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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.

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

Initialize the components needed for the agent.

```
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`

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

```
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.
```

```
# 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')]
]
```

```
import json

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

```
[
  [
    [
      "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"  
]
```