Assignment II

Design Decisions in Entity-Relationship diagram

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**Schemas:**

* **User** (Username, Full name, E-Mail)
* **Customer –** inherits from **User** (Phone number)
* **Manager** – inherits from **User** ()
* **Location** (GPS-coordinates, Country, City, Street, ZIP-code)
* **Payment** (PID, Time, Amount)
* **Order** (OID, Creating time, Cost of ride)
* **Car** (Car license plate, VIN)
* **Car type** (CTID, Brand, Model)
* **Cart part** (CPID, Part name)
* **Workshop** (WID, Timetable)
* **Car parts provider** (PID, Name, Phone number)
* **Charging station** (UID, Price, Time of charging)
* **Plug** (Size, Shape, Amount of available sockets)

**Design decisions with regarding to Schemas:**

* Make a basic **User** and inherit from its **Customer** and **Manager**
* Make **Location** as separate entity, because it is used in 5 entities
* Make **Plug** as separate entity, for easier and faster searching suitable
* Make **Car Part** and **Car type** for easier managing of **Workshops** and **Car part providers** and **searching**
* Creating **Payments** entity which is derived from the **order** of customers. Managers should control the flow of orders and payments
* **Users** are not allowed to charge a self-driven **car** because **charging stations** are capable of doing such actions

**Relationships and notes with regarding to the:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Source** | **Destination** | **Relationship** | **Cardinality/Type** | **Note** |
| Customer | Location | Resident (live at) | None/None | Address of living |
| Customer | Order | Create | 1-N/weak | Customer creates order(s) |
| Payment | Customer | Done by | N-1/weak | Payment(s) is done (paid) by customer |
| Payment | Order | For | 1-1 | Each Payment is done (paid) for each order |
| Manager | Order | Manage of | None/None | Manager manages (administrate) customer`s orders |
| Car | Order | Attached | 1-N | Car is attached to Order (one Car can be attached to several Order in distinct time interval) |
| Car | Charging station | Find the closest | N-1 | Self-driving Car find the closest suitable charging station is out(For car can be only one CLOSEST station, but station can be closest for many cars) |
| Car part | Car type | Correspond to | N – 1/weak | Each Car part correspond to some Car type for which part is suitable |
| Car parts provider | Car part | Provide of | M – N/strong | Car parts provider can provide some set of Car parts |
| Car parts provider | Location | Locate at | None/None | Car parts provider has a location |
| Workshop | Car parts provider | Buy from | N – M | Workshops buy parts from Car parts provider |
| Workshop | Car part | Has a | N – M | Workshop has a some set of parts in the moment |
| Workshop | Location | Locate at | None/None | Workshop has a location |
| Order | Location | Pick up at | None/Node | Location of customer pick uping |
| Charging station | Location | Locate at | None/None | Charing station has a location |