VEHICLE

UNF

VEHICLE (vehicle_vin, vehicle_lp, vm_make, vm_model, vehicle_year, vehicle_odometer, vehicle_capacity, (feature_name))

1NF

VEHICLE (vehicle_vin, vehicle_lp, vm_make, vm_model, vehicle_year, vehicle_odometer, vehicle_capacity)

CK:

- vehicle_vin
- vehicle_lp

Partial Dependencies:

No partial dependencies present

FEATURE (feature_name, vehicle_vin)

CK:

feature_name, vehicle_vin

Partial Dependencies:

No partial dependencies present

2nf

VEHICLE (vehicle_vin, vehicle_lp, vm_make, vm_model, vehicle_year, vehicle_odometer, vehicle_capacity)

FEATURE (feature_name, vehicle_vin)

Transitive dependencies:

vm_model -> vm_make

3NF:

VEHICLE (<u>vehicle_vin</u>, vehicle_lp, vehicle_model, vehicle_year, vehicle_odometer, vehicle_capacity)

FEATURE (<u>feature_name</u>, <u>vehicle_vin</u>)

VEHICLE_DETAILS (<u>vm_model</u>, vm_make)

Full dependencies:

vehicle_vin -> vehicle_lp, vehicle_model, vehicle_year, vehicle_odometer, vehicle_capacity

vm_model -> vm_make

TRIP

UNF

TRIP (trip_id, vehicle_vin, vehicle_lp, driver_id, driver_family_name, driver_given_name, off_olym_id, off_name, trip_passenger_no, pickup_location_ id, pickup_location_name, pickup_location_type, pickup_location_address, trip_intended_pickup_datetime, trip_actual_pickup_datetime, dropoff_location_ id, dropoff_location_name, dropoff_location_type, dropoff_location_address, trip_intended_dropoff_datetime, trip_actual_dropoff_datetime)

1NF

TRIP (<u>trip_id</u>, vehicle_vin, vehicle_lp, driver_id, driver_family_name, driver_given_name, off_olym_id, off_name, trip_passenger_no, pickup_location_ id, pickup_location_name, pickup_location_type, pickup_location_address, trip_intended_pickup_datetime, trip_actual_pickup_datetime, dropoff_location_ id, dropoff_location_name, dropoff_location_type, dropoff_location_address, trip_intended_dropoff_datetime, trip_actual_dropoff_datetime)

CK:

trip_id

Partial Dependency:

No partial dependencies present

2NF

TRIP (trip_id, vehicle_vin, vehicle_lp, driver_id, driver_family_name, driver_given_name, off_olym_id, off_name, trip_passenger_no, pickup_location_ id, pickup_location_name, pickup_location_type, pickup_location_address, trip_intended_pickup_datetime, trip_actual_pickup_datetime, dropoff_location_ id, dropoff_location_name, dropoff_location_type, dropoff_location_address, trip_intended_dropoff_datetime, trip_actual_dropoff_datetime)

Transitive Dependencies:

vehicle_vin -> vehicle_lp

driver_id -> driver_family_name, driver_given_name

off_olym_id -> off_name

pickup_location_ id -> pickup_location_name, pickup_location_type, pickup_location_address

dropoff_location_ id -> dropoff_location_name, dropoff_location_type, dropoff_location_address,

3NF

TRIP (trip_id, vehicle_vin, driver_id, off_olym_id, trip_passenger_no, pickup_location_ id, trip_intended_pickup_datetime, trip_actual_pickup_datetime, dropoff_location_ id, trip_intended_dropoff_datetime, trip_actual_dropoff_datetime)

VEHICLE(vehicle_vin, vehicle_lp)

DRIVER(driver_id, driver_family_name, driver_given_name)

OFFICIAL(off_olym_id, off_name)

PICKUP_LOCATION (pickup_location_id, pickup_location_name, pickup_location_type, pickup_location_address)

DROPOFF_LOCATION (<u>dropoff_location_id</u>, dropoff_location_name, dropoff_location_type, dropoff_location_address)

Full dependencies:

trip_id -> vehicle_vin, driver_id, off_olym_id, trip_passenger_no, pickup_location_ id, trip_intended_pickup_datetime, trip_actual_pickup_datetime, dropoff_location_ id, trip_intended_dropoff_datetime, trip_actual_dropoff_datetime

vehicle_vin -> vehicle_lp

driver_id -> driver_family_name, driver_given_name

off_olym_id -> off_name

pickup_location_id -> pickup_location_name, pickup_location_type, pickup_location_address

dropoff_location_id -> dropoff_location_name, dropoff_location_type, dropoff_location_address

[Collected 3NF Relations:](#)

1. VEHICLE (<u>vehicle_vin</u>, vehicle_lp, vehicle_model, vehicle_year, vehicle_odometer, vehicle_capacity)
2. FEATURE (<u>feature_name</u>, <u>vehicle_vin</u>)
3. VEHICLE_DETAILS (<u>vehicle_model</u>, vehicle_make)
4. TRIP (<u>trip_id</u>, vehicle_vin, driver_id, off_olym_id, trip_passenger_no, pickup_location_ id, trip_intended_pickup_datetime, trip_actual_pickup_datetime, dropoff_location_ id, trip_intended_dropoff_datetime, trip_actual_dropoff_datetime)
5. VEHICLE(<u>vehicle_vin</u>, vehicle_lp)
6. DRIVER(<u>driver_id</u>, driver_family_name, driver_given_name)
7. OFFICIAL(<u>off_olym_id</u>, off_name)
8. PICKUP_LOCATION (<u>pickup_location_id</u>, pickup_location_name, pickup_location_type, pickup_location_address)

9. DROPOFF_LOCATION (<u>dropoff_location_id</u>, dropoff_location_name, dropoff_location_type, dropoff_location_address)

Attribute Synthesis:

Joined together the relations with the same pk:

8 & 9

Combined PICKUP_LOCATION and DROPOFF_LOCATION into LOCATION(<u>location_id</u>, location_name, location_type, location_address) since they are identical relations.

FINAL 3NF Relations:

VEHICLE (<u>vehicle_vin</u>, vehicle_lp, vehicle_model, vehicle_year, vehicle_odometer, vehicle_capacity)

FEATURE (<u>feature_name</u>, <u>vehicle_vin</u>)

VEHICLE_DETAILS (<u>vm_model</u>, vm_make)

TRIP (<u>trip_id</u>, vehicle_vin, driver_id, off_olym_id, trip_passenger_no, pickup_location_ id, trip_intended_pickup_datetime, trip_actual_pickup_datetime, dropoff_location_ id, trip_intended_dropoff_datetime, trip_actual_dropoff_datetime)

DRIVER(<u>driver_id</u>, driver_family_name, driver_given_name)

OFFICIAL(<u>off_olym_id</u>, off_name)

LOCATION(<u>location_id</u>, location_name, location_type, location_address)