A4: Demo of a large language model application

This assignment is meant for students to practice building a demo of a large language model (LLM)-based AI system. Imagine this is a demo you would prepare in case the idea of building an AI application that requires natural language understanding is brought up at a meeting, and you offer to build this demo.

There are three categories of tasks you can implement with LLMs. The first is simply natural language understanding such as the use of an LLM as an interface between an algorithm or tool and their users. The second is to use an LLM to execute natural language tasks such as information extraction, machine translation, summarization, interpretation, etc. The third is using the contents of the data the model was trained with such as asking prompt questions for which you did not provide contents.

First step is to select an LLM API to use (e.g., Claude, Llama can be used for free).

Second step is to conceptualize the application identifying one or more tasks the application entails.

The minimum required for this assignment is a sequence of prompts. You may also use external sources such as ontologies and databases. For coordination with other sources, consider using Anthropic's MCP model.

Note that when using APIs, LLMs do not carry over any memory from one prompt to another, consequently, if you want the LLM to use the contents of a previous prompt and its answer, you have to capture them and include in the following prompt.

Third step is to answer the following items:

1. Value: describe the value to potential users and organization.
2. Describe in what way the application requires natural language understanding.
3. AI complex task: indicate the AI task(s) in your application demo.
4. Provide a set of at least two examples of inputs and outputs using your application.
5. Testing and evaluation: this can be done manually by commenting on a few examples discussing how well the LLM works for your chosen demo.

When sharing the code you used, remove your API key from the code and please add a link to how to get a key if you use models other than Claude, Llama, or OpenAI's models.