Distributed System Practice

Purpose

Deliver a general idea of distributed communication. Show examples: Golang, Golang + RabbitMQ distributed system. Encourage students to do hands-on practice to build a distributed system.

Competencies delivered

Students will get a general overview of the programming language Golang and the RabbitMQ message broker. Students will be able to build distributed system with Golang and RabbitMQ.

Pre-requirement

The students need to be familiar with at least one programming language. This course is recommended for at least second-semester BSc students.

Topics

1 Install Golang. Hello world. Const. Operators. Variable. If. Function. Error. Type convert (strconv package). Exported name. Methods in Strings package.

2 Defer. Recursion. For loop. Slice. For range. Variadic Functions.

3 Slice, Struct. Pointer. Method. and Map.

4 Goroutine, WaitGroup, Mutex, AddUint64.

5 CPU setting. Channel with and without buffer.

6 Select

7 Limit the number of goroutines

8 RabbitMQ. RabbitMQ hello world example.

9 Exclusive. Fanout exchange example. Direct exchange example. Shared queue example.

10 Globally unique id generator. Reply example.

11 Parallel receive example

12 Cancel example

Requirements

One homework: maximum 2 points.

One exam: maximum 5 points.

Final grade: homework points + exam points

There will be a one-time retake in the exam period only for the exam.

(If you get full points from homework, you can pass this course with mark 2. However, we suggest you attend the exam for a better grade)