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How to create a prompt template that uses few shot examples

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In this tutorial, we'll learn how to create a prompt template that uses few shot examples.

We'll use the `FewShotPromptTemplate` class to create a prompt template that uses few shot examples. This class either takes in a set of examples, or an `ExampleSelector` object. In this tutorial, we'll go over both options.

Use Case

In this tutorial, we'll configure few shot examples for self-ask with search.

Using an example set

Create the example set

To get started, create a list of few shot examples. Each example should be a dictionary with the keys being the input variables and the values being the values for those input variables.

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```
examples = [
  {
    "question": "Who lived longer, Muhammad Ali or Alan Turing?",
    "answer":
"""
Are follow up questions needed here: Yes.
Follow up: How old was Muhammad Ali when he died?
Intermediate answer: Muhammad Ali was 74 years old when he died.
Follow up: How old was Alan Turing when he died?
Intermediate answer: Alan Turing was 41 years old when he died.
So the final answer is: Muhammad Ali
"""
  },
  {
    "question": "When was the founder of craigslist born?",
    "answer":
"""
Are follow up questions needed here: Yes.
Follow up: Who was the founder of craigslist?
Intermediate answer: Craigslist was founded by Craig Newmark.
Follow up: When was Craig Newmark born?
Intermediate answer: Craig Newmark was born on December 6, 1952.
So the final answer is: December 6, 1952
"""
  },
  {
    "question": "Who was the maternal grandfather of George Washington?",
    "answer":
"""
Are follow up questions needed here: Yes.
Follow up: Who was the mother of George Washington?
Intermediate answer: The mother of George Washington was Mary Ball Washington.
Follow up: Who was the father of Mary Ball Washington?
Intermediate answer: The father of Mary Ball Washington was Joseph Ball.
So the final answer is: Joseph Ball
"""
  },
  {
    "question": "Are both the directors of Jaws and Casino Royale from the same country?",
    "answer":
"""
Are follow up questions needed here: Yes.
Follow up: Who is the director of Jaws?
Intermediate Answer: The director of Jaws is Steven Spielberg.
Follow up: Where is Steven Spielberg from?
Intermediate Answer: The United States.
Follow up: Who is the director of Casino Royale?
Intermediate Answer: The director of Casino Royale is Martin Campbell.
Follow up: Where is Martin Campbell from?
Intermediate Answer: New Zealand.
So the final answer is: No
"""
```

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```
    }
]
```

Create a formatter for the few shot examples

Configure a formatter that will format the few shot examples into a string. This formatter should be a `PromptTemplate` object.

```
example_prompt = PromptTemplate(input_variables=["question", "answer"],
template="Question: {question}\n{answer}")

print(example_prompt.format(**examples[0]))
```

```
Question: Who lived longer, Muhammad Ali or Alan Turing?

Are follow up questions needed here: Yes.
Follow up: How old was Muhammad Ali when he died?
Intermediate answer: Muhammad Ali was 74 years old when he died.
Follow up: How old was Alan Turing when he died?
Intermediate answer: Alan Turing was 41 years old when he died.
So the final answer is: Muhammad Ali
```

Feed examples and formatter to `FewShotPromptTemplate`

Finally, create a `FewShotPromptTemplate` object. This object takes in the few shot examples and the formatter for the few shot examples.

```
prompt = FewShotPromptTemplate(
    examples=examples,
    example_prompt=example_prompt,
    suffix="Question: {input}",
    input_variables=["input"]
)

print(prompt.format(input="Who was the father of Mary Ball Washington?"))
```

```
Question: Who lived longer, Muhammad Ali or Alan Turing?
```

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```
Follow up: How old was Muhammad Ali when he died?
Intermediate answer: Muhammad Ali was 74 years old when he died.
Follow up: How old was Alan Turing when he died?
Intermediate answer: Alan Turing was 41 years old when he died.
So the final answer is: Muhammad Ali


Question: When was the founder of craigslist born?

Are follow up questions needed here: Yes.
Follow up: Who was the founder of craigslist?
Intermediate answer: Craigslist was founded by Craig Newmark.
Follow up: When was Craig Newmark born?
Intermediate answer: Craig Newmark was born on December 6, 1952.
So the final answer is: December 6, 1952


Question: Who was the maternal grandfather of George Washington?

Are follow up questions needed here: Yes.
Follow up: Who was the mother of George Washington?
Intermediate answer: The mother of George Washington was Mary Ball Washington.
Follow up: Who was the father of Mary Ball Washington?
Intermediate answer: The father of Mary Ball Washington was Joseph Ball.
So the final answer is: Joseph Ball


Question: Are both the directors of Jaws and Casino Royale from the same country?

Are follow up questions needed here: Yes.
Follow up: Who is the director of Jaws?
Intermediate Answer: The director of Jaws is Steven Spielberg.
Follow up: Where is Steven Spielberg from?
Intermediate Answer: The United States.
Follow up: Who is the director of Casino Royale?
Intermediate Answer: The director of Casino Royale is Martin Campbell.
Follow up: Where is Martin Campbell from?
Intermediate Answer: New Zealand.
So the final answer is: No


Question: Who was the father of Mary Ball Washington?
```

Using an example selector

Feed examples into `ExampleSelector`

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an `ExampleSelector` object.

In this tutorial, we will use the `SemanticSimilarityExampleSelector` class. This class selects few shot examples based on their similarity to the input. It uses an embedding model to compute the similarity between the input and the few shot examples, as well as a vector store to perform the nearest neighbor search.

```python
from langchain.prompts.example_selector import SemanticSimilarityExampleSelector
from langchain.vectorstores import Chroma
from langchain.embeddings import OpenAIEmbeddings


example_selector = SemanticSimilarityExampleSelector.from_examples(
    # This is the list of examples available to select from.
    examples,
    # This is the embedding class used to produce embeddings which are used to
measure semantic similarity.
    OpenAIEmbeddings(),
    # This is the VectorStore class that is used to store the embeddings and do a
similarity search over.
    Chroma,
    # This is the number of examples to produce.
    k=1
)

# Select the most similar example to the input.
question = "Who was the father of Mary Ball Washington?"
selected_examples = example_selector.select_examples({"question": question})
print(f"Examples most similar to the input: {question}")
for example in selected_examples:
    print("\n")
    for k, v in example.items():
        print(f"{k}: {v}")
```

```
Running Chroma using direct local API.
Using DuckDB in-memory for database. Data will be transient.
Examples most similar to the input: Who was the father of Mary Ball Washington?


question: Who was the maternal grandfather of George Washington?
answer:
Are follow up questions needed here: Yes.
Follow up: Who was the mother of George Washington?
Intermediate answer: The mother of George Washington was Mary Ball Washington.
Follow up: Who was the father of Mary Ball Washington?
Intermediate answer: The father of Mary Ball Washington was Joseph Ball.
So the final answer is: Joseph Ball
```

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Feed example selector into `FewShotPromptTemplate`

Finally, create a `FewShotPromptTemplate` object. This object takes in the example selector and the formatter for the few shot examples.

```python
prompt = FewShotPromptTemplate(
    example_selector=example_selector,
    example_prompt=example_prompt,
    suffix="Question: {input}",
    input_variables=["input"]
)

print(prompt.format(input="Who was the father of Mary Ball Washington?"))
```

```
Question: Who was the maternal grandfather of George Washington?

Are follow up questions needed here: Yes.
Follow up: Who was the mother of George Washington?
Intermediate answer: The mother of George Washington was Mary Ball Washington.
Follow up: Who was the father of Mary Ball Washington?
Intermediate answer: The father of Mary Ball Washington was Joseph Ball.
So the final answer is: Joseph Ball


Question: Who was the father of Mary Ball Washington?
```