[Visual diagram](https://mermaid.live/edit#pako:eNqVV1tvGjkU_iujkSqRbVKFkkuZh5UmA1GRIERcKm3Fi5kxxOqMzdqepCxLfvseX-Y-0C4PYJ-bv3O1Obghi7DruWGMhBgQtOUoWVHH0XvnGfEfhG7HTE4QRVvMnYNiOs7HLZZAnYZhukM03HdiJkeR58wlB_kLz8k5M7xjXFqtDaGR_4pIjNYxnoNOVe_SecUvJIzxYr_DnvOt2IBFi0VpWWsiXSdELgXm5pAO1z-eU5BA75WRyCqAOhZyjqlgfIAkAgUUARHO17SZ2VaVjKeiA9QxEfK9iMm7kjiuaFu8skBdVRy0NIoSXCPFLESSMNogSxOLsVlYsgC6qOJRcXnP2NqbTMD49l5x5wkQKI_KhynWgkkUz3coxNphQmXBKxLXzjfkh73C2ZEa9dzir4gSkVtSNtaMxRjRU7FUJvJgirZoKuJTmqwxL52iqYsKCMtgqjIJjionA_1U6WWZQEIudxGSShOKBy9Ign_pkY1MjrBTi8TUgmlV04G8qDvwUWCZqxUWcv2zTVSqa2FwtWcrk6tkxJrKsyHbQ1WGXmNWzKkuzW2RqJy8DeFC12i9HVArGScQ_RptB0e8MR59ReKlxgqh7SGNvmwkEpCPBo3CfszQtHXMGJ3mPaZx3MpDqXzBVBLoedzJkJamZ6MU_FANh2IIGcnmAApigg10s_ejhNCygBkGRUPpbbOlNNm2T74-M9E4jglak5jIvedsYoay8KkJq90vD9gG7Ar3V-Ak5EtIlOzq6ctbO2ApleV64uhNzXvPmaBdax2a2yI_2VwkjZNTkBxVCrUtFqfxGbO4uALLpkJGNyTCNKxRkwQyKspnVNDXLtqz985pZEAmCToFTbCUh_gBcvkjYm80D6OqZBHkuOch47rW8wKoIFUZqD0jdESFQl6gLm9FbW8CWJGwlZMRVLOohD7sRzAdTa4usomHXnH5tVB5KFiZv1PM92oQwkU2rr9PLk5cudbNDx-cIU0T4aiHCMcADQLqIGH8x8LZQOclmMO0ii5KxW_H7iHwZ4o6mS6ms-CvYDxUu6_-02AU-M_Pw4HaDr-p72A6efaDxbExm_-HnZKyfVwc5svZox9o8flitgwWy9nwWO9SLbkcL2b-fPo0ClbwoYE_Gc58vRxPp882HqXX0MrtrlyHXV3B6g9Y1R5zZyTNoVWhrIqMbN3ouG7zhHiR_N8Sb0wwfX-dtVmu-LNYzwgqiyacZrYD598_LdUx871Mci_dLSeR60me4kvXVhs88HXHrVy4d6DpXQ-WEd6gNJYrd0WPoAZD5DtjSabJWbp9cb0NigXsUv3ysf8PchFMI8z1sHW97u2ttuF6B_en6111-9f3n66vezfd-_7dl3tg7l3v7vOn_ufbG6DddPs3vd7d8dL9Rx8KjN5d_7rb-3Ld69_c9y9dHBHJ-MT-PVE_x_8AiiAxaQ)

**ParkingLotManager**

+getLotOccupancy(lotId: String): OccupancyReport

+findAvailableSlot(lotId: String, vehicle: Vehicle): ParkingSlot

+submitUserReport(report: UserReport): void

+ingestSensorData(reading: SensorReading): void

+getLots(): List<ParkingLot>

**Vehicle (abstract)**

-type: VehicleType

+getType(): VehicleType

**parkingLot**

-lotId: String

-name: String

-location: String

-lotType: LotType

-slots: List<ParkingSlot>

-sensors: List<Sensor>

+getLotName(): String

+getTotalSpaces(): int

+getAvailableSpaces(): int

+getSpacesByType(type: SlotType): int

+isAvailable(): boolean

+getLotName(): string

+isAvailable(): int

+setOccupied(isOccupied: int): void

**parkingSlot**

-slotId: String

-slotNumber: int

-slotType: SlotType

-occupied: boolean

-vehicleType: VehicleType

-lastUpdated: DateTime

+isAvailable(): boolean

+getSlotNumber(): int

+isOccupied(): boolean

+getType(): SlotType

+setOccupied(isOccupied: boolean, vehicleType: VehicleType): void

+setSlotType(type: SlotType): void

**User**

-id: int

-firstName: String

-lastName: String

-email: String

-passwordHash: String

-createdAt: DateTime

+getID(): int

+getFirstName(): String

+getLastName(): String

+getFullName(): String

+authenticate(password: String): boolean

+getActions(): List<String>

**Admin (extends User)**

**Client (extends User)**

**UserReport**

-reportId: String

-userId: int

-lotId: String

-timestamp: DateTime

-reportedAvailable: int

-confidence: int

-comments: String

**OccupancyReport**

-lotId: String

-timestamp: DateTime

-estimatedAvailable: int

-sourceBreakdown: Map

+asConfidenceScore(): float

**DataManager**

-usersRepo

-lotsRepo

-slotsRepo

-reportsRepo

-sensorRepo

+getUserById(id: int)

+saveUserReport(r: UserReport)

+querySlotsByLot(lotId: String): List<ParkingSlot>

**VehicleType (enum)**

**SlotType (enum)**

CAR

MOTORCYCLE

HANDICAPPED

EV

COMPACT

**VehicleMake (enum)**

\*values\*

VehicleType (enum)

CAR

MOTORCYCLE

EV

TRUCK

**LotType (enum)**

SURFACE

STRUCTURE

**SensorType (enum)**

ULTRASONIC

CAMERA

LOOP