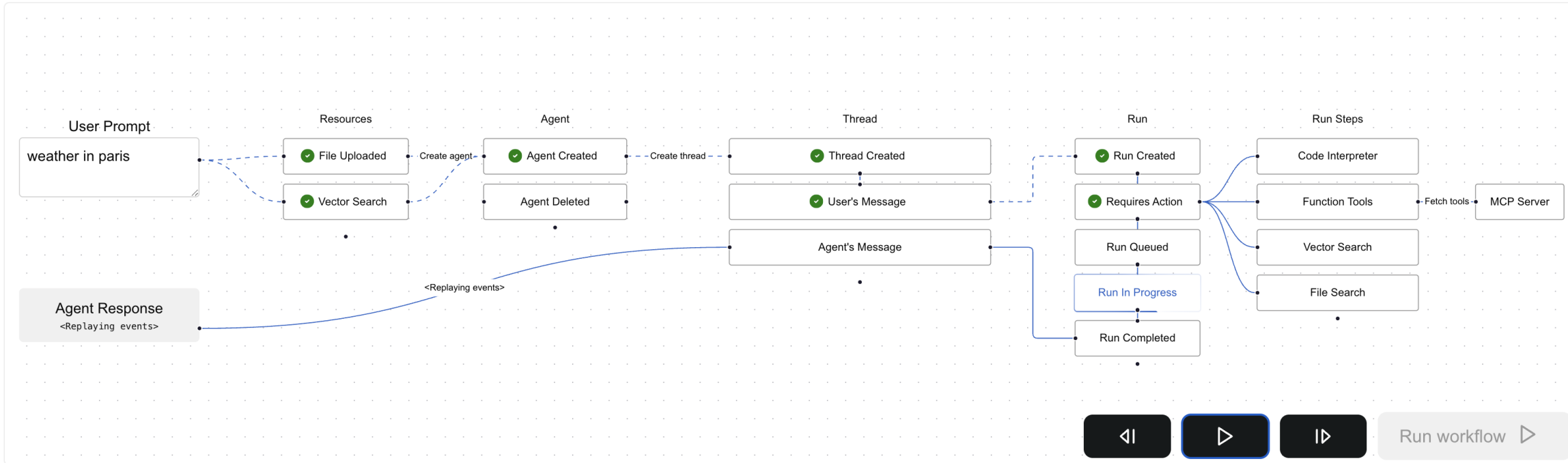
Run 2
1. Code Interpreter Tool
Create a chart
2. Create message

AI Agent Service in Action

Demo

Agent in action illustration

AgenTracer



Resources

```
Uploading file
./data/global_weather_data.txt...
Creating vector store for file
search tool...
Uploading file
./data/global_weather_data.txt...
Uploaded file
./data/global_weather_data.txt...
Creating vector store for file
search tool...
Created vector store for file
search tool...
```

Agents

```
Creating agent...
Deleting agent
asst_DBJIg56qhYeJWBNzWQoOZnsd...
Deleted agent
asst_DBJIg56qhYeJWBNzWQoOZnsd...
Creating agent...
Created agent my-weather-
agent...
```

Threads

```
Creating thread...
Creating thread...
Created thread
thread_c2kd9tb8eE1sfR7wc3im1U7A...
```

Runs

```
Creating run...
Run status - queued...
Creating run...
Created run
run_nSflXlTrJkdtTRam7Qfcy5qv...
Run status - queued...
Run status - in_progress...
```

Messages

```
Creating user message...
Creating user message...
Created user message
msg_AMbnZfkI7Swibv4GKfnA0UbT...
```

Tools

```
Function tool call completed -
getWeather
Submitted tool response - queued
```

not vibe-coded by Wassim Chegham

Function calling

The capability of LLMs to take in user-defined functions as inputs & generate structured outputs.

Function Calling: Example

Instruction

You are a system administrator agent specializing in system performance and monitoring. Use the provided function to get the average CPU usage.

Function

```
1 reference
class FunctionToolFactory {
    1 reference
    static getCpuUsage() {
        return `CPU Usage: ${cpus()[0].model}
          ${Math.floor( (cpus().reduce((acc, core) => acc + core.speed, 0)) / 1000)}%`;
    }
}

4 references
export class FunctionToolExecutor {
  2 references
  static functionTools: {
    func: Function;
    definition: FunctionToolDefinition;
  }[] = [
    {
      func: FunctionToolFactory.getCpuUsage,
      ...ToolUtility.createFunctionTool({
        name: "getCpuUsage",
        description: "This function returns the CPU usage of the system.",
        parameters: {},
      }),
    },
  ];
```

+

User

What is the average CPUs usage on my local machine

=

LLM

name = getCpuUsage

args = {}

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Demo time

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Lab 0: Agent Building Blocks

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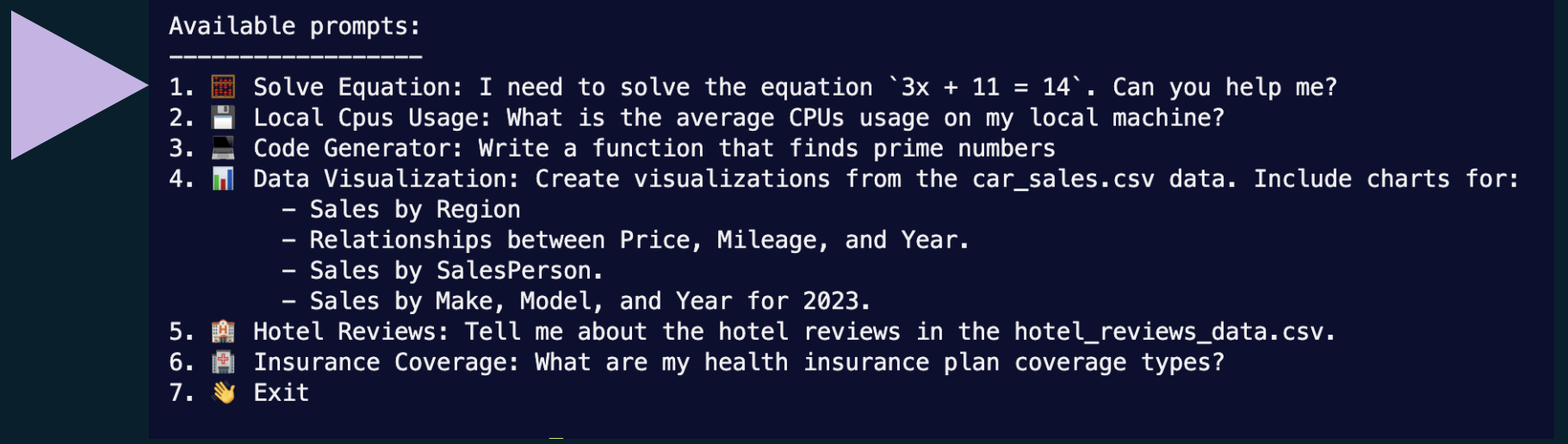
Lab 1: Agent with no tools



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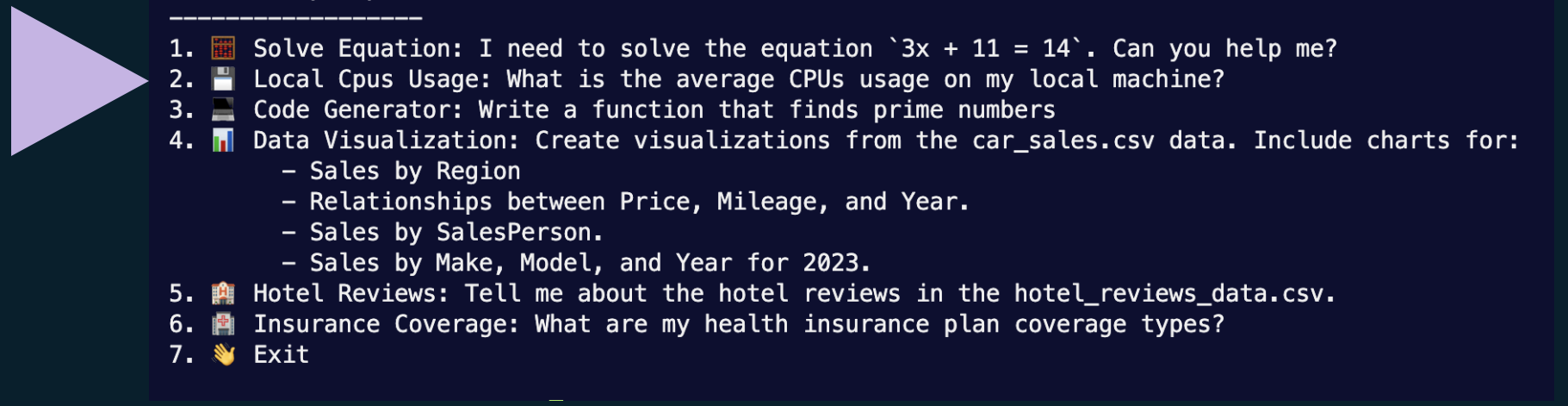
Lab 2: Agent with Function Calling



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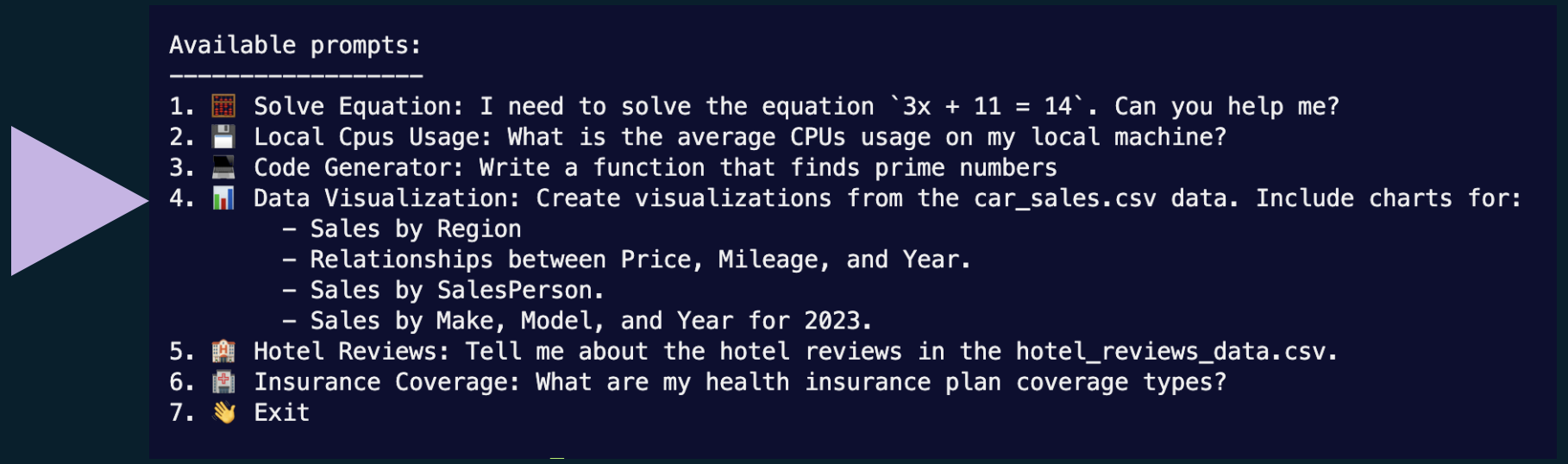
Lab 3: Agent with Code Interpreter



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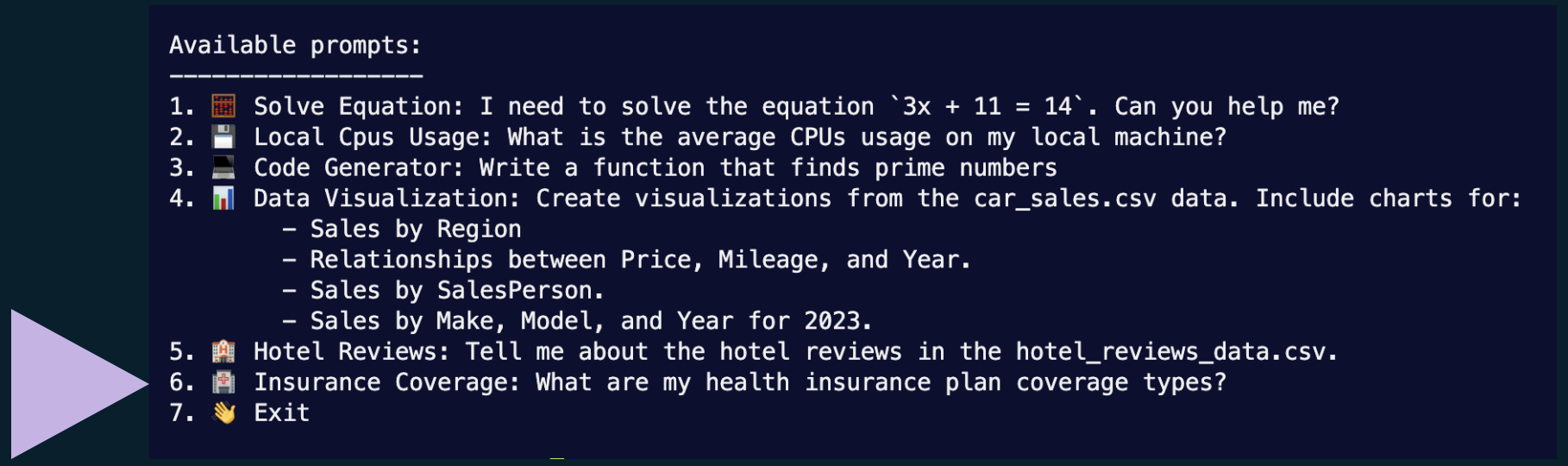
Lab 4: Agent with AI Search Tool



Learnings and next steps

- Build agents quickly with Azure's fully managed agent service
- Use Azure AI Agent Service to get out of the box tools like Bing, Azure AI Search, function calling, code interpreter, file search, and more
- Explore frameworks to implement advanced functionalities like multi-agent systems
- Use UI or code to build your agent

Thank you

aka.ms/azure-ai-agents-javascript


Generative AI for Beginners
aka.ms/genai-js-course