

VIETNAM NATIONAL UNIVERSITY, HO CHI MINH CITY  
UNIVERSITY OF TECHNOLOGY  
FACULTY OF COMPUTER SCIENCE AND ENGINEERING



## Programming Intergration Project (CO3101)

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Group 4:

*“Research and build AI chatbots using Retrieval-Augmented Generation for a music-related website, with Speech-to-Text and Text-to-Speech integration”*

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## Member list & Workload

No.	Fullname	Student ID	Problems	% done
1	Nguyễn Thiên Minh	2312097	- Exercise 1: 1.2 - Exercise 2 - Exercise 3: 3.2	100%
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3	Phạm Trần Minh Trí	2313622	- Exercise 1: 1.1 - Exercise 4 - L <sup>A</sup> T <sub>E</sub> X	100%

Table 1: Member list & workload



## 1 Introduction



## 2 Prerequisite: ANN, Transformer, LLM



### 3 Agent, URAG, LangChain



## 4 Retrieval-Augmented Generation for Large Language Models: A Survey



## 5 Reranking, RAG-Reasoning, RAG-RL



## 6 Implementation: LangChain, Text-to-speech, Speech-to-text



## 7 Evaluation



## 8 Conclusion



## References

- [1] LangChain Documentation. *Build a RAG agent with LangChain*. Accessed: 2026-01-05.  
LangChain. 2025. URL: <https://docs.langchain.com/oss/python/langchain/rag>.