🏠   Modules   Agents   How-to   Access intermediate steps

Access intermediate steps

In order to get more visibility into what an agent is doing, we can also return intermediate steps. This comes in the form of an extra key in the return value, which is a list of (action, observation) tuples.

```python
from langchain.agents import load_tools
from langchain.agents import initialize_agent
from langchain.agents import AgentType
from langchain.llms import OpenAI
```

API Reference:

- load_tools from `langchain.agents`

- initialize_agent from `langchain.agents`

- AgentType from `langchain.agents`

- OpenAI from `langchain.llms`

Initialize the components needed for the agent.

```python
llm = OpenAI(temperature=0, model_name="text-davinci-002")
tools = load_tools(["serpapi", "llm-math"], llm=llm)
```

Initialize the agent with `return_intermediate_steps=True`

```python
agent = initialize_agent(
    tools,
    llm,
    agent=AgentType.ZERO_SHOT_REACT_DESCRIPTION,
    verbose=True,
    return_intermediate_steps=True,
)
```

```python
response = agent(
    {
        "input": "Who is Leo DiCaprio's girlfriend? What is her current age raised to the 0.43 power?"
    }
)
```

```
> Entering new AgentExecutor chain...
 I should look up who Leo DiCaprio is dating
Action: Search
Action Input: "Leo DiCaprio girlfriend"
Observation: Camila Morrone
Thought: I should look up how old Camila Morrone is
Action: Search
Action Input: "Camila Morrone age"
Observation: 25 years
Thought: I should calculate what 25 years raised to the 0.43 power is
Action: Calculator
Action Input: 25^0.43
Observation: Answer: 3.991298452658078

Thought: I now know the final answer
Final Answer: Camila Morrone is Leo DiCaprio's girlfriend and she is
3.991298452658078 years old.

> Finished chain.
```

```python
# The actual return type is a NamedTuple for the agent action, and then an
observation
print(response["intermediate_steps"])
```

```
[(AgentAction(tool='Search', tool_input='Leo DiCaprio girlfriend',
log=' I should look up who Leo DiCaprio is dating\nAction: Search\nAction
Input: "Leo DiCaprio girlfriend"'), 'Camila Morrone'),
(AgentAction(tool='Search', tool_input='Camila Morrone age', log=' I
should look up how old Camila Morrone is\nAction: Search\nAction Input:
"Camila Morrone age"'), '25 years'), (AgentAction(tool='Calculator',
```

```
tool_input='25^0.43', log=' I should calculate what 25 years raised to the
0.43 power is\nAction: Calculator\nAction Input: 25^0.43'), 'Answer:
3.991298452658078\n')]
```

```python
import json

print(json.dumps(response["intermediate_steps"], indent=2))
```

```json
[
  [
    [
      "Search",
      "Leo DiCaprio girlfriend",
      " I should look up who Leo DiCaprio is dating\nAction:
Search\nAction Input: \"Leo DiCaprio girlfriend\""
    ],
    "Camila Morrone"
  ],
  [
    [
      "Search",
      "Camila Morrone age",
      " I should look up how old Camila Morrone is\nAction:
Search\nAction Input: \"Camila Morrone age\""
    ],
    "25 years"
  ],
  [
    [
      "Calculator",
      "25^0.43",
      " I should calculate what 25 years raised to the 0.43 power
is\nAction: Calculator\nAction Input: 25^0.43"
    ],
    "Answer: 3.991298452658078\n"
  ]
]
```