🏠   Modules   Agents   How-to   Use ToolKits with OpenAI Functions

Use ToolKits with OpenAI Functions

This notebook shows how to use the OpenAI functions agent with arbitrary toolkits.

```python
from langchain import (
    LLMMathChain,
    OpenAI,
    SerpAPIWrapper,
    SQLDatabase,
    SQLDatabaseChain,
)
from langchain.agents import initialize_agent, Tool
from langchain.agents import AgentType
from langchain.chat_models import ChatOpenAI
from langchain.agents.agent_toolkits import SQLDatabaseToolkit
from langchain.schema import SystemMessage
```

API Reference:

- initialize_agent from `langchain.agents`

- Tool from `langchain.agents`

- AgentType from `langchain.agents`

- ChatOpenAI from `langchain.chat_models`

- SQLDatabaseToolkit from `langchain.agents.agent_toolkits`

- SystemMessage from `langchain.schema`

Load the toolkit

```python
db = SQLDatabase.from_uri("sqlite:///../../../../../notebooks/Chinook.db")
toolkit = SQLDatabaseToolkit(llm=ChatOpenAI(), db=db)
```

Set a system message specific to that toolkit

```python
agent_kwargs = {
    "system_message": SystemMessage(content="You are an expert SQL data
```

```
analyst.")
}
```

```
llm = ChatOpenAI(temperature=0, model="gpt-3.5-turbo-0613")
agent = initialize_agent(
    toolkit.get_tools(),
    llm,
    agent=AgentType.OPENAI_FUNCTIONS,
    verbose=True,
    agent_kwargs=agent_kwargs,
)
```

```
agent.run("how many different artists are there?")
```

```
    > Entering new  chain...

    Invoking: `sql_db_query` with `{'query': 'SELECT COUNT(DISTINCT
artist_name) AS num_artists FROM artists'}`


    Error: (sqlite3.OperationalError) no such table: artists
    [SQL: SELECT COUNT(DISTINCT artist_name) AS num_artists FROM artists]
    (Background on this error at: https://sqlalche.me/e/20/e3q8)
    Invoking: `sql_db_list_tables` with `{}`


    MediaType, Track, Playlist, sales_table, Customer, Genre,
PlaylistTrack, Artist, Invoice, Album, InvoiceLine, Employee
    Invoking: `sql_db_query` with `{'query': 'SELECT COUNT(DISTINCT
artist_id) AS num_artists FROM Artist'}`


    Error: (sqlite3.OperationalError) no such column: artist_id
    [SQL: SELECT COUNT(DISTINCT artist_id) AS num_artists FROM Artist]
    (Background on this error at: https://sqlalche.me/e/20/e3q8)
    Invoking: `sql_db_query` with `{'query': 'SELECT COUNT(DISTINCT Name)
AS num_artists FROM Artist'}`
```

```
[(275,)]There are 275 different artists in the database.

> Finished chain.



'There are 275 different artists in the database.'
```