

In this Exercise Sheet, you are given a Jupiter Notebook to build your first RAG system. Here we will be generating recipes given some ingredients. The names of functions that have to be used are already provided. Your task is mostly searching for documentation and finding the right parameters. You can find all the documentation on <https://haystack.deepset.ai/>

Exercise 1 (Documents) 3 Points

- a. Initialize the InMemoryDocumentStore. **(1 Point)**
- b. Use the SentenceTransformersDocumentEmbedder to choose an embedding model for your documents. **(1 Point)**
- c. Use the document store from exercise a) and add the embedded document. **(1 Point)**

Exercise 2 (Main RAG-System Components) 7 Points

- a. Use the SentenceTransformersTextEmbedder to choose an embedding model for your documents. **(Use the same model as in exercise 1b) (1 Point)**
- b. Initialize an InMemoryEmbeddingRetriever which has access to your document store. **(2 Points)**
- c. Define a Template Prompt to control the placement of the user query and the retrieved prompts. An example is given in the Jupiter Notebook. Try changing it to receive better results. **(2 Points)**
- d. **If you are using your own PC**, download and install the Ollama Client <https://ollama.com/download>. After installing Ollama use a terminal to download Llama 3.1 with the command "ollama pull llama3.1:8b".
If you are using a PC in the course room, Ollama is already installed. To pull an LLM from the server, you need to follow two steps:
 1. Open a Terminal and enter "ollama serve"
 2. Open another Terminal and enter "ollama pull llama3.1:8b".**(2 Points)**

Exercise 3 (Assemble and test the pipeline) 10 Points

- a. Connect your text embedder, retriever, prompt builder and generator into a pipeline. **(2 Points)**
- b. Add the variables that are necessary to run your pipeline. **(2 points)**
- c. Try at least 6 different queries and save those recipes in a PDF file. Find the three recipes you liked the most and prepare a small presentation (in English) for the group. **(6 points)**