# Project 02: Schema

## Group # 50

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|---|---|
| Bryan Castorius Halim | *Implement the Schema* |
| Jason Lienardi | *Implement the Schema* |
| Jayson Ng | *Implement the Schema* |
| Ng Yan Jie | *Implement the Schema* |

## Application Constraints

### Customers

| | |
|---|---|
| ✓ | Uniquely identified by `email` |
| ✓ | Have the required attributes `address`, `dob`, and `phone` |
| ✓ | Have the attribute `name` composed of the optional `fsname` and the required `lsname` |
| ✘ | Have the derived attribute `age` |
| ✓ | May initiate 0 bookings |
| ✓ | May initiate more than 1 bookings |
| ✓ | May book more than 1 cars with the same car model for the same date, and from the same location |
| ✓ | Date of birth (`dob`) must be before today (*i.e.,* `NOW()`) |

### Locations

| | |
|---|---|
| ✓ | Uniquely identified by `zip` |
| ✓ | Uniquely identified by location name (`lname`) |
| ✓ | Have the required attribute `laddr` |
| ✓ | May be for at least 0 bookings |
| ✓ | May be for more than 1 bookings |
| ✓ | May have 0 employee working |
| ✓ | May have more than employees working |
| ✓ | May have 0 car (*i.e., car details*) parked |
| ✓ | May have more than 1 cars (*i.e., car details*) parked |

### Employees

| | |
|---|---|
| ✓ | Uniquely identified by `eid` |
| ✓ | Have the required attribute `ename` (*i.e., employee name*) |
| ✓ | Have the required attribute `ephone` (*i.e., employee phone number*) |
| ✓ | May handover the key for at least 0 booking |
| ✓ | May handover the key for more than 1 booking |
| ✓ | May receive returned key for at least 0 booking |
| ✓ | May receive returned key for more than 1 booking |
| ✓ | Must work in at least 1 location |
| ✓ | Must work in at most 1 location |
| ✓ | May be a driver |

## Drivers

| | |
|---|---|
| ✓ | Uniquely identified by **eid** |
| ✓ | Uniquely identified by **pdvl** |
| ✓ | May be hired by at least 0 bookings |
| ✓ | May be hired by more than 1 bookings |
| ✗ | Cannot be double-booked (*i.e., booked for two different bookings on overlapping date*) where overlapping date is computed from **fromdate** to **todate** (*of hires*) |
| ✓ | Can only be hired for assigned bookings (*i.e., bookings with assigned car details*) |
| ✓ | When hired, the attribute **ccnum** must be recorded |

## CarModels

| | |
|---|---|
| ✓ | Uniquely identified by **brand** and **model** |
| ✓ | Have the required attributes **capacity**, **deposit**, and **daily** |
| ✓ | May be rented by at least 0 bookings |
| ✓ | May be rented by more than 1 bookings |
| ✓ | May have at least 0 car details |
| ✓ | May have more than 1 car details |

## CarDetails

| | |
|---|---|
| ✓ | Uniquely identified by **plate** (*i.e., license plate number*) |
| ✓ | Have the required attributes **color** and **pyear** (*i.e., production year*) |
| ✓ | Must be a detail for at least 1 car model |
| ✓ | Must be a detail for at most 1 car model |
| ✓ | Must be parked in at least 1 location (*i.e., when not being rented*) |
| ✓ | Must be parked in at most 1 location (*i.e., when not being rented*) |
| ✓ | May be assigned to at least 0 booking |
| ✓ | May be assigned to more than 1 bookings |
| ✗ | Cannot be double-booked (*i.e., booked for two different bookings on overlapping date*) where overlapping date is computed from **sdate** to **edate** (*of bookings*) |
| ✓ | Car details handover must be during or after the car is assigned (*i.e., no entry in handover before assigns*) |
| ✓ | Car details return must be during or after the car is assigned (*i.e., no entry in returned before assigns*) |
| ✗ | Car details return must be during or after the car handover (*i.e., no entry in returned before handover*) |
| ✗ | Car details handover must be by the same employee working in the same location as specified in bookings |
| ✓ | The **ccnum** used to initiate booking may be different **ccnum** used to pay excess for return |
| ✗ | The car (*i.e., car details*) assigned to the booking must be for the car models rented by the booking |
| ✗ | The car (*i.e., car details*) assigned to the booking must be park in the same location as the booking |

## Bookings

| | |
|:---:|:---|
| ✓ | Uniquely identified by **bid** |
| ✓ | Have the required attributes **sdate** and **days** |
| ✓ | Have the required attribute **ccnum** and **bdate** (*booking date*) when initiated by a customer |
| ✓ | Have the attribute **ccnum** and **cost** (*required*) when returned by a customer |
| ✗ | Have the derived attribute **edate** |
| ✓ | Must be initiated by at least 1 customer |
| ✓ | Must be initiated by at most 1 customer |
| ✓ | Must rent at least 1 car model |
| ✓ | Must rent at most 1 car model |
| ✓ | Must be for least at 1 location |
| ✓ | Must be for most at 1 location |
| ✓ | May be handovered by at least 0 employee |
| ✓ | Must be handovered by at most 1 employee |
| ✓ | May be returned to at least 0 employee |
| ✓ | Must be returned to at most 1 employee |
| ✓ | May be assigned at least 0 car (*i.e., car details*) |
| ✓ | Must be assigned at most 1 car (*i.e., car details*) |
| ✓ | May hire at least 0 driver |
| ✓ | Must hire at most 1 driver |
| ✓ | **ccnum** is required in return if the cost is positive (*i.e., more than 0*) |
| ✓ | The **fromdate** and **todate** for the hiring of driver (*if any*) must be within **sdate** and **edate** |
| ✓ | The booking date (**bdate**) must be before **sdate** |