

Normalization

i)

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VEHICLE(vehicle_vin, vehicle_registration_no, vehicle_make, vehicle_model, vehicle_year, vehicle_curr_odometer, vehicle_seats, (feature_bootspace, feature_plating, feature_blackout, feature_mobile_wifi, feature_electric_tail_lift, feature_carry, feature_GPS))

1NF

VEHICLE (vehicle_vin, vehicle_registration_no, vehicle_make, vehicle_model, vehicle_year, vehicle_curr_odometer, vehicle_seats)

CKs:

vehicle_vin

VEHICLE_FEATURES (vehicle_vin, feature_bootspace, feature_plating, feature_blackout, feature_mobile_wifi, feature_electric_tail_lift, feature_carry, feature_GPS)

CKs:

vehicle_vin

Partial dependencies:

None

2NF

VEHICLE (vehicle_vin, vehicle_registration_no, vehicle_make, vehicle_model, vehicle_year, vehicle_curr_odometer, vehicle_seats)

VEHICLE_FEATURES (vehicle_vin, feature_bootspace, feature_plating, feature_blackout, feature_mobile_wifi, feature_electric_tail_lift, feature_carry, feature_GPS)

Transitive dependencies:

None

3NF

VEHICLE (vehicle_vin, vehicle_registration_no, vehicle_make, vehicle_model, vehicle_year, vehicle_curr_odometer, vehicle_seats, vehicle_features)

VEHICLE_FEATURES (vehicle_vin, feature_bootspace, feature_plating, feature_blackout, feature_mobile_wifi, feature_electric_tail_lift, feature_carry, feature_GPS)

Full dependencies:

vehicle_vin -> vehicle_registration_no, vehicle_make, vehicle_model, vehicle_year,
vehicle_curr_odometer

vehicle_vin -> feature_bootspace, feature_plating, feature_blackout, feature_mobile_wifi,
feature_electric_tail_lift, feature_carry, feature_GPS

ii)

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TRIP (trip_id, (vehicle_vin, vehicle_rego), (driver_id, driver_name), (officials_olympic_id,
officials_name), trip_no_of_passengers, (pul_id, pul_name, pul_type, pul_address), (dol_id,
dol_name, dol_type, dol_address), trip_intended_pick_up_time, trip_actual_pick_up_time,
trip_intended_drop_off_time, trip_actual_drop_off_time)

1NF

TRIP (trip_id, vehicle_vin, driver_id, officials_olympic_id, trip_number_of_passengers,
trip_intended_pick_up_time, trip_actual_pick_up_time, trip_intended_drop_off_time,
trip_actual_drop_off_time)

CKs:

trip_id

VEHICLE (vehicle_vin, vehicle_rego)

CKs:

vehicle_vin

DRIVER (driver_id, driver_name)

CKs:

driver_id

OFFICIAL (officials_olympic_id, officials_name)

CKs:

official_olympic_id

PICK_UP_LOCATION (pul_id, pul_name, pul_type, pul_address)

CKs:

pul_id

DROP_OFF_LOCATION (dol_id, dol_name, dol_type, dol_address)

CKs:

dol_id

Partial Dependencies:

None

2NF

TRIP (trip_id, vehicle_vin, driver_id, officials_olympic_id, trip_number_of_passengers, trip_intended_pick_up_time, trip_actual_pick_up_time, trip_intended_drop_off_time, trip_actual_drop_off_time)

VEHICLE (vehicle_vin, vehicle_rego)

DRIVER (driver_id, driver_name)

OFFICIAL (officials_olympic_id, officials_name)

PICK_UP_LOCATION (pul_id, pul_name, pul_type, pul_address)

DROP_OFF_LOCATION (dol_id, dol_name, dol_type, dol_address)

Transitive Dependencies:

None

3NF

TRIP (trip_id, vehicle_vin, driver_id, officials_olympic_id, trip_number_of_passengers, trip_intended_pick_up_time, trip_actual_pick_up_time, trip_intended_drop_off_time, trip_actual_drop_off_time)

VEHICLE (vehicle_vin, vehicle_rego)

DRIVER (driver_id, driver_name)

OFFICIAL (official_olympic_id, official_name)

PICK_UP_LOCATION(pul_id, pul_name, pul_type, pul_address)

DROP_OFF_LOCATION (dol_id, dol_name, dol_type, dol_address)

Full Dependencies:

Trip_id → vehicle_vin, driver_id, trip_number_of_passengers, trip_intended_pick_up_time, trip_actual_pick_up_time, trip_intended_drop_off_time, trip_actual_drop_off_time

driver_id → driver_name

officials_olympic_id → officials_name

pul_id → pul_name, pul_type, pul_address

dol_id → dol_name, dol_type, dol_address

Attribute Synthesis:

Combined PICK_UP_LOCATION and DROP_OFF_LOCATION into LOCATION (location_id, location_name, location_type, location_address) since they are identical relations.

FINAL 3NF Relations:

TRIP (trip_id, vehicle_vin, driver_id, officials_olympic_id, trip_number_of_passengers, trip_intended_pick_up_time, trip_actual_pick_up_time, trip_intended_drop_off_time, trip_actual_drop_off_time)

VEHICLE (vehicle_vin, vehicle_rego)

DRIVER (driver_id, driver_name)

OFFICIAL (official_olympic_id, official_name)

LOCATION (location_id, location_name, location_type, location_address)