🧠 100 Q&A on Output Types

📘 Basics of Output Types

1.

   Q: What are output types in Agentic AI?
   A: Output types define the format in which an agent delivers its results, such as text, JSON, or structured schema.

2.

   Q: Why are output types important?
   A: They ensure consistency, machine-readability, and compatibility with downstream tasks.

3.

   Q: What is the default output type in most agent frameworks?
   A: Free-form text (natural language).

4.

   Q: Give an example of a structured output type.
   A: JSON object with specific keys and values.

5.

   Q: Can an agent switch output types during execution?
   A: Yes, if configured with dynamic instructions or tool specifications.

📝 Text Output

6.

   Q: What is a text output type?
   A: The agent returns plain unstructured text as the final response.

7.

Q: When is text output most useful?
A: For natural conversations, summaries, and explanations.

8.

Q: What is the limitation of text output?
A: It lacks structure, making it harder for other systems to parse.

9.

Q: Example of text output from a weather agent?
A: "Today's forecast is sunny with a high of 32°C."

10.

Q: Is text output human-readable?
A: Yes, it's designed for human consumption.

JSON Output

11.

Q: What is JSON output type?
A: Output returned in a JavaScript Object Notation structure.

12.

Q: Why use JSON output?
A: It's machine-readable, structured, and easy to integrate with APIs.

13.

Q: Example of JSON weather output?
A: {"temperature": 32, "condition": "sunny"}

14.

Q: Can JSON output enforce schema validation?
A: Yes, via predefined fields and constraints.

15.

Q: What happens if JSON output is malformed?
A: The consuming system may fail or throw parsing errors.

⬚ Structured Schema Output

16.

Q: What is schema-based output?
A: A strict format where the agent must follow a given structure.

17.

Q: Example of schema in output types?
A: Pydantic models or JSON schema definitions.

18.

Q: Why enforce schema outputs?
A: To reduce ambiguity and ensure reliable data handling.

19.

Q: When are schema outputs critical?
A: In financial transactions, healthcare, or regulatory environments.

20.

Q: Can schema outputs include nested structures?
A: Yes, schemas can be hierarchical.

🧩 Multi-Output Types

21.

Q: What are multi-output types?
A: Outputs combining different formats like text + JSON.

22.

Q: Example of multi-output in a chatbot?
A: Human-readable answer with structured metadata.

23.

Q: Benefit of multi-output?
A: Flexibility for both humans and machines.

24.

Q: What is a risk with multi-output?
A: Inconsistencies between human-readable and machine-readable parts.

25.

Q: How can multi-output be synchronized?
A: By generating structured data first and deriving text from it.

🖼 Images, Tables, and Graphs

26.

Q: Can output types include images?
A: Yes, via encoded image formats or links.

27.

Q: What is table output type?
A: Data formatted into tabular structures.

28.

Q: Example of a table output?
A: CSV or Markdown table.

29.

Q: What is graph output?
A: Visualization-ready data (nodes/edges).

30.

Q: Which output type is best for analytics dashboards?
A: Structured tables or JSON.

⬚ Output Control

31.

Q: What setting controls randomness in outputs?
A: Temperature.

32.

Q: How to enforce deterministic outputs?
A: Set temperature to 0 and use schema enforcement.

33.

Q: What is top_p's effect on output types?
A: Controls diversity in generated outputs.

34.

Q: Why control output types?
A: To avoid unpredictability and ensure correctness.

35.

Q: Can penalties influence output type structure?

A: Indirectly, by reducing repetition in structured data.

🛠 Output in Tools

36.

    Q: How do tools define expected output types?
    A: By specifying return formats in tool schemas.

37.

    Q: Example of tool with structured output?
    A: Calculator tool returning { "result": 25 }.

38.

    Q: Why must tools use structured outputs?
    A: To avoid misinterpretation by the agent.

39.

    Q: Can tools return free text?
    A: Yes, but structured return is preferred.

40.

    Q: What if a tool's output type mismatches the agent expectation?
    A: Errors or failed integrations occur.

⚠ Error Handling in Outputs

41.

    Q: What happens when output doesn't match schema?
    A: Validation errors are raised.

42.

Q: How to handle invalid JSON output?
A: Use repair functions or regex cleaning.

43.

Q: Can fallback to text occur if schema fails?
A: Yes, as a recovery mechanism.

44.

Q: What is the role of failure_error_function in outputs?
A: To define custom handling of malformed outputs.

45.

Q: Why is validation crucial for structured outputs?
A: To prevent downstream system crashes.

🧠 Agent & Runner Perspective

46.

Q: How does runner decide output type?
A: Based on agent configuration and execution flow.

47.

Q: Can multiple agents return different output types?
A: Yes, each agent can be configured separately.

48.

Q: What if agent A returns text and agent B expects JSON?
A: A conversion or adapter is needed.

49.

Q: Are runners responsible for enforcing schema?
A: Yes, they validate and process outputs.

50.

Q: Can output types be logged for tracing?
A: Yes, to debug agent flow.

🔷 Streaming Outputs

51.

Q: What is streaming output?
A: Token-by-token delivery of results.

52.

Q: Can streaming work with structured JSON?
A: Yes, but requires careful assembly.

53.

Q: Advantage of streaming structured output?
A: Faster perceived response while building data.

54.

Q: Limitation of streaming JSON?
A: Risk of incomplete/malformed structures mid-stream.

55.

Q: How to ensure valid streamed JSON?
A: Use incremental JSON builders.

⬚ Output Filtering

56.

Q: What is output filtering?
A: Restricting agent outputs to allowed content.

57.

Q: Can filters apply to output types?
A: Yes, restricting format like JSON-only.

58.

Q: Why filter outputs?
A: For safety, compliance, and standardization.

59.

Q: Example of output filter in healthcare?
A: Forcing structured patient data schema.

60.

Q: Is filtering related to guardrails?
A: Yes, output types are enforced via guardrails.

⬚ Advanced Usage

61.

Q: Can outputs be hybrid formats?
A: Yes, combining JSON with embedded HTML.

62.

Q: Example of hybrid output?
A: Chatbot reply with text + inline JSON.

63.

Q: What is multimodal output?
A: Responses that include text, images, audio, or video.

64.

Q: Do agents support multimodal output?
A: Yes, in advanced frameworks.

65.

Q: Example of multimodal weather output?
A: Text forecast + weather chart image.

□ Custom Output Extractors

66.

Q: What is a custom output extractor?
A: A function to parse agent output into structured form.

67.

Q: Why use custom extractors?
A: To handle complex, non-standard outputs.

68.

Q: Example of extractor in action?
A: Parsing recipe instructions into JSON steps.

69.

Q: Are extractors tied to output types?
A: Yes, they interpret raw outputs into expected structures.

70.

Q: Can extractors fix malformed outputs?

A: Yes, by cleaning and restructuring.

⬜ Practical Applications

71.

Q: Which output type suits chatbots?
A: Text + optional structured metadata.

72.

Q: Which output type suits APIs?
A: JSON.

73.

Q: Which output type suits dashboards?
A: Tables and structured JSON.

74.

Q: Which output type suits reports?
A: Structured text or PDFs.

75.

Q: Which output type suits robotics?
A: Schema-based instructions.

⬜ Testing and Validation

76.

Q: How to test output types?
A: By running validation against schemas.

77.

Q: What tool validates JSON schemas?
A: JSON Schema Validator.

78.

Q: Why unit test outputs?
A: To ensure correctness across runs.

79.

Q: Can output types be fuzz tested?
A: Yes, with random inputs.

80.

Q: How to log outputs for debugging?
A: By enabling tracing hooks.

Security Aspects

81.

Q: Can output types be a security risk?
A: Yes, if they leak sensitive info.

82.

Q: Example of secure output enforcement?
A: Only allowing anonymized JSON.

83.

Q: What is output sanitization?
A: Cleaning data before returning it.

84.

Q: Why sanitize structured outputs?
A: To prevent injection attacks.

85.

Q: Is free-text output riskier?
A: Yes, because it's harder to control.

🗖 Performance Aspects

86.

Q: Which output type is fastest to generate?
A: Plain text.

87.

Q: Which output type consumes more tokens?
A: JSON with verbose keys.

88.

Q: How to optimize structured outputs?
A: Use compact schemas.

89.

Q: Does streaming impact output performance?
A: Yes, improves latency but increases complexity.

90.

Q: Can large outputs be chunked?
A: Yes, using streaming or pagination.

🔮 Future of Output Types

91.

Q: What trend is emerging in output types?
A: Multimodal structured outputs.

92.

Q: Will output types become more dynamic?
A: Yes, with real-time adaptability.

93.

Q: Example of future output use case?
A: Agent returning 3D objects with metadata.

94.

Q: How will output types integrate with IoT?
A: Schema outputs controlling devices.

95.

Q: Can output types adapt to user preference?
A: Yes, using personalization.

🎯 Wrap-Up

1.

Q: Why must developers care about output types?
A: To ensure interoperability and correctness.

Q: Can one agent support multiple output types?
A: Yes, if configured.

Q: How do output types affect downstream tasks?
A: They define how data is consumed and processed.

Q: What is the simplest output type?
A: Plain text.

Q: What is the most robust output type?
A: Structured schema (validated JSON).