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Reflection

The addition of getCustomerIds(), getPermitIds(), and getPermitIds(Customer) methods to the ParkingOffice class represents an architectural decision focusing on loosening the coupling of classes. These methods serve as controlled access points that expose only the specific properties rather than the entire objects themselves.

Directly returning collections of Customer and Car objects creates tight coupling between the ParkingOffice and any client code that needs to work with these entities. By providing methods that return only string properties, we establish a boundary where users of the classes can reference entities without depending on their internal structure. This approach emphasizes the separation of concerns, a fundamental part of computer science where objects should not be coupled tightly, and should only reference the data necessary instead of the whole object (Srinam, 2024).

The implementation of equals() and hashCode() across all collection-based classes ensures the equality checks behave correctly when these objects are stored in Lists and other data structures. Without proper equality, operations like contains(), remove(), and duplicate detection would fail, leading to bugs. These methods define object identity based on business keys rather than memory references, allowing meaningful comparison based on customerId, license plates, and other identifiers.

These methods and changes were modified in the Class Diagram and the new interactions were used to create Interaction Diagrams.

Class Diagram

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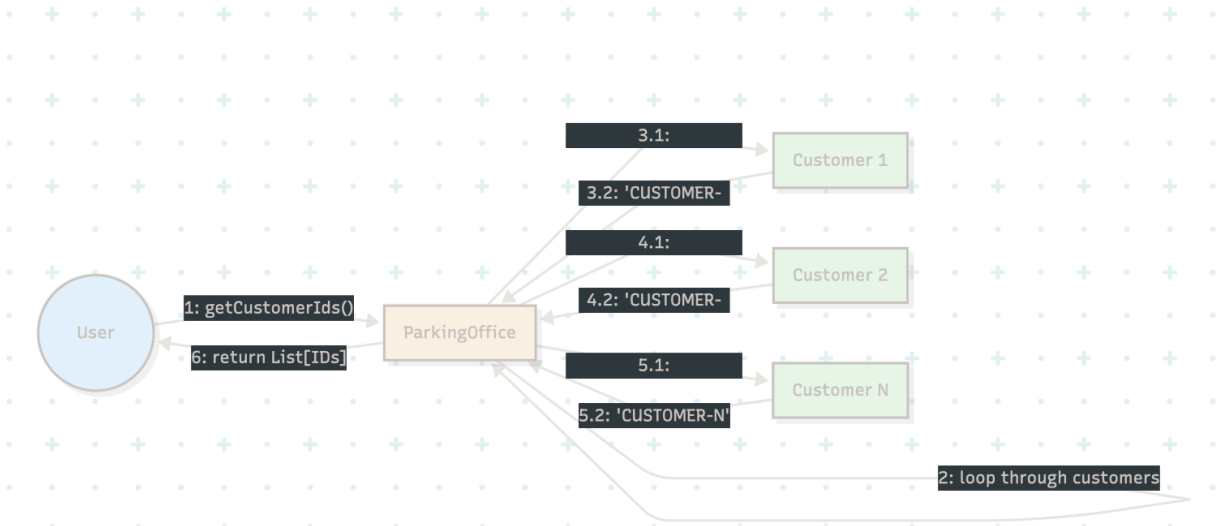
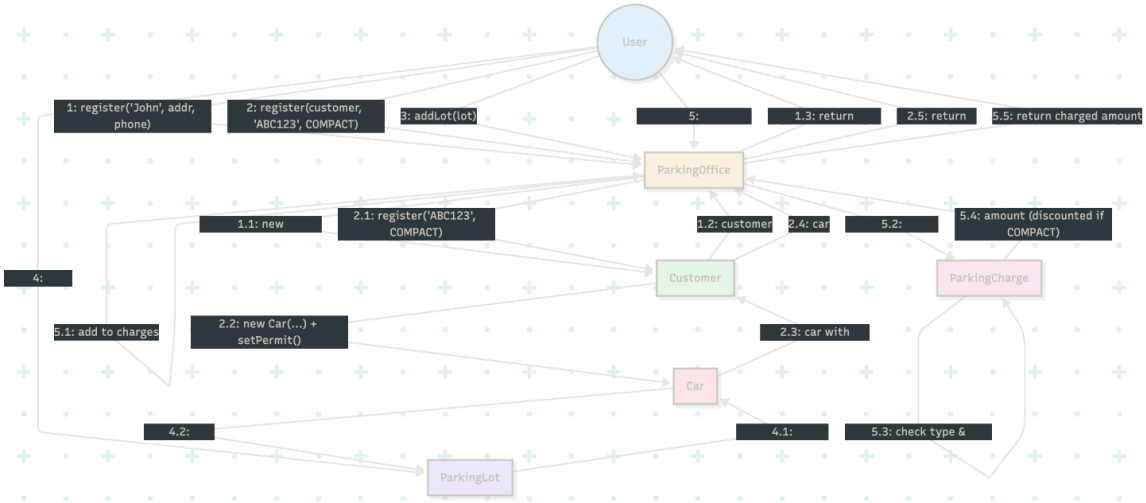
Interaction Diagrams





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References

Srinam (2024) *Separation of concerns (SOC)*, *GeeksforGeeks*. Available at: https://www.geeksforgeeks.org/software-engineering/separation-of-concerns-soc/ (Accessed: 09 November 2025).