**Enterprise System Integration UT 2021 -  
Homework 3**

# **General Notes**

In these homework series you will build step-by-step a service called RentIT. RentIT is a plant hire supplier. Before starting, familiarize yourself with the complete scenario: <https://docs.google.com/document/d/1N2HLMjWlzvbtketMguOMBa0bGfSUyM33Cwn-oeSw2CM/edit>

The requirements that need to be addressed in this homework are:

PS4. The system should allow a customer to submit a PO for hiring a plant. The PO may be accepted or rejected depending on the plant’s availability.

PS5. The system should allow employees at Rentit to determine which plants need to be delivered on a given date.

PS6. The system should allow a customer to submit modified POs requests and accept/reject a modified PO depending on the plant’s availability .

PS7. The system should allow a customer to submit a request to cancel a PO. A cancellation request is normally accepted if the request arrives prior to the plant being delivered. If the plant has already been delivered, the cancellation request is rejected.

PS8. The system should allow employees at the plant depot to mark the plant as “rejected by customer”.

PS9. The system should allow employees at the plant depot to mark a plant as “returned”, meaning that the plant has been returned in due form and the rental period has expired.

PS10. The system should submit invoices for “returned” plants.

PS11. The system should submit payment reminders for unpaid invoices.

PS12. The system should allow customers to submit remittance advices and mark the corresponding invoice as "paid" once the corresponding remittance advice is received.

**Tasks**

1. **Functionality**

Finalize the functionality for RentIT by implementing all requirements: P4-P12.

Choose one interface of choice (HTTP, WebSocket, gRPC/graphQL) to expose the new functionality, no need to expose it through all three interfaces.

The tech lead has decided that the payment reminders would be distributed to customers in an event driven manner. Choose an ESB/broker between Kafka and RabbitMQ to implement requirement PS11.

Write an external test (the only additional test required for this HW) for the payment reminder functionality.

1. **ORM**

The developers at RentIT performed a code review and saw an opportunity to reduce the amount of code in the repository that connects to PostgreSQL. Your task is to refactor the code of the repository by using a Golang ORM of choice (GORM suggested <https://github.com/go-gorm/gorm>).

1. **DTO**

During a discussion that the developers at RentIT conducted with their partners at BuildIT, the latter have required RentIT to follow proper JSON response style in their interface. Your task is to make use of DTO structs that follows the Property Name Format of Google: <https://google.github.io/styleguide/jsoncstyleguide.xml?showone=Property_Name_Format#Property_Name_Format>

1. **Pagination**

During the same meeting (see 3) developers at RentIT have raised some concerns regarding plant list retrieval. It is a busy season and RentIT receives lots of requests, therefore querying the full list of plans stresses the network. RentIT developers suggested paginating the response using offset pagination, which was embraced by BuildIT partners. Your task is to implement offset pagination when listing plants.

**Audit**

Perform an audit similar to HW1-2.