HKBU-ITM -Comp 7940

Group project- Line bot Group AAA

Milestone 4

Q1: How is your project architecture related to the theory taught in the lecture?

According to our project, it actually uses the cloud computing technology and like a small distributed system which through the network to achieve sharing of hardware resources, file, database, information and so on.

The distributed system is the one which hardware and software components located at networked computers then communicate and coordinate their actions by message passing such as API.

As for our project, we push our project code in the Heroku cloud computing platform as a service which can register and run our project code in the cloud by using virtual hardware and software components. Moreover, we also use some API to connect with several servers and databases in order to get some services form them. Those reflect the concept of distributed system and cloud computing technology.

For example, in this project, we use linebot API which is provided by the official Line to create a program on the server to receive messages, process messages, and return messages. In this way, we cannot to design and develop our own chatbot server but use

cloud to connect other existing server which have already created good software for using. For another thing, we use redis API to connect with this database so that we can achieve the function of recording user's news reading. The redis might contains many networked computers to achieve its various services but we can simply use cloud to make use of those services. Furthermore, in the project, we also use GoogleMap API to connect with Google system to make use of its map function for receiving some hospital location directly and automatically.

Take GoogleMap API as a example to illustrate the distributed system models. For instance, GoogleMap API uses HTTP requests to access driving, cycling, walking and public transportation routes, which represents the communication entities that are web services in the architecture model in the distributed system. Normally, form a system perspective, the entities that communicate in a distributed system are typically process, but from a programming perspective, more problem-oriented abstractions have been proposed such as web services that use web standards to represent and discover services.

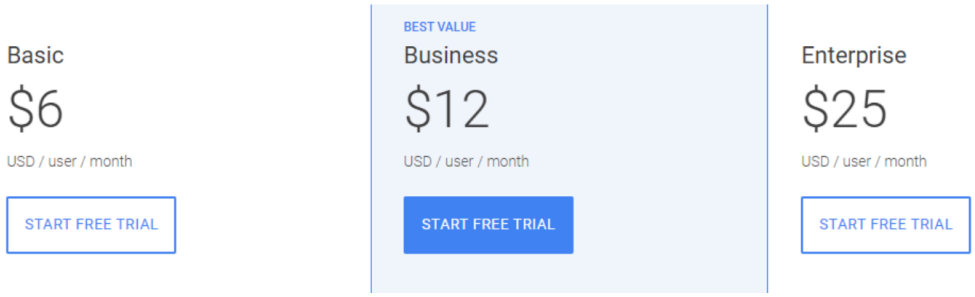
Q2: Can you demonstrate, with some screen cap, how to increase capacity of your chat bot service?

As for the concurrency and synchronous problems, our project uses redis to address this two things to achieve high concurrency and non-blocking. The Redis server is single-threaded for command processing, but at the I/O level it can simultaneously provide services to multiple clients concurrently, and the conversion from concurrent to internal

single-threading is achieved through a multiplexing framework. I/O multiplexing is actually managing multiple I/O streams by recording and tracking the status of each socket(I/O stream) in a single thread.

Moreover, we can use python multithread to increase capacity of my chat bot service. Python multithreading is suitable for I/O intensive tasks. I/O intensive tasks spend less time on CPU computing but more time on I/O , such as file reading and writing, web requests and so on.

And as for many video files, we can choose to purchase more cloud storage to store them it for the time when many users are require to access them at the same time. For example, we can choose Google Drive, and the following picture shows the price of it.



Furthermore, wo can choose different Line office account for our chat bot dependents on the approximately number of online users who use our chat bot at the same time. The following picture shows the different prices for different account plan.

Official Account Monthly Plan

	Free	Basic	Pro
Monthly Fee	Free	IDR 275,000	IDR 825,000
Free Messages	500	2,500	10,000
Additional Message Fee	Change Plan (Light/Standard) to have additional Message	IDR 80	IDR 60

Q3: Can you identify if you bot is one of the examples of PaaS, IaaS, SaaS? Explain your

Our bot is one of the example of SaaS. As SaaS, It is a mode of providing software through the Internet. Manufacturers deploy application software on their own servers. Customers can order the required application software services from manufacturers through the Internet according to their actual needs and the number of services ordered and the length of time. Pay the manufacturer and get the services provided by the manufacturer through the Internet.

Users no longer need to purchase software, but instead rent web-based software from the provider to manage the business activities of the enterprise, and there is no need to maintain the software. The service provider will fully manage and maintain the software. The software manufacturer provides Internet applications to customers while it also provides offline operation of the software and local data storage, so that users can use the software and services they ordered anytime, anywhere.

In our chatbot, it can provide some services for users such as searching latest news service, providing popular science service and getting hospital location in map service. For instance, in the main-services box, when users click “popular science”, the chatbot will return another menu which precaution and more knowledge options. And when user click them respectively, user will receive some information automatically. Moreover, when user send their location to the chatbot, it will immediately search the nearest hospital location and show them in google map then return this to the user. In this way, user can easily and conveniently get a nearest hospital location without searching by themselves. In this way, our bot is a sample of SaaS.