

Cleaning Services Platform

- This project envisions an on-demand dry-cleaning and laundry website where users schedule pick-up and delivery from home.
- Customers can browse services (dry cleaning, washing, ironing, etc.) on the platform and have their clothes collected, cleaned, and returned.
- The business can operate either as a single laundry's online arm or as a marketplace aggregator connecting many cleaners.



How it works:

1. The customer places an order on your app.
2. The order is routed to a participating dry cleaner in the customer's area.
3. The dry cleaner (or a driver they contract) handles the pickup, cleaning, and delivery.
4. You take a commission (e.g., 15-25%) from each transaction processed through your platform.

Key Features:

- **User Accounts & Profiles:** Support both individual and business customers (hotels, event organizers, etc.) under one “Customer” entity by adding a **Type** field (individual vs. business). Users register/login by email or phone and maintain profiles (name, contact, address, preferences). An admin panel (for “Admin” user role) allows site management.
- **Service Catalog:** List all cleaning services (e.g. “Suit Dry Clean”, “Wash & Iron”, “Carpet Cleaning”) with descriptions and prices. Customers can search and filter by **price, service type, location or rating**.
- **Order Placement & Scheduling:** Users select service(s), then **schedule pickup and delivery** times. The app should show an estimated price (based on item count, garment type, etc.) before confirmation. Customers can modify or cancel an order before processing. Favorite providers and re-order functionality simplify repeat use.
- **Payment Processing:** Integrate multiple payment methods (credit/debit cards, Fawry, PayPal, cash on delivery, etc.). After order confirmation, the user pays (or has the amount charged to a stored wallet). The system must securely handle transactions and record payment status.
- **Order Tracking & Notifications:** Once an order is placed, the user can **track its status** in real time (e.g. “Picked up”, “Cleaning”, “Out for Delivery”). Send email/SMS/app push notifications at each stage or for promotions.
- **Courier (Driver) Interface:** Drivers log in to see nearby pickup/delivery jobs, accept orders, and update statuses (picked up, delivered). GPS integration allows navigation and order tracking on a map.

- **Ratings & Reviews:** After delivery, customers can rate the service and leave comments. Display provider ratings to help future customers choose trusted cleaners.
 - **Order History & Invoicing:** Customers can view past orders and print/download receipts. This is important for business accounts tracking expenses.
 - **Support & Chat:** Include a customer support chat or FAQ bot for common questions (pickup policies, billing queries, etc.). A chatbot (see Section 3) can automate routine support 24/7.
 - **Promotions and Loyalty:** Implement coupons, loyalty points or subscription plans for regular users to encourage repeat business.
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Software Requirements Specification (SRS)

Functional Requirements

- **User Registration & Authentication:**
 - Secure account creation for customers, business clients, drivers, and admins via email or phone.
 - Passwords stored using secure hashing algorithms and encrypted tokens.
 - OTP verification via SMS or email for critical actions (login, password reset, profile update).
 - Role-based permissions and admin control over user access.
- **User Profile Management:**
 - Customers can edit personal info and saved locations.-
 - Business users can register company details and billing profiles.-
 - Drivers manage availability, working hours, and service areas.-
 - Admins manage all accounts with full activity logging.
- **Service Browsing & Search:**
 - Detailed service catalog with categories, pricing, and processing times.
 - Advanced filtering by service type, garment/fabric, price range, location, or provider rating.
 - AI-assisted service matching using uploaded images (stain/fabric detection).
 - Transparent pricing preview before order creation.
- **Pricing & Quotes:**
 - Automated cost calculation with itemized breakdown.
 - Support for coupons, loyalty credits, and wallet balance.

Smart Pricing Engine

- Dynamic pricing based on demand
- Special rates for loyal customers

- Peak/off-peak adjustments
- Instant digital quote preview.

- **Order Management:**

- Customers create orders by selecting services, quantities, and pickup/drop locations.
- Ability to modify, cancel, or reschedule before processing.
- Drivers receive and accept pickup/delivery tasks.
- Admins can assign/reassign drivers and monitor order progress.

- **Scheduling:**

- Customers select preferred pickup and delivery dates/times.
- System checks nearby driver availability before confirmation.
- AI Predictive Scheduling suggests optimal pickup times based on historical user data and demand pattern.

- **Payment Processing:**

- Payment gateways: Credit Card, Fawry, Stripe, PayPal.
- In-app wallet for prepaid balance, refunds, and loyalty rewards.
- Secure payment verification and fraud detection.
- Automatic invoice generation stored in user history.

- **Order Tracking & Notifications:**

Real-time order status:

Requested → Picked Up → In Cleaning → Out for Delivery → Completed

Multi-channel notifications:

- SMS
- Email
- Push notifications via FCM

Live driver tracking with ETA using Google Maps Directions API.
Admin dashboard shows full lifecycle and driver movements.

- **Rating and Feedback:**

- Post-order customer rating and feedback submission.
- Ratings displayed on provider profiles.
- AI Sentiment Analysis monitors feedback trends and flags issues for admins.

- **Administration:**

- Manage all users, roles, services, and orders.
 - Add/edit service categories, pricing, time slots, and promotions.
 - Driver assignment tools with route suggestions.
 - Access control for staff, supervisors, and management.
 - View AI-generated insights like demand patterns and sentiment summaries.
- **Reporting/Analytics:**
 - Interactive dashboards for:
 - Total orders
 - Revenue
 - Customer retention
 - Driver performance
 - Inventory usage
 - Exportable reports (CSV, PDF).
 - Integration with BI tools like Metabase or Power BI.
 - AI-driven forecasting of demand and operational load.

Non-Functional Requirements

- **Performance:** The system should respond quickly (e.g. page loads < 2 seconds) even with many concurrent users. Batch operations (like reading/writing JSON) must not block the UI.
- **Scalability:** Design should allow scaling (e.g. to more cities or countries) by easily adding new service providers and expanding server capacity.
- **Availability:** The service must be highly available (24/7 uptime) to serve users anytime. Use reliable hosting and database backups.
- **Security:** Protect all user data and transactions. Use HTTPS for data in transit, encrypt sensitive information, and follow payment security standards (PCI DSS). The system must be robust against cyber-attacks and fraud.
- **Usability:** The web interface must be intuitive and accessible (responsive design for mobile, multilingual support, and accessibility for disabled users).
- **Reliability:** Ensure data integrity (e.g. no lost orders), with proper error handling and recovery.
- **Maintainability:** Code should follow good OOP practices so it can be easily updated (e.g. adding new features or payment methods without major rewrites).

AI-Powered Features

We can enhance the platform with AI in several ways:

- **AI Chatbot / Voice Assistant:** Implement a 24/7 AI chatbot to handle common customer queries (e.g. “When will my order arrive?”) and even schedule pickups. A voice-based assistant could take orders or answer FAQs by phone.
 - **Personalized Recommendations:** Use AI to analyze a user’s order history and suggest services or reminders. For example, if a customer often dry-cleans suits monthly, the system can automatically send reminders or loyalty coupons. AI can also upsell additional services (“Would you like ironing with that?”).
 - **Smart Pricing/Forecasting:** Apply AI to predict demand (e.g. peak days/times) and optimize staffing. Demand forecasting keeps enough drivers available and can adjust promotions. AI can also dynamically price or suggest discounts based on load and customer profile.
 - **Image Recognition:** Let users upload a photo of a garment or stain. AI can identify fabric type or stain category and provide an instant quote or care advice. This reduces errors in service selection.
 - **Route Optimization:** Use AI algorithms to assign drivers to orders and compute optimal delivery routes, minimizing travel time and fuel. This improves efficiency as orders scale.
 - **Sentiment Analysis:** Automatically monitor customer feedback (reviews or social media) using AI to gauge satisfaction. If negative sentiment spikes, the system can alert managers to take action.
 - **Maintenance and Inventory:** On the provider side, AI can predict when equipment needs servicing to prevent downtime, manage inventory of supplies, and schedule maintenance tasks automatically. By using QR codes on items that redirect to the owner’s account, warehouse management becomes faster and more organized.
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Integrations

1. Authentication & User Management

- **Auth0 / Firebase Authentication** → For secure email/phone login, password hashing, and account management.
- **Twilio Verify** → For OTP-based phone verification.
- **JWT/OAuth2** → For secure token-based authentication.

2. Location & Maps

- **Google Maps Platform / Mapbox**
 - Location autocomplete for pickup/drop-off addresses
 - Geocoding (convert address ↔ coordinates)
 - Map display for drivers & customers
 - Distance/time estimation for pricing & scheduling

3. Scheduling

- **Calendly API / Custom Scheduler** → Provide time-slot availability and conflict-free scheduling.
- **Google Calendar API (optional)** → Allow customers to add pickups/deliveries to their personal calendar.

4. Pricing & Quotes

- **Custom Pricing Engine (internal)** → You'll implement this logic yourself, but you may use:
 - **TaxJar / Avalara API (if applicable)** → For calculating taxes dynamically.

5. Payment Processing

- **Stripe / PayPal / Fawry API / PayMob**
 - Card payments
 - Wallet top-up and balance tracking
 - Refunds and order cancellations
- **PCI-DSS compliance tools** (Stripe handles this if you use them)

6. Notifications

- **Twilio / Vonage** → For SMS notifications at order status updates
- **SendGrid / AWS SES / Mailgun** → For email notifications
- **Firebase Cloud Messaging (FCM)** → For push notifications in web/app

7. Order Tracking

- **Google Maps Directions API or OSRM (Open Source Routing Machine)**
→ For driver route tracking & live ETA updates.
- **WebSockets / SignalR** → For real-time updates to customers on order progress.

8. AI-Powered Features

- **Dialogflow / Rasa / OpenAI API** → For chatbot and voice assistant
- **Recommendation Engine (Custom ML Model)** → Or use AWS Personalize / Google Recommendations AI
- **Dynamic Pricing Engine** → Could be built with AWS SageMaker or a lightweight ML model
- **Image Recognition** → AWS Rekognition, Google Vision API, or custom TensorFlow model
- **Route Optimization** → Google Maps Distance Matrix API + clustering algorithms, or OR-Tools

- **Sentiment Analysis** → OpenAI API or AWS Comprehend

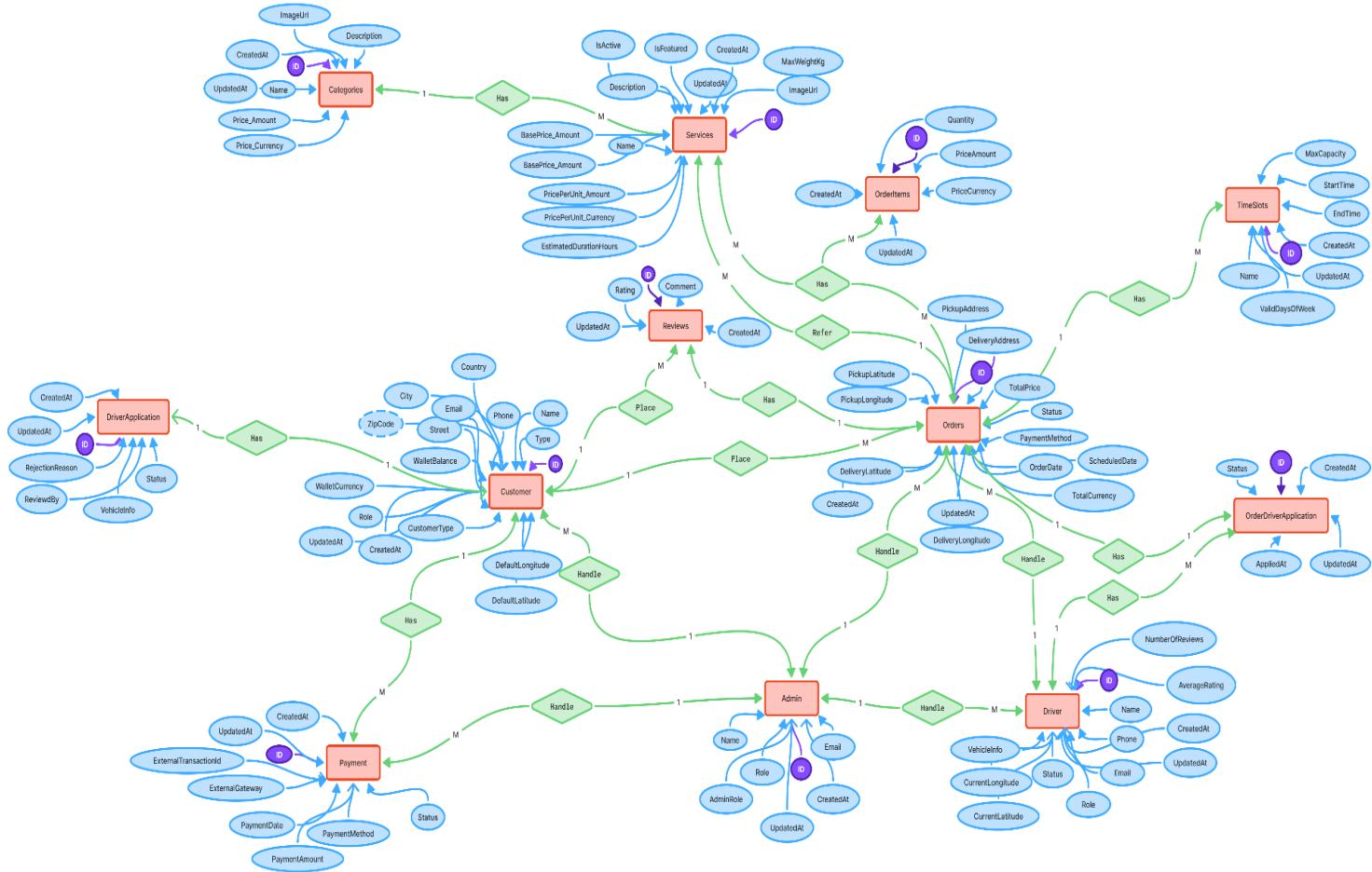
9. Admin & Reporting

- **Metabase / Power BI / Tableau (optional)** → For analytics dashboards
- **ElasticSearch + Kibana** → For search and analytics on user data

10. Maintenance & Inventory

- **QR Code Generator API** → For creating codes that link to item profiles
- **IoT Integrations (Optional)** → For predictive maintenance (if you scale up equipment monitoring)

ER Diagram



Website UI Design Concept

[Website Link](#)

The screenshot displays the homepage of the Spotless laundry service website. The header features the brand name "Spotless" with a small logo, followed by navigation links for "Services", "Why Us", and "Reviews". A "Sign In" button and a "Get Started" button are also present. The main visual is a dark blue background with various white icons representing laundry items like clothes, bags, and bottles. A central callout reads "Premium Laundry & Dry Cleaning Service". Below it, a large blue text headline says "Fresh Clothes, Zero Hassle". A sub-copy below the headline reads: "Experience the ultimate convenience with our door-to-door laundry service. Professional care for your garments, delivered back to you fresh and clean." A search bar with placeholder text "What needs cleaning? (e.g., Suits, Shirts, Bedding)" and a "Search" button are positioned below the headline. A teal-colored "Explore Services" button is centered on the page. A small "Scroll to explore" text with a downward arrow is located near the bottom center. The footer section is titled "POPULAR SERVICES" and features a grid of eight service cards. Each card includes a thumbnail image, the service name in English and Arabic, price, weight limit, a short description, a star rating of 4.9, and a "Book" button. The services listed are: Kitchen Deep Clean, Room Cleaning, Mattress Cleaning, Carpet Cleaning, Pants Dry Clean, Kids Room Sanitization, Daily Clothes Wash, and Home Disinfection.

Popular Services

Most Requested Services

From delicate fabrics to everyday wear, we handle it all with care and expertise.

Kitchen Deep Clean - تنظيف مطبخ
250 EGP Max 0 KG
تنظيف عميق للمطبخ وإزالة الدهون
★★★★★ 4.9 [Book →](#)

Room Cleaning - تنظيف غرفة
150 EGP Max 50 KG
تنظيف وترتيب الغرفة
★★★★★ 4.9 [Book →](#)

Mattress Cleaning - تنظيف مراتب
200 EGP Max 50 KG
تنظيف وتعقيم المراطب
★★★★★ 4.9 [Book →](#)

Carpet Cleaning - غسيل سجاد
80 EGP Max 50 KG
غسيل سجاد بالدوكار (المتر المربع)
★★★★★ 4.9 [Book →](#)

Pants Dry Clean - بنطال
60 EGP Max 0 KG
غسيل جاف وكي للبنطالونات
★★★★★ 4.9 [Book →](#)

Kids Room Sanitization - تعقيم غرف الأطفال
200 EGP Max 50 KG
تعقيم آمن لغرف الأطفال
★★★★★ 4.9 [Book →](#)

Daily Clothes Wash - غسيل ملابس يومية
40 EGP Max 50 KG
غسيل لملابس اليومية (الكبار)
★★★★★ 4.9 [Book →](#)

Home Disinfection - تعقيم منزل
400 EGP Max 0 KG
تعديم المنزل بالكامل ضد الفيروسات والبكتيريا
★★★★★ 4.9 [Book →](#)

[View All Services →](#)

WHY CHOOSE US

The Spotless Difference

We go above and beyond to deliver exceptional service that keeps you coming back.



Quick Turnaround

Get your clothes back in as little as 24 hours. We value your time as much as you do.



Premium Care

Expert handling of all fabric types using top-quality, eco-friendly cleaning solutions.



Doorstep Service

Free pickup and delivery at your scheduled time and preferred location.



Stain Specialists

Our experts tackle even the toughest stains with specialized treatments.



Eco-Friendly

Sustainable cleaning practices that are gentle on your clothes and the environment.

TESTIMONIALS

What Our Customers Say

Join thousands of satisfied customers who trust us with their garments.



"The best laundry service I've ever used. Their attention to detail and customer service is top-notch. Highly recommend!"

Nour El-Din
Loyal Customer



Ready for a Spotless Experience?

Join thousands of satisfied customers who trust us with their garments.

First order gets 20% off!

Get Started Now

View Pricing

✓ Free Pickup & Delivery ✓ 24-Hour Turnaround ✓ Satisfaction Guaranteed



Premium laundry and dry cleaning service delivered to your doorstep. Quality care for your garments.



Services

- Dry Cleaning
- Wash & Fold
- Ironing
- Alterations

Company

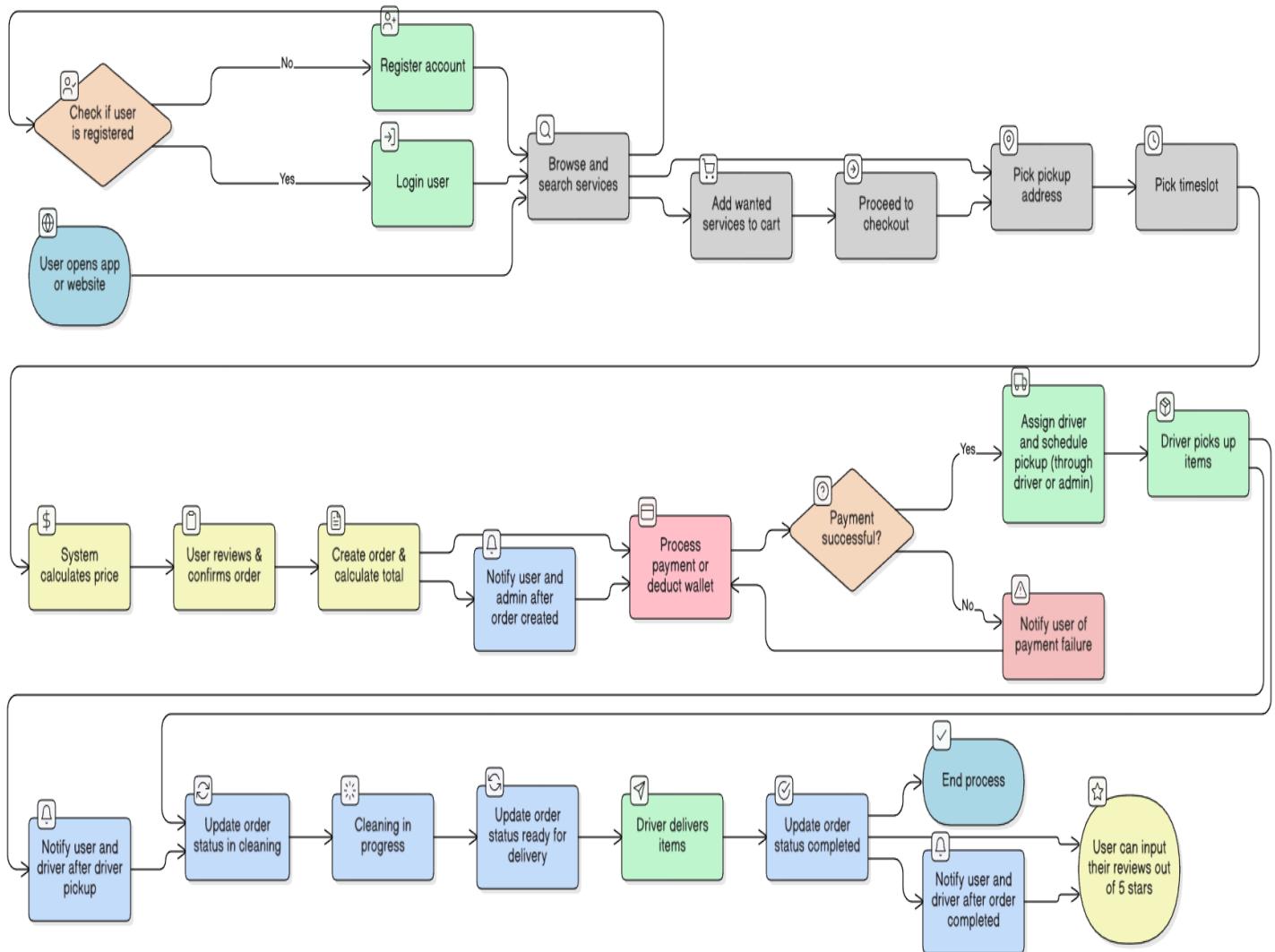
- About Us
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Contact

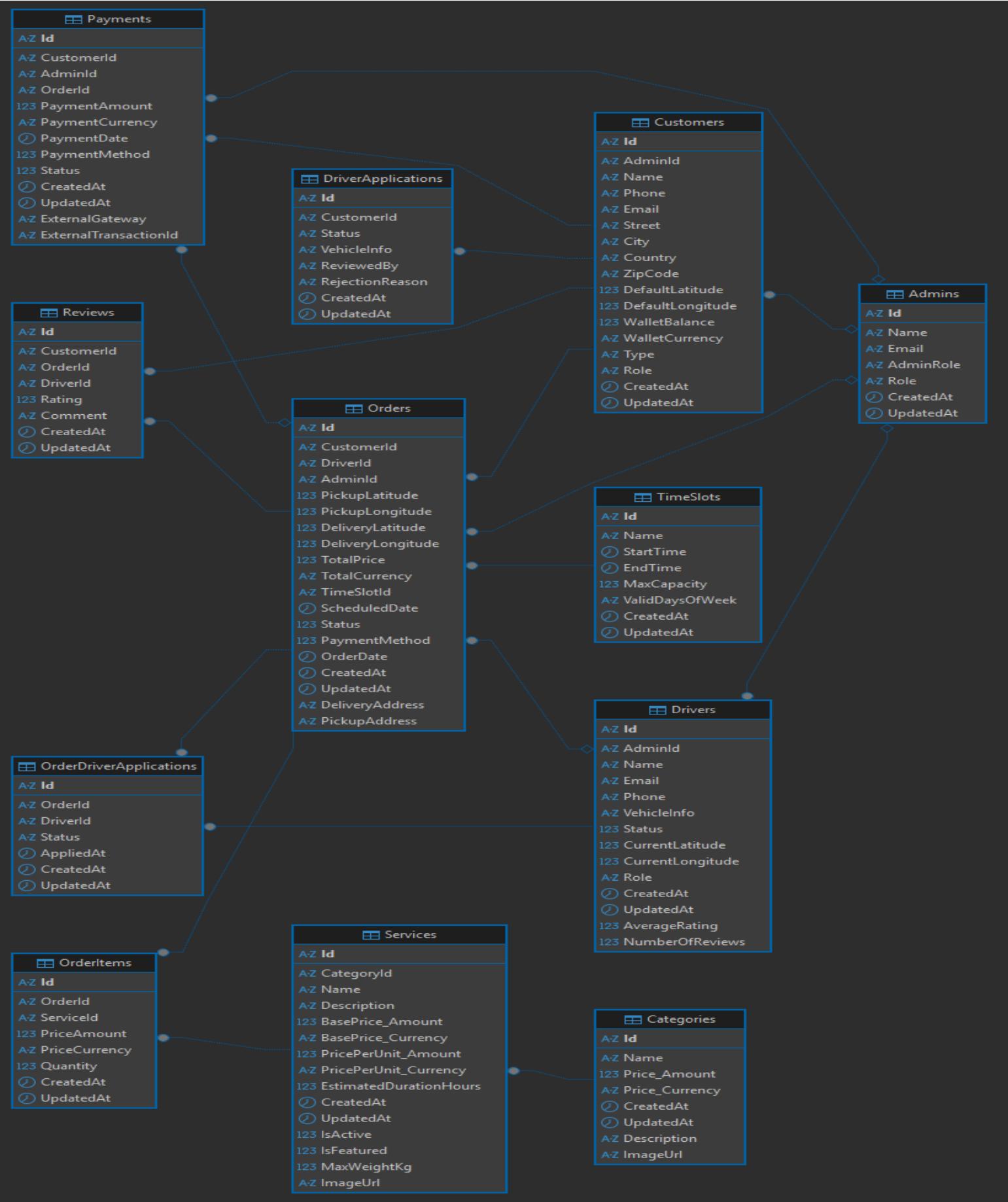
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Activity Diagram (Order Cycle)



Class Diagram



GitHub: <https://github.com/m-atef1999/Spotless>



Spotless