

```
In [5]: import os
import json

#LangChain imports
from langchain import PromptTemplate, LLMChain
from langchain_openai import ChatOpenAI
from langchain.text_splitter import CharacterTextSplitter
```

```
In [4]: %pip install langchain-community
%pip install -U langchain-openai
```

```

Collecting langchain-community
  Downloading langchain_community-0.3.19-py3-none-any.whl.metadata (2.4 kB)
Collecting langchain-core<1.0.0,>=0.3.41 (from langchain-community)
  Downloading langchain_core-0.3.41-py3-none-any.whl.metadata (5.9 kB)
Collecting langchain<1.0.0,>=0.3.20 (from langchain-community)
  Downloading langchain-0.3.20-py3-none-any.whl.metadata (7.7 kB)
Collecting SQLAlchemy<3,>=1.4 (from langchain-community)
  Downloading SQLAlchemy-2.0.38-cp312-cp312-manylinux_2_17_x86_64.manylinux2014_x86_64.whl.metadata (9.6 kB)
Requirement already satisfied: requests<3,>=2 in /home/codespace/.local/lib/python3.12/site-packages (from langchain-community) (2.32.3)
Requirement already satisfied: PyYAML>=5.3 in /home/codespace/.local/lib/python3.12/site-packages (from langchain-community) (6.0.2)
Collecting aiohttp<4.0.0,>=3.8.3 (from langchain-community)
  Downloading aiohttp-3.11.13-cp312-cp312-manylinux_2_17_x86_64.manylinux2014_x86_64.whl.metadata (7.7 kB)
Requirement already satisfied: tenacity!=8.4.0,<10,>=8.1.0 in /home/codespace/.local/lib/python3.12/site-packages (from langchain-community) (9.0.0)
Collecting dataclasses-json<0.7,>=0.5.7 (from langchain-community)
  Downloading dataclasses_json-0.6.7-py3-none-any.whl.metadata (25 kB)
Collecting pydantic-settings<3.0.0,>=2.4.0 (from langchain-community)
  Downloading pydantic_settings-2.8.1-py3-none-any.whl.metadata (3.5 kB)
Collecting langsmith<0.4,>=0.1.125 (from langchain-community)
  Downloading langsmith-0.3.12-py3-none-any.whl.metadata (14 kB)
Collecting httpx-sse<1.0.0,>=0.4.0 (from langchain-community)
  Downloading httpx_sse-0.4.0-py3-none-any.whl.metadata (9.0 kB)
Requirement already satisfied: numpy<3,>=1.26.2 in /home/codespace/.local/lib/python3.12/site-packages (from langchain-community) (2.2.0)
Collecting aiohappyeyeballs>=2.3.0 (from aiohttp<4.0.0,>=3.8.3->langchain-community)
  Downloading aiohappyeyeballs-2.5.0-py3-none-any.whl.metadata (5.9 kB)
Collecting aiosignal>=1.1.2 (from aiohttp<4.0.0,>=3.8.3->langchain-community)
  Downloading aiosignal-1.3.2-py2.py3-none-any.whl.metadata (3.8 kB)
Requirement already satisfied: attrs>=17.3.0 in /home/codespace/.local/lib/python3.12/site-packages (from aiohttp<4.0.0,>=3.8.3->langchain-community) (24.2.0)
Collecting frozenlist>=1.1.1 (from aiohttp<4.0.0,>=3.8.3->langchain-community)
  Downloading frozenlist-1.5.0-cp312-cp312-manylinux_2_5_x86_64.manylinux1_x86_64.manylinux_2_17_x86_64.manylinux2014_x86_64.whl.metadata (13 kB)
Collecting multidict<7.0,>=4.5 (from aiohttp<4.0.0,>=3.8.3->langchain-community)
  Downloading multidict-6.1.0-cp312-cp312-manylinux_2_17_x86_64.manylinux2014_x86_64.whl.metadata (5.0 kB)
Collecting propcache>=0.2.0 (from aiohttp<4.0.0,>=3.8.3->langchain-community)
  Downloading propcache-0.3.0-cp312-cp312-manylinux_2_17_x86_64.manylinux2014_x86_64.whl.metadata (10 kB)
Collecting yarl<2.0,>=1.17.0 (from aiohttp<4.0.0,>=3.8.3->langchain-community)
  Downloading yarl-1.18.3-cp312-cp312-manylinux_2_17_x86_64.manylinux2014_x86_64.whl.metadata (69 kB)
Collecting marshmallow<4.0.0,>=3.18.0 (from dataclasses-json<0.7,>=0.5.7->langchain-community)
  Downloading marshmallow-3.26.1-py3-none-any.whl.metadata (7.3 kB)

```

Collecting typing-inspect<1,>=0.4.0 (from dataclasses-json<0.7,>=0.5.7->langchain-community)  
 Downloading typing\_inspect-0.9.0-py3-none-any.whl.metadata (1.5 kB)  
 Collecting langchain-text-splitters<1.0.0,>=0.3.6 (from langchain<1.0.0,>=0.3.20->langchain-community)  
 Downloading langchain\_text\_splitters-0.3.6-py3-none-any.whl.metadata (1.9 kB)  
 Collecting pydantic<3.0.0,>=2.7.4 (from langchain<1.0.0,>=0.3.20->langchain-community)  
 Downloading pydantic-2.10.6-py3-none-any.whl.metadata (30 kB)  
 Collecting jsonpatch<2.0,>=1.33 (from langchain-core<1.0.0,>=0.3.41->langchain-community)  
 Downloading jsonpatch-1.33-py2.py3-none-any.whl.metadata (3.0 kB)  
 Requirement already satisfied: packaging<25,>=23.2 in /home/codespace/.local/lib/python3.12/site-packages (from langchain-core<1.0.0,>=0.3.41->langchain-community) (24.2)  
 Requirement already satisfied: typing-extensions>=4.7 in /home/codespace/.local/lib/python3.12/site-packages (from langchain-core<1.0.0,>=0.3.41->langchain-community) (4.12.2)  
 Requirement already satisfied: httpx<1,>=0.23.0 in /home/codespace/.local/lib/python3.12/site-packages (from langsmith<0.4,>=0.1.125->langchain-community) (0.28.1)  
 Collecting orjson<4.0.0,>=3.9.14 (from langsmith<0.4,>=0.1.125->langchain-community)  
 Downloading orjson-3.10.15-cp312-cp312-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl.metadata (41 kB)  
 Collecting requests-toolbelt<2.0.0,>=1.0.0 (from langsmith<0.4,>=0.1.125->langchain-community)  
 Downloading requests\_toolbelt-1.0.0-py2.py3-none-any.whl.metadata (14 kB)  
 Collecting zstandard<0.24.0,>=0.23.0 (from langsmith<0.4,>=0.1.125->langchain-community)  
 Downloading zstandard-0.23.0-cp312-cp312-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl.metadata (3.0 kB)  
 Collecting python-dotenv>=0.21.0 (from pydantic-settings<3.0.0,>=2.4.0->langchain-community)  
 Downloading python\_dotenv-1.0.1-py3-none-any.whl.metadata (23 kB)  
 Requirement already satisfied: charset-normalizer<4,>=2 in /home/codespace/.local/lib/python3.12/site-packages (from requests<3,>=2->langchain-community) (3.4.0)  
 Requirement already satisfied: idna<4,>=2.5 in /home/codespace/.local/lib/python3.12/site-packages (from requests<3,>=2->langchain-community) (3.10)  
 Requirement already satisfied: urllib3<3,>=1.21.1 in /home/codespace/.local/lib/python3.12/site-packages (from requests<3,>=2->langchain-community) (2.2.3)  
 Requirement already satisfied: certifi>=2017.4.17 in /home/codespace/.local/lib/python3.12/site-packages (from requests<3,>=2->langchain-community) (2024.8.30)  
 Collecting greenlet!=0.4.17 (from SQLAlchemy<3,>=1.4->langchain-community)  
 Downloading greenlet-3.1.1-cp312-cp312-manylinux\_2\_24\_x86\_64.manylinux2\_28\_x86\_64.whl.metadata (3.8 kB)  
 Requirement already satisfied: anyio in /home/codespace/.local/lib/python3.12/site-packages (from httpx<1,>=0.23.0->langsmith<0.4,>=0.1.125->langchain-community) (4.7.0)  
 Requirement already satisfied: httpcore==1.\* in /home/codespace/.local/lib/python3.12/site-packages (from httpx<1,>=0.23.0->langsmith<0.4,>=0.1.125->langchain-community) (1.0.7)

Requirement already satisfied: h11<0.15,>=0.13 in /home/codespace/.local/lib/python3.12/site-packages (from httpcore==1.\*->httpx<1,>=0.23.0->langsmith<0.4,>=0.1.125->langchain-community) (0.14.0)

Requirement already satisfied: jsonpointer>=1.9 in /home/codespace/.local/lib/python3.12/site-packages (from jsonpatch<2.0,>=1.33->langchain-core<1.0.0,>=0.3.41->langchain-community) (3.0.0)

Collecting annotated-types>=0.6.0 (from pydantic<3.0.0,>=2.7.4->langchain<1.0.0,>=0.3.20->langchain-community)

Downloading annotated\_types-0.7.0-py3-none-any.whl.metadata (15 kB)

Collecting pydantic-core==2.27.2 (from pydantic<3.0.0,>=2.7.4->langchain<1.0.0,>=0.3.20->langchain-community)

Downloading pydantic\_core-2.27.2-cp312-cp312-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl.metadata (6.6 kB)

Collecting mpy-extensions>=0.3.0 (from typing-inspect<1,>=0.4.0->dataclasses-json<0.7,>=0.5.7->langchain-community)

Downloading mpy\_extensions-1.0.0-py3-none-any.whl.metadata (1.1 kB)

Requirement already satisfied: sniffio>=1.1 in /home/codespace/.local/lib/python3.12/site-packages (from anyio->httpx<1,>=0.23.0->langsmith<0.4,>=0.1.125->langchain-community) (1.3.1)

Downloading langchain\_community-0.3.19-py3-none-any.whl (2.5 MB)

2.5/2.5 MB 53.4 MB/s eta 0:00:00

Downloading aiohttp-3.11.13-cp312-cp312-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (1.7 MB)

1.7/1.7 MB 46.0 MB/s eta 0:00:00

Downloading dataclasses\_json-0.6.7-py3-none-any.whl (28 kB)

Downloading httpx\_sse-0.4.0-py3-none-any.whl (7.8 kB)

Downloading langchain-0.3.20-py3-none-any.whl (1.0 MB)

1.0/1.0 MB 38.0 MB/s eta 0:00:00

Downloading langchain\_core-0.3.41-py3-none-any.whl (415 kB)

Downloading langsmith-0.3.12-py3-none-any.whl (335 kB)

Downloading pydantic\_settings-2.8.1-py3-none-any.whl (30 kB)

Downloading SQLAlchemy-2.0.38-cp312-cp312-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (3.3 MB)

3.3/3.3 MB 50.1 MB/s eta 0:00:00

Downloading aiohappyeyeballs-2.5.0-py3-none-any.whl (15 kB)

Downloading aiosignal-1.3.2-py2.py3-none-any.whl (7.6 kB)

Downloading frozenlist-1.5.0-cp312-cp312-manylinux\_2\_5\_x86\_64.manylinux1\_x86\_64.manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (283 kB)

Downloading greenlet-3.1.1-cp312-cp312-manylinux\_2\_24\_x86\_64.manylinux\_2\_28\_x86\_64.whl (613 kB)

613.1/613.1 kB 27.0 MB/s eta 0:00:00

0:00

Downloading jsonpatch-1.33-py2.py3-none-any.whl (12 kB)

Downloading langchain\_text\_splitters-0.3.6-py3-none-any.whl (31 kB)

Downloading marshmallow-3.26.1-py3-none-any.whl (50 kB)

Downloading multidict-6.1.0-cp312-cp312-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (131 kB)

Downloading orjson-3.10.15-cp312-cp312-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (130 kB)

Downloading propcache-0.3.0-cp312-cp312-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (243 kB)

Downloading pydantic-2.10.6-py3-none-any.whl (431 kB)

Downloading pydantic\_core-2.27.2-cp312-cp312-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (2.0 MB)

2.0/2.0 MB 45.7 MB/s eta 0:00:00

Downloading python\_dotenv-1.0.1-py3-none-any.whl (19 kB)

Downloading requests\_toolbelt-1.0.0-py2.py3-none-any.whl (54 kB)  
 Downloading typing\_inspect-0.9.0-py3-none-any.whl (8.8 kB)  
 Downloading yarl-1.18.3-cp312-cp312-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (336 kB)  
 Downloading zstandard-0.23.0-cp312-cp312-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (5.4 MB)

5.4/5.4 MB 48.2 MB/s eta 0:00:00

Downloading annotated\_types-0.7.0-py3-none-any.whl (13 kB)  
 Downloading mypy\_extensions-1.0.0-py3-none-any.whl (4.7 kB)  
 Installing collected packages: zstandard, python-dotenv, pydantic-core, propcache, orjson, mypy\_extensions, multidict, marshmallow, jsonpatch, httpx-sse, greenlet, frozenlist, annotated-types, aiohappyeyeballs, yarl, typing-inspect, SQLAlchemy, requests-toolbelt, pydantic, aiosignal, pydantic-settings, langsmith, dataclasses-json, aiohttp, langchain-core, langchain-text-splitters, langchain, langchain-community  
 Successfully installed SQLAlchemy-2.0.38 aiohappyeyeballs-2.5.0 aiohttp-3.11.13 aiosignal-1.3.2 annotated-types-0.7.0 dataclasses-json-0.6.7 frozenlist-1.5.0 greenlet-3.1.1 httpx-sse-0.4.0 jsonpatch-1.33 langchain-0.3.20 langchain-community-0.3.19 langchain-core-0.3.41 langchain-text-splitters-0.3.6 langsmith-0.3.12 marshmallow-3.26.1 multidict-6.1.0 mypy\_extensions-1.0.0 orjson-3.10.15 propcache-0.3.0 pydantic-2.10.6 pydantic-core-2.27.2 pydantic-settings-2.8.1 python-dotenv-1.0.1 requests-toolbelt-1.0.0 typing-inspect-0.9.0 yarl-1.18.3 zstandard-0.23.0

[notice] A new release of pip is available: 24.3.1 -> 25.0.1

[notice] To update, run: `pip install --upgrade pip`

Note: you may need to restart the kernel to use updated packages.

Collecting langchain-openai

Downloading langchain\_openai-0.3.7-py3-none-any.whl.metadata (2.3 kB)

Requirement already satisfied: langchain-core<1.0.0,>=0.3.39 in /home/codespace/.python/current/lib/python3.12/site-packages (from langchain-openai) (0.3.41)

Collecting openai<2.0.0,>=1.58.1 (from langchain-openai)

Downloading openai-1.65.4-py3-none-any.whl.metadata (27 kB)

Collecting tiktoken<1,>=0.7 (from langchain-openai)

Downloading tiktoken-0.9.0-cp312-cp312-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl.metadata (6.7 kB)

Requirement already satisfied: langsmith<0.4,>=0.1.125 in /home/codespace/.python/current/lib/python3.12/site-packages (from langchain-core<1.0.0,>=0.3.39->langchain-openai) (0.3.12)

Requirement already satisfied: tenacity!=8.4.0,<10.0.0,>=8.1.0 in /home/codespace/.local/lib/python3.12/site-packages (from langchain-core<1.0.0,>=0.3.39->langchain-openai) (9.0.0)

Requirement already satisfied: jsonpatch<2.0,>=1.33 in /home/codespace/.python/current/lib/python3.12/site-packages (from langchain-core<1.0.0,>=0.3.39->langchain-openai) (1.33)

Requirement already satisfied: PyYAML>=5.3 in /home/codespace/.local/lib/python3.12/site-packages (from langchain-core<1.0.0,>=0.3.39->langchain-openai) (6.0.2)

Requirement already satisfied: packaging<25,>=23.2 in /home/codespace/.local/lib/python3.12/site-packages (from langchain-core<1.0.0,>=0.3.39->langchain-openai) (24.2)

Requirement already satisfied: typing-extensions>=4.7 in /home/codespace/.local/lib/python3.12/site-packages (from langchain-core<1.0.0,>=0.3.39->langchain-openai) (4.12.2)

Requirement already satisfied: pydantic<3.0.0,>=2.5.2 in /home/codespace/.py

thon/current/lib/python3.12/site-packages (from langchain-core<1.0.0,>=0.3.39->langchain-openai) (2.10.6)  
Requirement already satisfied: anyio<5,>=3.5.0 in /home/codespace/.local/lib/python3.12/site-packages (from openai<2.0.0,>=1.58.1->langchain-openai) (4.7.0)  
Collecting distro<2,>=1.7.0 (from openai<2.0.0,>=1.58.1->langchain-openai)  
  Downloading distro-1.9.0-py3-none-any.whl.metadata (6.8 kB)  
Requirement already satisfied: httpx<1,>=0.23.0 in /home/codespace/.local/lib/python3.12/site-packages (from openai<2.0.0,>=1.58.1->langchain-openai) (0.28.1)  
Collecting jiter<1,>=0.4.0 (from openai<2.0.0,>=1.58.1->langchain-openai)  
  Downloading jiter-0.8.2-cp312-cp312-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl.metadata (5.2 kB)  
Requirement already satisfied: sniffio in /home/codespace/.local/lib/python3.12/site-packages (from openai<2.0.0,>=1.58.1->langchain-openai) (1.3.1)  
Collecting tqdm>4 (from openai<2.0.0,>=1.58.1->langchain-openai)  
  Downloading tqdm-4.67.1-py3-none-any.whl.metadata (57 kB)  
Collecting regex>=2022.1.18 (from tiktoken<1,>=0.7->langchain-openai)  
  Downloading regex-2024.11.6-cp312-cp312-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl.metadata (40 kB)  
Requirement already satisfied: requests>=2.26.0 in /home/codespace/.local/lib/python3.12/site-packages (from tiktoken<1,>=0.7->langchain-openai) (2.32.3)  
Requirement already satisfied: idna>=2.8 in /home/codespace/.local/lib/python3.12/site-packages (from anyio<5,>=3.5.0->openai<2.0.0,>=1.58.1->langchain-openai) (3.10)  
Requirement already satisfied: certifi in /home/codespace/.local/lib/python3.12/site-packages (from httpx<1,>=0.23.0->openai<2.0.0,>=1.58.1->langchain-openai) (2024.8.30)  
Requirement already satisfied: httpcore==1.\* in /home/codespace/.local/lib/python3.12/site-packages (from httpx<1,>=0.23.0->openai<2.0.0,>=1.58.1->langchain-openai) (1.0.7)  
Requirement already satisfied: h11<0.15,>=0.13 in /home/codespace/.local/lib/python3.12/site-packages (from httpcore==1.\*->httpx<1,>=0.23.0->openai<2.0.0,>=1.58.1->langchain-openai) (0.14.0)  
Requirement already satisfied: jsonpointer>=1.9 in /home/codespace/.local/lib/python3.12/site-packages (from jsonpatch<2.0,>=1.33->langchain-core<1.0.0,>=0.3.39->langchain-openai) (3.0.0)  
Requirement already satisfied: orjson<4.0.0,>=3.9.14 in /home/codespace/.python/current/lib/python3.12/site-packages (from langsmith<0.4,>=0.1.125->langchain-core<1.0.0,>=0.3.39->langchain-openai) (3.10.15)  
Requirement already satisfied: requests-toolbelt<2.0.0,>=1.0.0 in /home/codespace/.python/current/lib/python3.12/site-packages (from langsmith<0.4,>=0.1.125->langchain-core<1.0.0,>=0.3.39->langchain-openai) (1.0.0)  
Requirement already satisfied: zstandard<0.24.0,>=0.23.0 in /home/codespace/.python/current/lib/python3.12/site-packages (from langsmith<0.4,>=0.1.125->langchain-core<1.0.0,>=0.3.39->langchain-openai) (0.23.0)  
Requirement already satisfied: annotated-types>=0.6.0 in /home/codespace/.python/current/lib/python3.12/site-packages (from pydantic<3.0.0,>=2.5.2->langchain-core<1.0.0,>=0.3.39->langchain-openai) (0.7.0)  
Requirement already satisfied: pydantic-core==2.27.2 in /home/codespace/.python/current/lib/python3.12/site-packages (from pydantic<3.0.0,>=2.5.2->langchain-core<1.0.0,>=0.3.39->langchain-openai) (2.27.2)  
Requirement already satisfied: charset-normalizer<4,>=2 in /home/codespace/.local/lib/python3.12/site-packages (from requests>=2.26.0->tiktoken<1,>=0.7->langchain-openai) (3.4.0)

Requirement already satisfied: urllib3<3,>=1.21.1 in /home/codespace/.local/lib/python3.12/site-packages (from requests>=2.26.0->tiktoken<1,>=0.7->langchain-openai) (2.2.3)

Downloading langchain\_openai-0.3.7-py3-none-any.whl (55 kB)

Downloading openai-1.65.4-py3-none-any.whl (473 kB)

Downloading tiktoken-0.9.0-cp312-cp312-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (1.2 MB)

1.2/1.2 MB 18.4 MB/s eta 0:00:00

Downloading distro-1.9.0-py3-none-any.whl (20 kB)

Downloading jiter-0.8.2-cp312-cp312-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (345 kB)

Downloading regex-2024.11.6-cp312-cp312-manylinux\_2\_17\_x86\_64.manylinux2014\_x86\_64.whl (796 kB)

796.9/796.9 kB 19.5 MB/s eta 0:00:00

Downloading tqdm-4.67.1-py3-none-any.whl (78 kB)

Installing collected packages: tqdm, regex, jiter, distro, tiktoken, openai, langchain-openai

Successfully installed distro-1.9.0 jiter-0.8.2 langchain-openai-0.3.7 openai-1.65.4 regex-2024.11.6 tiktoken-0.9.0 tqdm-4.67.1

[notice] A new release of pip is available: 24.3.1 -> 25.0.1

[notice] To update, run: `pip install --upgrade pip`

Note: you may need to restart the kernel to use updated packages.

```
In [ ]: os.environ["OPENAI_API_KEY"] = "secret"
```

```
In [7]: #4o the best model available for us
llm = ChatOpenAI(
    model_name="gpt-4",
    temperature=0 #For consistent, fact-based responses
)
```

```
In [8]: #this is used to store our entire article, if we want more articles follow t
#however if we have an article with more than 8k characters, chat 4o has a c
#into chunks if needed
article_text = """
Members of the Insurance and Real Estate Committee introduced a broad bill a
But policyholders who gathered at a public hearing Tuesday called on leaders
The proposal would limit premium increases for certain long-term care insura
"If a reduction in these outrageous premiums is not legislated, policyholder
"My husband and I have long-term health insurance policies from Transamerica
Under the bill, insurers would not be able to impose rate increases that exc
"They sent me a letter that said, 'We are going to increase your rates appro
"The benefit to the insurance company is that for every dollar they pay in a
Schwartzter asked insurance committee members to do more to hold carriers acc
```

“Residents, mostly seniors ... are being forced to choose between buying food, and paying for long-term care insurance. Lobbyists for the insurance industry expressed opposition to the measure.

“While this bill is well-intentioned, it would have serious consequences for residents. As insurers, we have a fundamental obligation to ensure the financial sustainability of the system. It’s going to impact different insurance companies differently,” Jan Graebner, executive vice president of the Connecticut Insurance Association, told The Connecticut Mirror reported last month that the annual cost of maintaining long-term care insurance is rising sharply.

Nearly 100,000 people in Connecticut have long-term care insurance, coverage that is essential for many seniors. A CT Mirror review of rate hikes from January 2019 to October 2024 shows more than 65,000 policyholders faced premium increases. When large providers seek premium increases, thousands of consumers can be impacted. In 2022, Genworth raised rates for more than 2,000 people by an average of 9 percent. As consumers are squeezed, grievances filed with the Insurance Department have increased. Solutions have been elusive. Legislators introduced more than 50 bills from 2019 to 2024. So far this year, at least 13 bills have been raised to tackle the issue, including one by Rep. Matt Blumenthal, D-Stamford, House chair of the Government Administration and Services Committee.

“There is a crisis with regard to long-term care insurance and affordability,” Blumenthal said. Blumenthal has submitted his own bill on the topic, and some policyholders expect it to pass. Wood said the committee is still working on the bill and would incorporate suggestions from stakeholders.

“We are making this a priority this legislative session,” she said.

”””

```
In [9]: template_str = """
You are a helpful assistant analyzing an article about insurance-related issues.
We are working on a project titled:
'Insurance Complaints in Connecticut: A Data-Driven Approach to Consumer Trust'

Our overarching goal:
- Analyze 65,000 consumer complaints filed against insurance companies in Connecticut
- Identify which insurers are most responsive
- Examine complaint frequencies, resolution times, financial recovery amounts
- Guide Connecticut residents toward more trustworthy insurance providers
- Add valuable unstructured data to our existing datasets

Given the ARTICLE TEXT below, extract the following fields in valid JSON format:

{{
  "hearing_date": "",           // If provided (e.g., "Feb 11, 2025"), else empty
  "location": "",              // Where the hearing or event took place
  "insurers_mentioned": [],     // Any insurer names, companies, or associations
  "policyholder_issues": [],    // Key complaints, grievances, or issues raised
}}
```



```

"legislative_proposals": [],    // Legislative or policy measures suggested
"sentiment_overall": "",        // Brief description (e.g., 'critical', 'su
"notable_quotes": [],          // List of direct quotations from the text
"data_insights_for_project": ""
    // Summarize how this article's content could be integrated
    // or cross-referenced with our 65K insurance complaints database
    // for deeper analysis or context
}}

```

Rules for extraction:

- Return ONLY the JSON object.
- If a field is not discussed, leave it blank or empty.
- Focus on tying the content back to how it might inform or enrich our broader CT insurance complaint analysis.

ARTICLE TEXT:

```

{chunk}
"""

```

```

prompt = PromptTemplate(
    template=template_str,
    input_variables=["chunk"]
)

```

In [10]: *#this may change depending on if we split article into chunks, if we do split  
#we will need another code block for article chunk splitting for tokenization*

```

chain = LLMChain(llm=llm, prompt=prompt)
chunks = [article_text]
structured_responses = []

for i, chunk in enumerate(chunks):
    print(f"\n--- Processing Chunk {i+1}/{len(chunks)} ---")
    response = chain.run(chunk=chunk)
    print("Raw LLM Response:\n", response)

    #Attempt JSON parse
    try:
        data = json.loads(response)
    except json.JSONDecodeError:
        #In case of JSON parse issues, store raw text
        data = {"error": "Could not parse JSON", "raw_response": response}

    structured_responses.append(data)

print("\nAll Structured Responses:\n")
for sr in structured_responses:
    print(json.dumps(sr, indent=2))

```

```
/tmp/ipykernel_9029/1546865519.py:4: LangChainDeprecationWarning: The class
`LLMChain` was deprecated in LangChain 0.1.17 and will be removed in 1.0. Us
e :meth:`~RunnableSequence`, e.g., `prompt | llm` instead.
    chain = LLMChain(llm=llm, prompt=prompt)
/tmp/ipykernel_9029/1546865519.py:10: LangChainDeprecationWarning: The metho
d `Chain.run` was deprecated in langchain 0.1.0 and will be removed in 1.0.
Use :meth:`~invoke` instead.
    response = chain.run(chunk=chunk)
```

--- Processing Chunk 1/1 ---

Raw LLM Response:

```
{
  "hearing_date": "Tuesday",
  "location": "Connecticut",
  "insurers_mentioned": ["Transamerica", "Genworth Financial", "Metropolitan Life Insurance Company", "American Council of Life Insurers"],
  "policyholder_issues": ["Large rate hikes", "Lack of transparency in rate review process", "Risk of dropping policies due to high premiums", "Inadequate protection for consumers", "Dramatic rate increases", "Being offered buyouts to drop plans"],
  "legislative_proposals": ["Limit premium increases for certain long-term care insurance policies", "Create a tax credit for consumers with these plans", "Require prospective buyers to be notified about the risk of rate increases", "Mandate a public hearing when rate hike requests exceed 10%"],
  "sentiment_overall": "Critical",
  "notable_quotes": ["\"If a reduction in these outrageous premiums is not legislated, policyholders will be forced to drop these policies,\" said Jan Kritzman.", "\"Residents, mostly seniors ... are being forced to choose between buying food, paying their rent or mortgage or paying for their long-term care insurance,\" said David Schwartzer.", "\"While this bill is well-intentioned, it would have serious consequences for both consumers and insurers by undermining the financial stability of long-term care insurance,\" said Brooke Foley.", "\"There is a crisis with regard to long-term care insurance and affordability in this state, with thousands of individuals being priced out of their long-term care insurance after having paid into it for decades and now being forced to drop benefits and not being able to take advantage of the benefits they paid into for so long,\" said Rep. Matt Blumenthal."],
  "data_insights_for_project": "This article provides insights into the issues faced by policyholders in Connecticut, particularly with regards to long-term care insurance. It highlights the concerns about large rate hikes, lack of transparency, and inadequate consumer protection. This information can be cross-referenced with our database to identify trends in complaints and to assess the responsiveness of the mentioned insurers. The legislative proposals introduced can also be used to understand the potential changes in the insurance landscape in Connecticut. The sentiment expressed in the article is largely critical of the insurance companies, which can be used to gauge overall consumer trust."
}
```

All Structured Responses:

```
{
  "hearing_date": "Tuesday",
  "location": "Connecticut",
  "insurers_mentioned": [
    "Transamerica",
    "Genworth Financial",
    "Metropolitan Life Insurance Company",
    "American Council of Life Insurers"
  ],
  "policyholder_issues": [
    "Large rate hikes",
    "Lack of transparency in rate review process",
    "Risk of dropping policies due to high premiums",
    "Inadequate protection for consumers",

```

```
"Dramatic rate increases",
"Being offered buyouts to drop plans"
],
"legislative_proposals": [
  "Limit premium increases for certain long-term care insurance policies",
  "Create a tax credit for consumers with these plans",
  "Require prospective buyers to be notified about the risk of rate increases",
  "Mandate a public hearing when rate hike requests exceed 10%"
],
"sentiment_overall": "Critical",
"notable_quotes": [
  "\u201cIf a reduction in these outrageous premiums is not legislated, policyholders will be forced to drop these policies,\u201d said Jan Kritzman.",
  "\u201cResidents, mostly seniors \u2026 are being forced to choose between buying food, paying their rent or mortgage or paying for their long-term care insurance,\u201d said David Schwartzer.",
  "\u201cWhile this bill is well-intentioned, it would have serious consequences for both consumers and insurers by undermining the financial stability of long-term care insurance,\u201d said Brooke Foley.",
  "\u201cThere is a crisis with regard to long-term care insurance and affordability in this state, with thousands of individuals being priced out of their long-term care insurance after having paid into it for decades and now being forced to drop benefits and not being able to take advantage of the benefits they paid into for so long,\u201d said Rep. Matt Blumenthal."
],
"data_insights_for_project": "This article provides insights into the issues faced by policyholders in Connecticut, particularly with regards to long-term care insurance. It highlights the concerns about large rate hikes, lack of transparency, and inadequate consumer protection. This information can be cross-referenced with our database to identify trends in complaints and to assess the responsiveness of the mentioned insurers. The legislative proposals introduced can also be used to understand the potential changes in the insurance landscape in Connecticut. The sentiment expressed in the article is largely critical of the insurance companies, which can be used to gauge overall consumer trust."
}
```