Parking management system for a city

A **client** is looking for a parking spot in a busy area. They access the PMS application, which uses the **Location Service** (Google API) provided to find nearby parking. The **Parking Availability Service** is then queried to check the availability of slots at the parking.

The **client** selects a parking and a slot from the available options. At this point, the **Booking Service** is used to reserve the slot. To book **clients** must be registered in the system. **User Management Service** handles user data, credentials and permitted scope of usage. To complete the booking, you need to make an advance payment, which is processed by the **Payment Service**.

A client arrives at the parking, they park their vehicle, and the **Parking Management Service** is updated to reflect the newly occupied slot.

Over time, the **Analytics Service** collects data on the PMS metrics like price, usage etc. The **Reporting Service** generates reports and insights based on the data fetched from the **Analytics Service**.

The **Parking Management Service** allows **landlords** to manage parking slots: by setting availability, rates, properties etc. The **Parking Availability Service** regularly checks parking availability and supplies details about its status.

An administrator would manage the **overall system**. The administrator would have access to **all internal** services to handle system malfunctions and other issues to provide a positive user experience for **landlords** and **clients**.

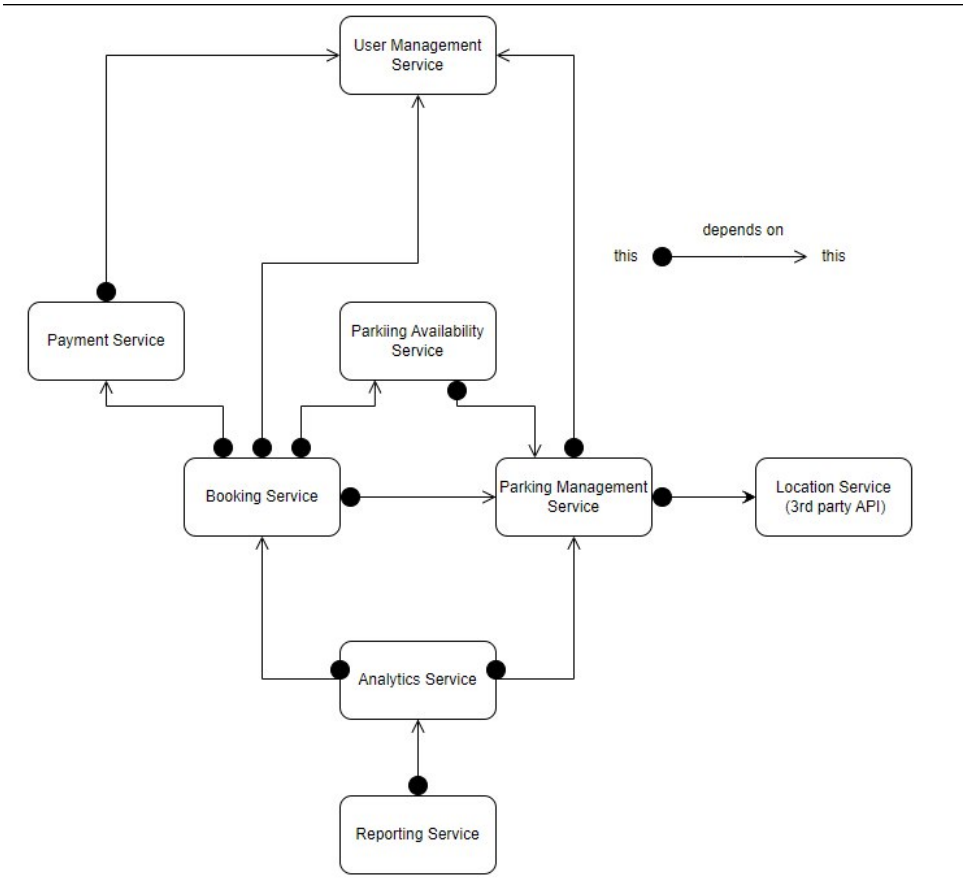

Figure 1. Microservices architecture

User Management Service

This service would handle user/landlord authentication and authorization, allowing users/landlords to create accounts, log in, and access protected resources.

Parking Management Service

A service that allows the landlord to manage and monitor parking slots, including setting availability, rates, and access controls.

Parking Availability Service

A service that monitors parking availability in real-time and provides information about available parking slots.

Booking service

This service would allow users to book parking slots in advance, ensuring they have a slot when they arrive.

Analytics service

This service would collect and analyze data about parking usage, providing insights that could be used to improve the parking experience for users.

Reporting Service

A service that generates reports and insights for the parking lot managers (landlord), including revenue, occupancy, and other key performance indicators.

Payment Service

A service that handles payment processing for parking fees and provides payment receipts to landlords.

Location Service

A service that provides geolocation information to the other microservices and finds available parking slots.