DOKUMENTASI SEQUENCE DIAGRAM

Sistem Informasi Manajemen LPG (SIM4LON)

1. GAMBARAN UMUM

Sequence Diagram menggambarkan **interaksi antar objek** dalam urutan waktu untuk menyelesaikan suatu proses. Setiap diagram menunjukkan bagaimana Frontend, Backend, dan Database berkomunikasi.

Komponen (Participants)

Stereotype	Simbol	Fungsi	Contoh
actor	😀	Pengguna sistem	User, Admin, Pangkalan
boundary	☐	UI/Interface	LoginPage, OrderPage
control	◎	Business Logic	AuthService, OrderService
entity	☐	Data Model	UserModel, OrderModel
database	⬡	Table Database	users, orders, pangkalans

Notasi Pesan

Notasi	Arti
`1.1:`	Numbered message (hierarchical)
→	Synchronous request
↝	Asynchronous request
- - →	Return/response
`alt`	Alternative (if-else)
`opt`	Optional
`loop`	Perulangan

2. DAFTAR SEQUENCE DIAGRAM

Fase	Jumlah	Fokus
Fase 1	8	Core Business Processes
Fase 2	10	Supporting Processes
Total	**18**	

3. FASE 1: CORE BUSINESS PROCESSES

SD-01: Login

Komponen	Deskripsi
File	SD_01_Login.puml
Aktor	User (Admin/Operator/Pangkalan)
Tujuan	Autentikasi user dan generate JWT token
Tables	users, activity_logs

Alur Utama:

1. User → LoginPage: Input email & password
2. LoginPage → AuthService: login(email, password)
3. AuthService → users: SELECT * FROM users WHERE email = ?
4. AuthService: Validate password dengan bcrypt
5. AuthService: Generate session_id baru (single-session)
6. AuthService → users: UPDATE users SET session_id = ?
7. AuthService: Generate JWT token
8. AuthService → activity_logs: Log aktivitas login
9. LoginPage: Simpan token ke localStorage
10. Redirect ke Dashboard

Fitur Khusus:

- Single-session login (invalidasi session lama)
- bcrypt password hashing

SD-03: Create Order

Komponen	Deskripsi
File	SD_03_CreateOrder.puml
Aktor	Admin/Operator
Tujuan	Membuat pesanan LPG baru
Tables	pangkalans, orders, order_items, timeline_tracks

Alur Utama:

1. Load daftar pangkalan aktif
2. User pilih pangkalan dan jenis LPG
3. OrderService: Generate kode (ORD-XXXX)
4. Loop: Hitung subtotal, cek taxable, hitung PPN 12%
5. Hitung total amount
6. Insert ke orders, order_items, timeline_tracks

Fitur Khusus:

- PPN 12% hanya untuk kategori NON_SUBSIDI
- Auto-generate kode pesanan

SD-04: Update Status Pesanan

Komponen	Deskripsi
File	SD_04_UpdateStatus.puml
Aktor	Admin/Operator
Tujuan	Mengubah status pesanan
Tables	orders, order_items, timeline_tracks, pangkalan_stocks

Alur Utama:

1. Validate status transition
2. Optional: Assign driver (jika SIAP_KIRIM)
3. Update current_status di orders
4. Insert timeline_tracks
5. **Jika SELESAI**: Auto-sync stok pangkalan

Status Transition:

```
DRAFT → MENUNGGU_PEMBAYARAN → DIPROSES → SIAP_KIRIM → DIKIRIM → SELESAI
```

SD-07: Record Payment

Komponen	Deskripsi
File	SD_07_RecordPayment.puml
Aktor	Admin/Operator
Tujuan	Mencatat pembayaran
Tables	order_payment_details, payment_records, orders, timeline_tracks

Alur Utama:

1. Load sisa tagihan
2. Input metode (TUNAI/TRANSFER) dan jumlah
3. Cek: Lunas atau DP?
4. Upsert payment_details
5. Insert payment_records
6. **Jika lunas**: Auto-update status ke DIPROSES

SD-09: Receive Stock

Komponen	Deskripsi
File	SD_09_ReceiveStock.puml
Aktor	Admin/Operator
Tujuan	Catat penerimaan stok dari SPBE
Tables	penerimaan_stok, stock_histories

Alur Utama:

1. Input No. SO, No. LO, nama material, qty
2. Insert penerimaan_stok
3. Map material ke lpg_type
4. Insert stock_histories (movement_type = MASUK)

SD-10: Record Distribution

Komponen	Deskripsi
File	SD_10_RecordDistribution.puml
Aktor	Admin/Operator
Tujuan	Catat penyaluran ke pangkalan
Tables	pangkalans, penyaluran_harian, stock_histories

Alur Utama:

1. Load grid (pangkalan × tanggal)
2. Input jumlah normal & fakultatif
3. Upsert penyaluran_harian
4. Insert stock_histories (movement_type = KELUAR)

SD-12: Record Sale (Pangkalan)

Komponen	Deskripsi
File	SD_12_RecordSale.puml
Aktor	Pangkalan
Tujuan	Catat penjualan ke konsumen
Tables	consumers, lpg_prices, pangkalan_stocks, consumer_orders, pangkalan_stock_movements

Alur Utama:

1. Load konsumen dan harga LPG
2. Cek ketersediaan stok
3. Generate kode (PORD-XXXX)
4. Hitung total dan profit
5. Insert consumer_orders
6. Update pangkalan_stocks (kurangi)
7. Insert pangkalan_stock_movements

Fitur Khusus:

- Multi-tenant: pangkalan_id dari JWT
- Validasi stok sebelum jual

SD-16: Create Pangkalan

Komponen	Deskripsi
File	SD_16_CreatePangkalan.puml
Aktor	Admin
Tujuan	Tambah pangkalan baru
Tables	pangkalans, users, activity_logs

Alur Utama:

1. Validate input
2. Cek email login unik (jika ada)
3. Generate kode pangkalan (PKL-XXX)
4. Insert pangkalans
5. **Jika ada kredensial**: Auto-create user dengan role PANGKALAN

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4. FASE 2: SUPPORTING PROCESSES

SD-02: Logout

Komponen	Deskripsi
File	SD_02_Logout.puml
Tables	users

Alur: Hapus token localStorage → Update session_id = NULL → Redirect login

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SD-05: Assign Driver

Komponen	Deskripsi

Komponen	Deskripsi
File	`SD_05_AssignDriver.puml`
Tables	`drivers`, `orders`, `timeline_tracks`

Alur: Load driver aktif → Pilih driver → Update orders.driver_id → Insert timeline

SD-06: Get Order Detail

Komponen	Deskripsi
File	`SD_06_GetOrderDetail.puml`
Tables	`orders`, `order_items`, `timeline_tracks`, `order_payment_details`, `pangkalans`, `drivers`

Alur: Join semua relasi → Render detail page

SD-08: Generate Invoice

Komponen	Deskripsi
File	`SD_08_GenerateInvoice.puml`
Tables	`invoices`, `orders`, `order_items`, `company_profile`

Alur: Cek existing → Generate INV-YYYY-XXXX → Calculate totals → Insert invoices

SD-11: Get Stock Summary

Komponen	Deskripsi
File	`SD_11_GetStockSummary.puml`
Tables	`stock_histories`, `lpg_products`

Alur: Loop per product → SUM(MASUK) - SUM(KELUAR) → Balance

SD-13: Create Order to Agen

Komponen	Deskripsi
File	`SD_13_CreateOrderToAgen.puml`
Tables	`agen_orders`, `pangkalans`, `agen`

Alur: Load agen data → Input order → Insert agen_orders (status=PENDING)

SD-14: Confirm Receipt

Komponen	Deskripsi
File	SD_14_ConfirmReceipt.puml
Tables	agen_orders, pangkalan_stocks, pangkalan_stock_movements

Alur: Input qty diterima → Update agen_orders → Tambah pangkalan_stocks → Insert movement

SD-15: Dashboard Pangkalan

Komponen	Deskripsi
File	SD_15_DashboardPangkalan.puml
Tables	consumer_orders, pangkalan_stocks, expenses

Alur: Load stats, stock levels, chart data, recent sales → Render dashboard

SD-17: CRUD Generic

Komponen	Deskripsi
File	SD_17_CRUDGeneric.puml
Tables	entity_table (template)

Template untuk:

- Kelola Pengguna
- Kelola Supir
- Kelola Produk LPG
- Kelola Konsumen

SD-18: Generate & Export Report

Komponen	Deskripsi
File	SD_18_GenerateExportReport.puml
Tables	orders, payment_records, stock_histories

Alur: Pilih jenis laporan → Filter → Query data → Generate Excel → Download

5. MATRIKS DIAGRAM & TABEL

Diagram	Tables yang Digunakan

Diagram	Tables yang Digunakan
SD-01	users, activity_logs
SD-02	users
SD-03	pangkalans, orders, order_items, timeline_tracks
SD-04	orders, order_items, timeline_tracks, pangkalan_stocks
SD-05	drivers, orders, timeline_tracks
SD-06	orders, order_items, timeline_tracks, order_payment_details, pangkalans, drivers
SD-07	order_payment_details, payment_records, orders, timeline_tracks
SD-08	invoices, orders, order_items, company_profile
SD-09	penerimaan_stok, stock_histories
SD-10	pangkalans, penyaluran_harian, stock_histories
SD-11	stock_histories, lpg_products
SD-12	consumers, lpg_prices, pangkalan_stocks, consumer_orders, pangkalan_stock_movements
SD-13	agen_orders, pangkalans, agen
SD-14	agen_orders, pangkalan_stocks, pangkalan_stock_movements
SD-15	consumer_orders, pangkalan_stocks, expenses
SD-16	pangkalans, users, activity_logs
SD-17	(template)
SD-18	orders, payment_records, stock_histories

6. CATATAN TEKNIS

1. **Numbered Messages**: Format `1.1.1` menunjukkan hierarki pemanggilan
2. **Fragments**:
   - `alt`: Alternative paths (if-else)
   - `opt`: Optional execution
   - `loop`: Iterasi
3. **Activation Bars**: Menunjukkan kapan objek aktif
4. **Return Messages**: Dashed line untuk response

Dokumen ini menjelaskan 18 Sequence Diagram SIM4LON
Sistem Informasi Manajemen LPG 4 Jalur Online