Appendix - Figures

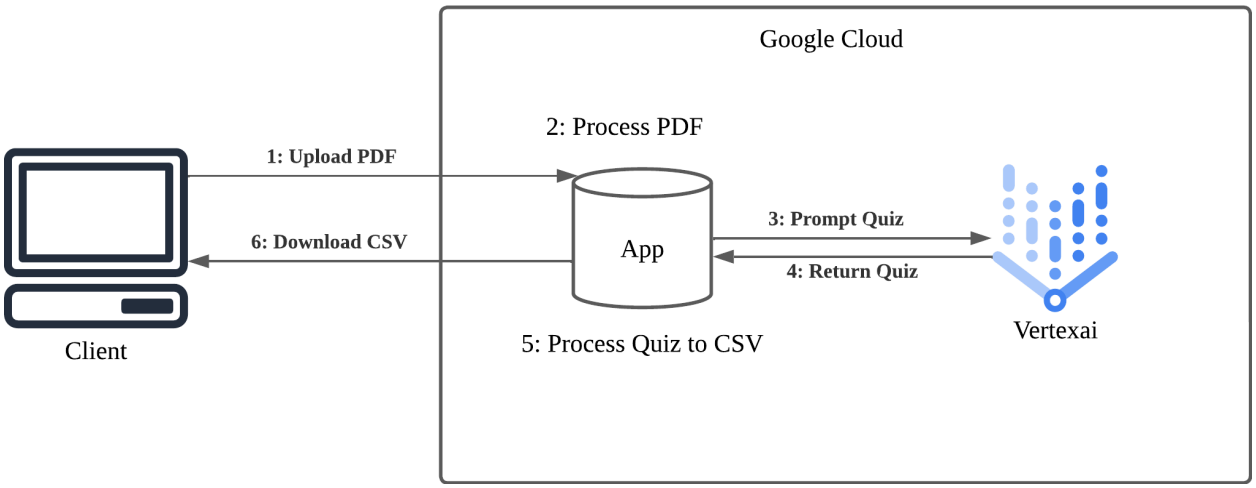

Figure 1: Application diagram

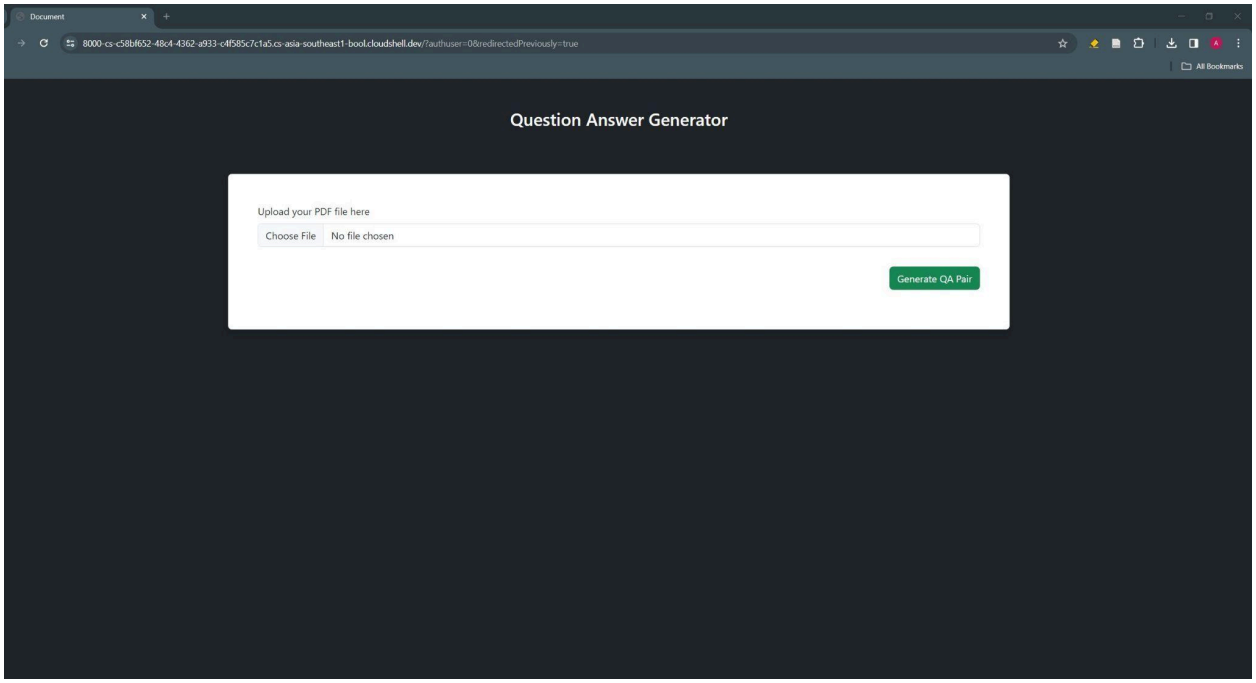

Figure 2: Homepage

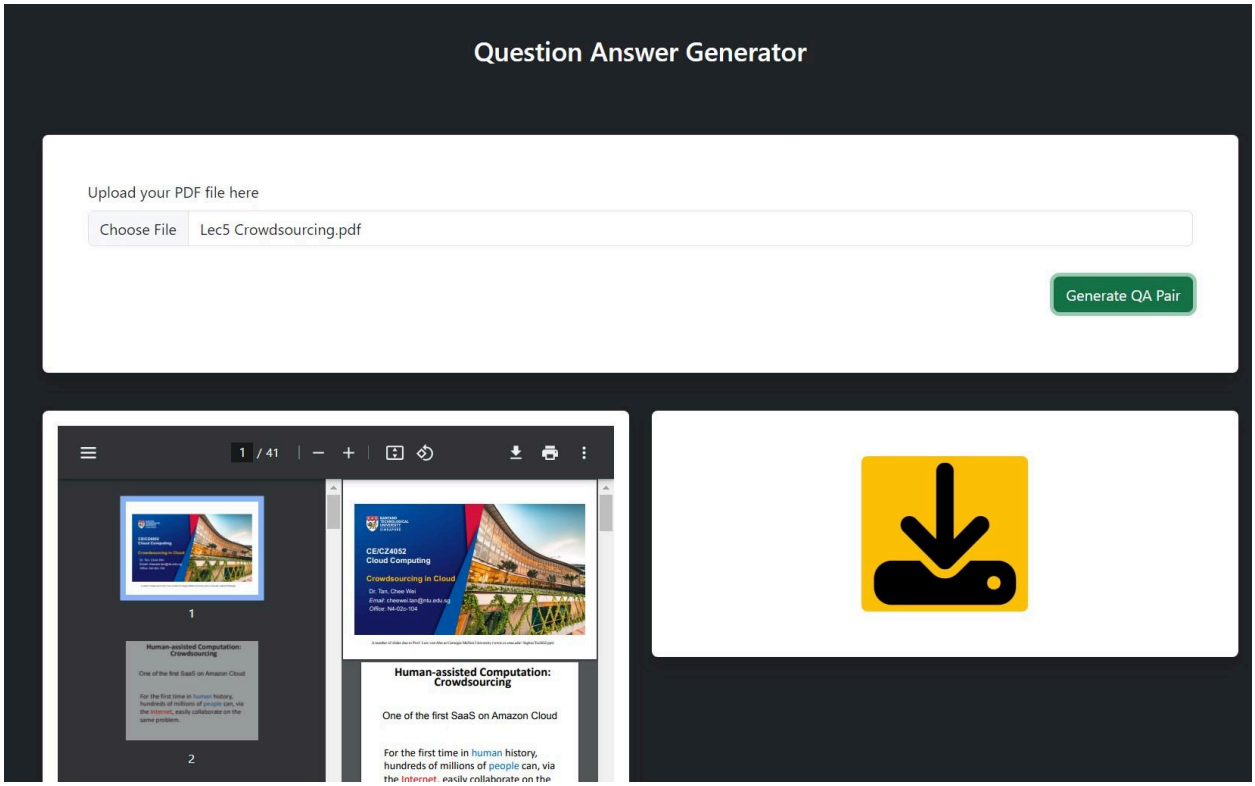

Figure 3: Upload and processing done

```
question_gen = ''

for page in documents:
    question_gen += page.page_content

splitter_ques_gen = TokenTextSplitter(
model_name = 'gpt-3.5-turbo',
chunk_size = 1000,
chunk_overlap = 50
)

chunks_ques_gen = splitter_ques_gen.split_text(question_gen)

document_ques_gen = [Document(page_content=t) for t in chunks_ques_gen]
```

Figure 4: Splitting of text into chunks

```python
map_chain = LLMChain(llm=answer_llm, prompt=map_prompt)
reduce_chain = LLMChain(llm=question_llm, prompt=reduce_prompt)

combine_documents_chain = StuffDocumentsChain(
    llm_chain=reduce_chain, document_variable_name="docs"
)

# Combines and iteratively reduces the mapped documents
reduce_documents_chain = ReduceDocumentsChain(
    # This is final chain that is called.
    combine_documents_chain=combine_documents_chain,
    # If documents exceed context for `StuffDocumentsChain`
    collapse_documents_chain=combine_documents_chain,
    # The maximum number of tokens to group documents into.
    token_max=4000,
)

# Combining documents by mapping a chain over them, then combining results
map_reduce_chain = MapReduceDocumentsChain(
    # Map chain
    llm_chain=map_chain,
    # Reduce chain
    reduce_documents_chain=reduce_documents_chain,
    # The variable name in the llm_chain to put the documents in
    document_variable_name="docs",
    # Return the results of the map steps in the output
    return_intermediate_steps=False,
)
```

Figure 5: MapReduce LLM Pipeline

```
# LLM model
ans_parameters = {
    # "candidate_count": 1,
    "model_name":"text-bison",
    "max_output_tokens": 2048,
    "temperature": 0.1,
    "top_p": 0.8,
    "top_k": 40,
    "verbose": True,
}

ques_parameters = {
    # "candidate_count": 1,
    "model_name":"text-bison",
    "max_output_tokens": 2048,
    "temperature": 0.3,
    "top_p": 0.8,
    "top_k": 40,
    "verbose": True,
}
```

Figure 6: Parameters settings

```
prompt_template = """
You are an expert at creating questions based on the content in documents.
Your goal is to prepare a student for their exam and tests.
You do this by asking questions about the text below:

------------
{text}
------------

Create questions in an MCQ format with 4 possible solutions that will prepare the students for
their tests. The output specifications are as follows:
'question', 'possible_answers', 'correct_answer', 'explanation'. Separate the questions with a *.
Make sure not to lose any important information.

QUESTIONS:
"""

PROMPT_QUESTIONS = PromptTemplate(template=prompt_template, input_variables=["text"])

refine_template = ("""
You are an expert at creating practice questions based on content in documents.
Your goal is to help a stuednt prepare for their exams and test.
We have received some practice questions to a certain extent: {existing_answer}.
The question, possible answers, correct answer and explanation can be found in the 'question',
'possible_answers','correct_answer' and 'explanation' fields respectively.
We have the option to refine the existing questions or add new ones.
(only if necessary) with some more context below. Separate the questions with a '*'.
------------
{text}
------------

Given the new context, refine the original questions in English.
If the context is not helpful, please provide the original questions.
QUESTIONS:
"""
)

REFINE_PROMPT_QUESTIONS = PromptTemplate(
    input_variables=["existing_answer", "text"],
    template=refine_template,
)
```

Figure 7: Refine prompts

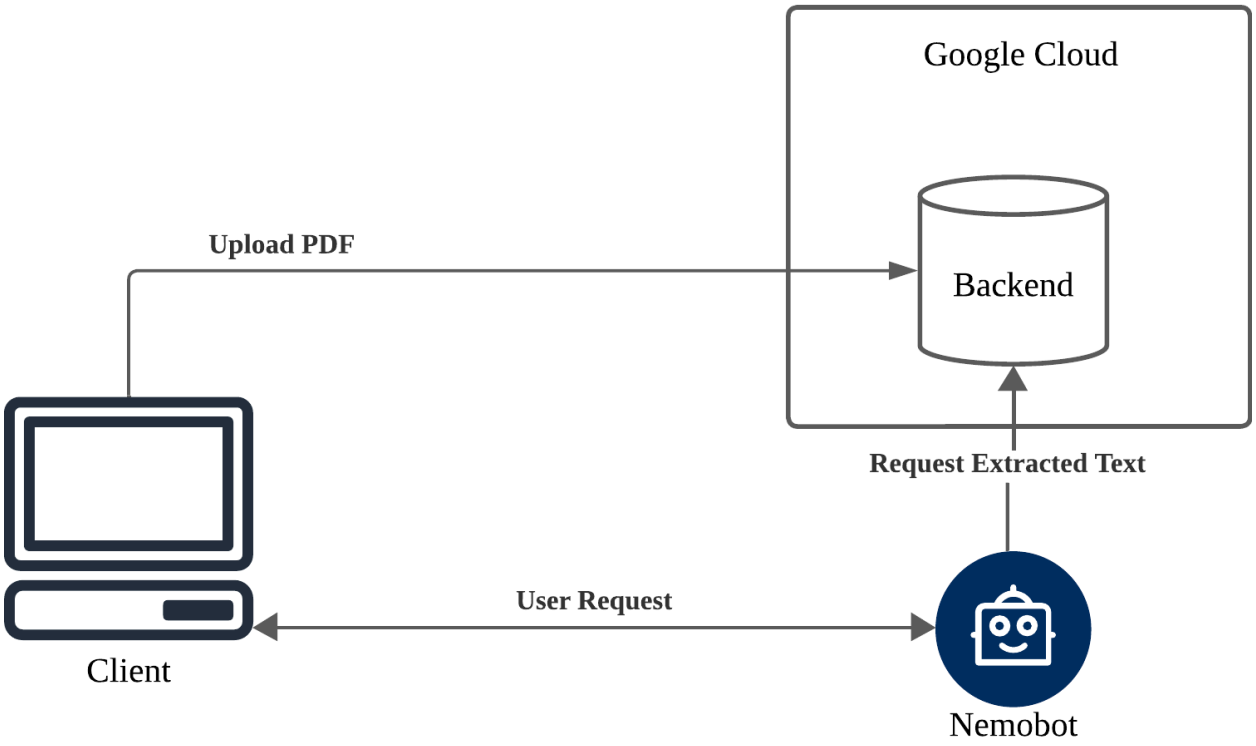

Figure 8: System architecture diagram

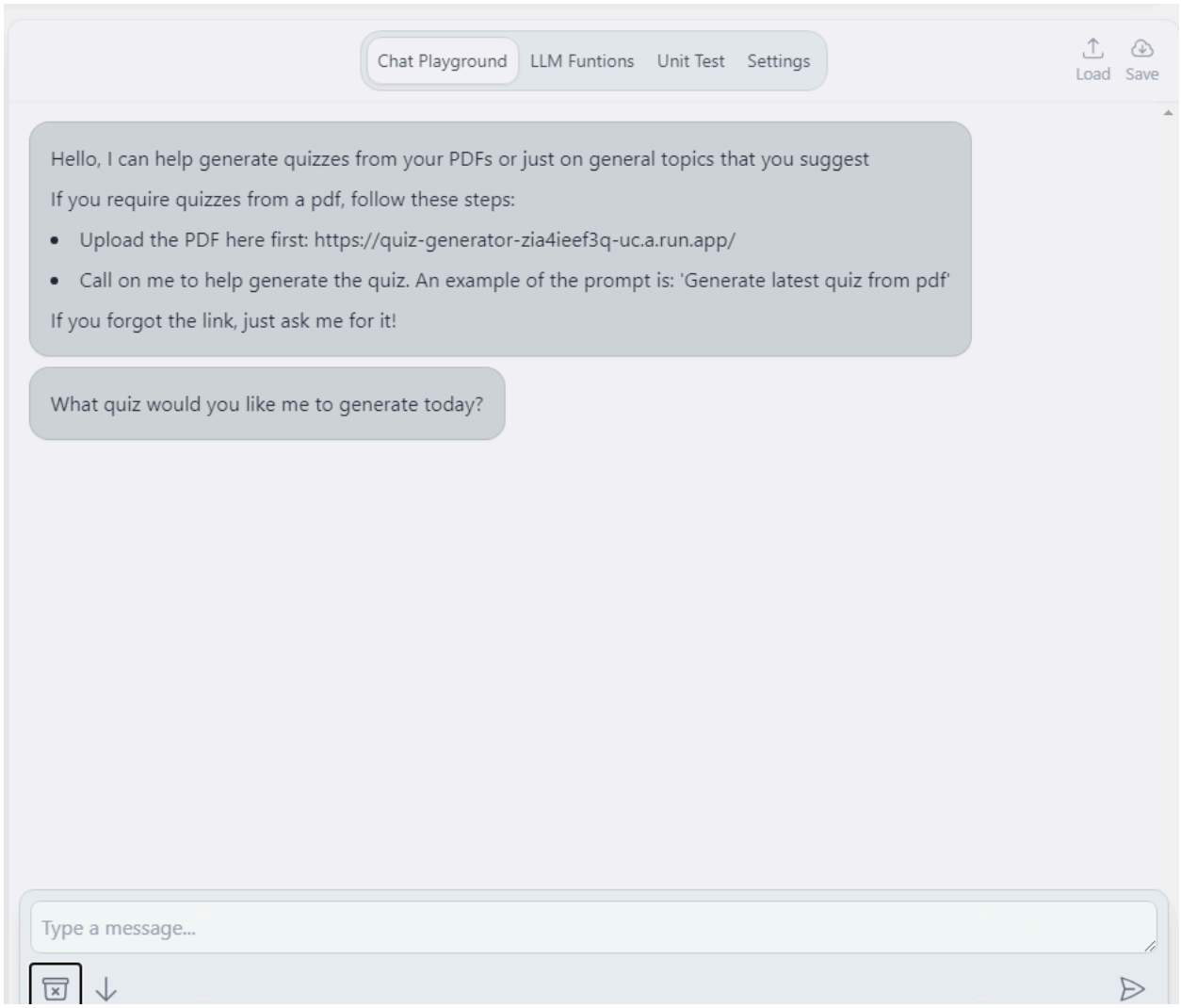

Figure 9: Initial message

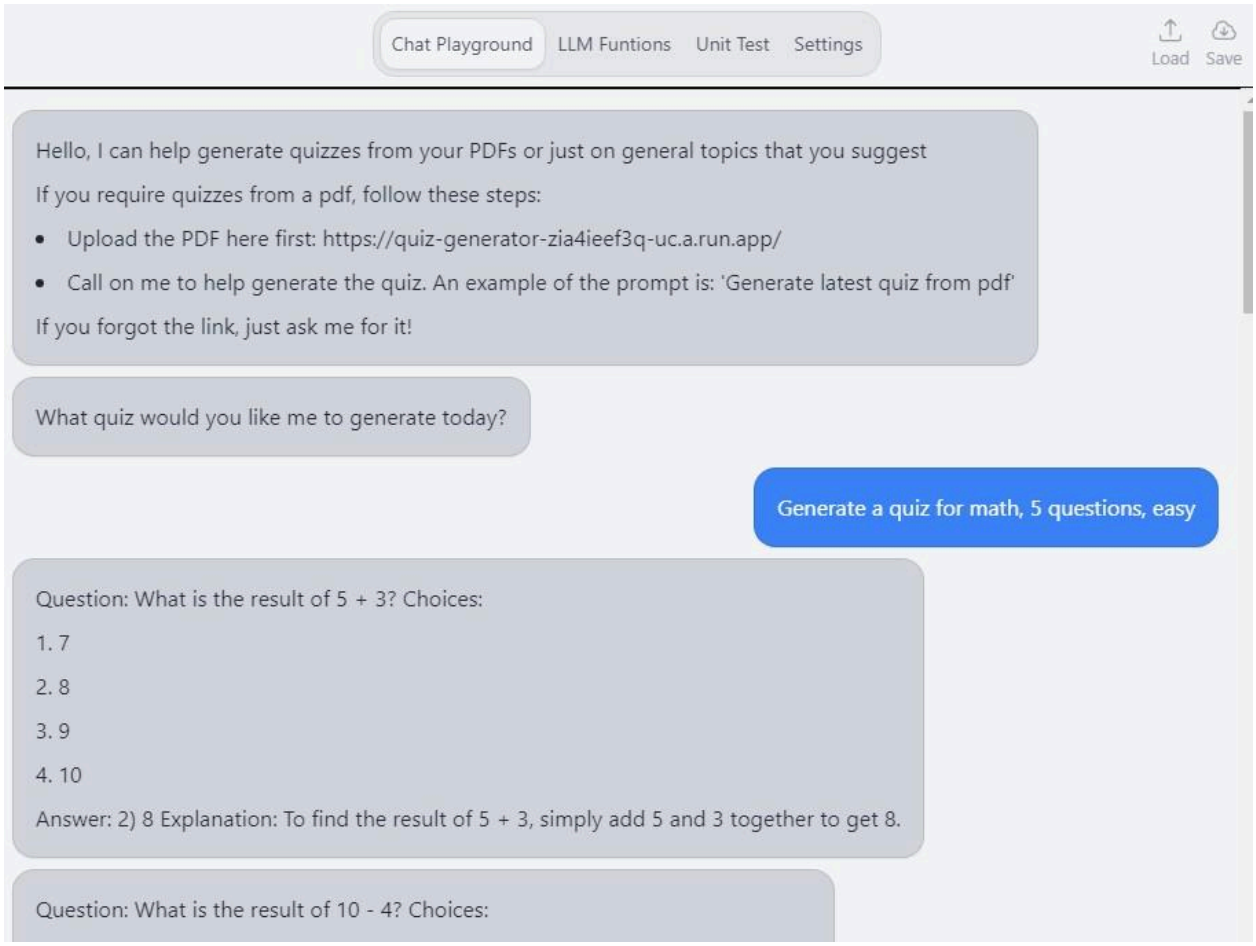

Figure 10 : Quiz on a topic given

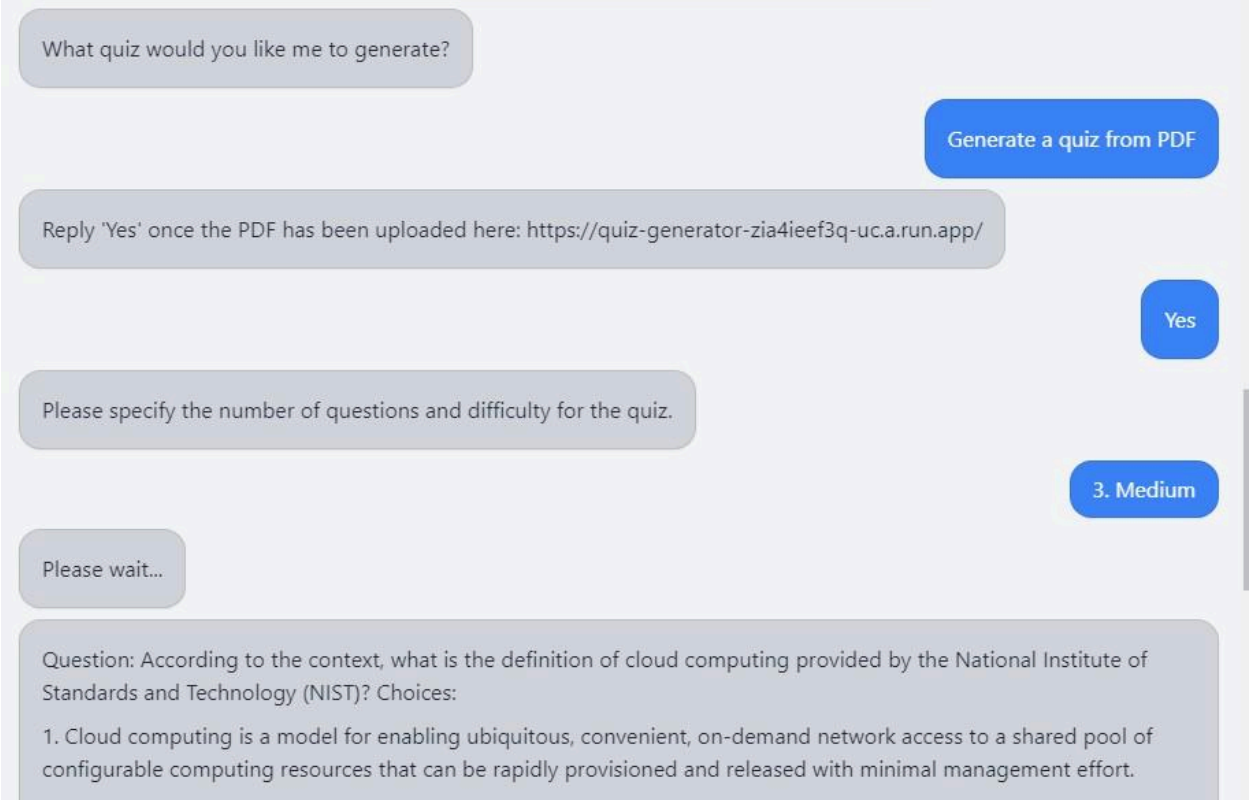

Figure 11: PDF Quiz

Figure 12: LLM Functions developed

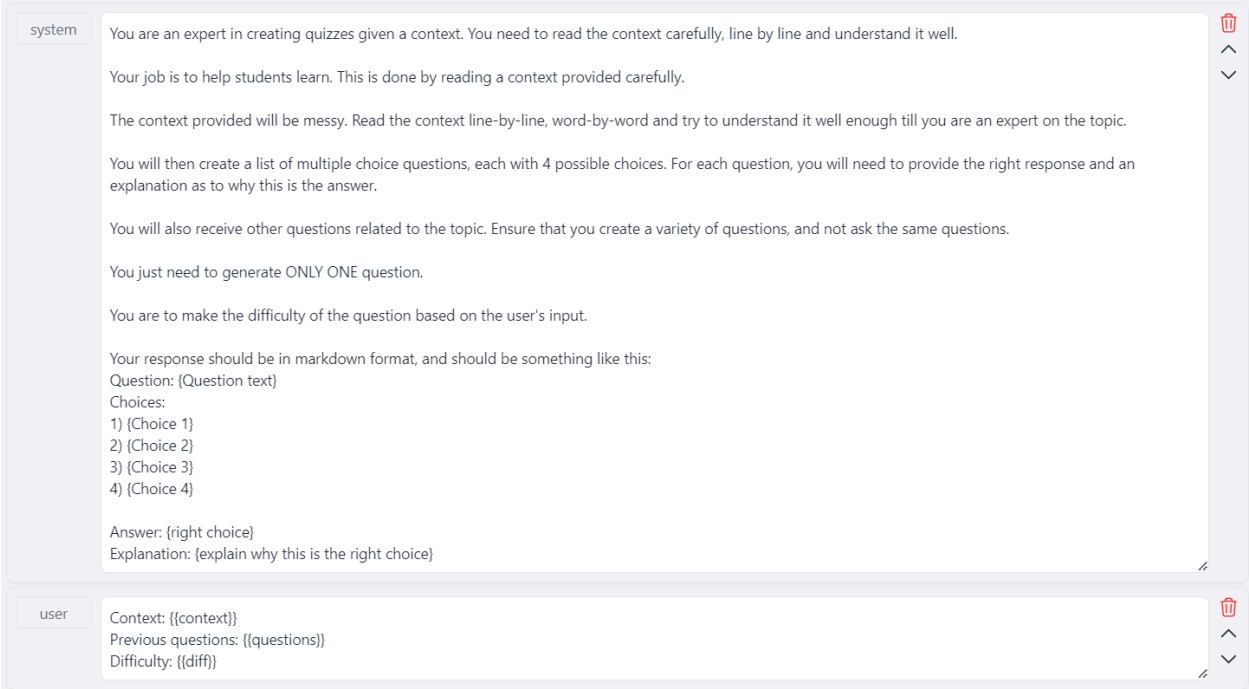

Figure 13: generate_quiz system and user message

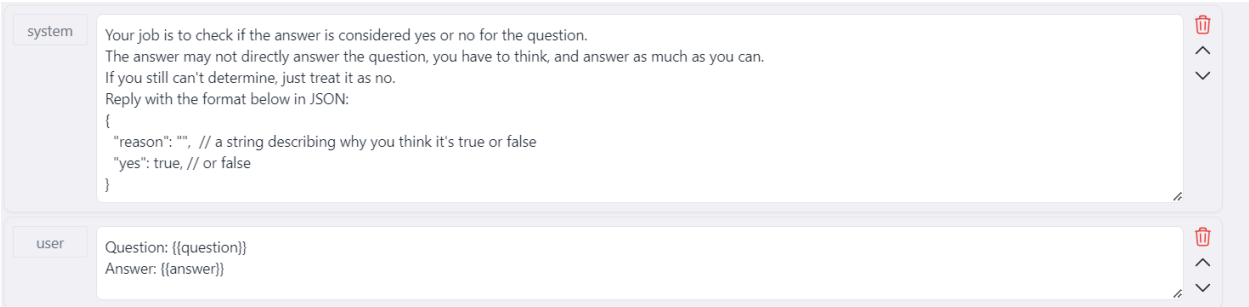

Figure 14: yesOrNo system and user message

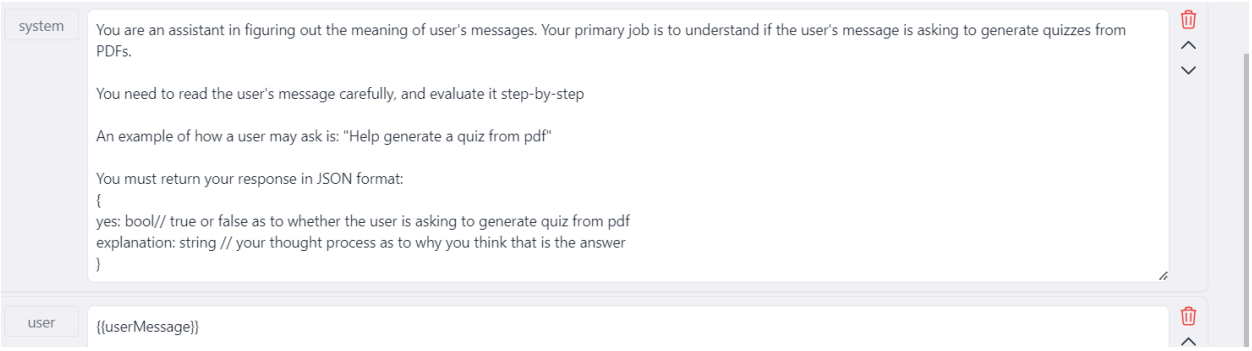

Figure 15: is_user_asking_to_use_pdf system and user message

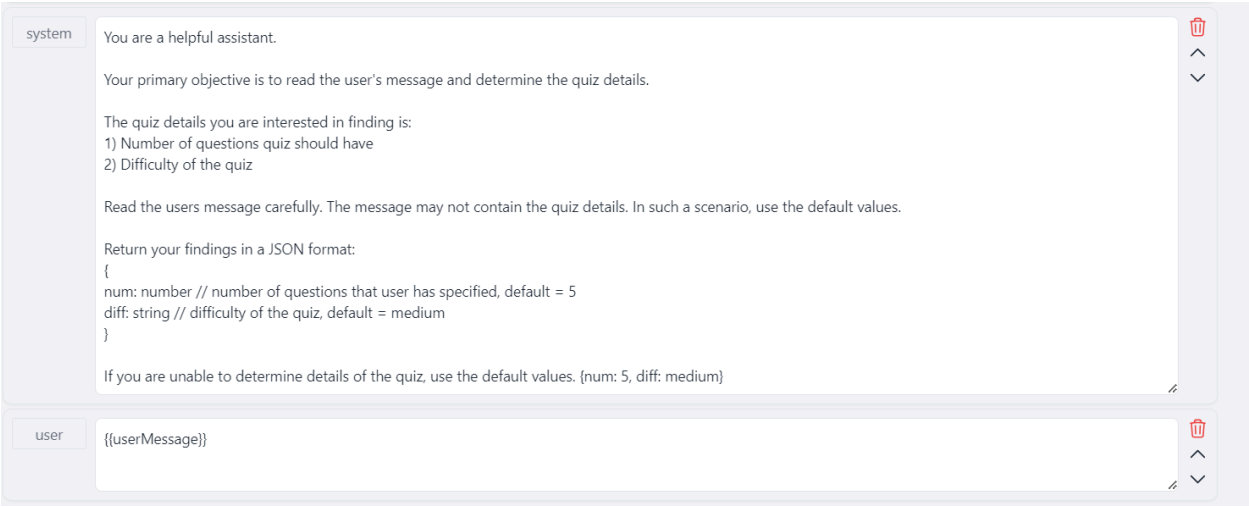

Figure 16: quiz_details system and user message