Users(<u>user_id: Integer</u>, username: String, password_hash: String, email: String, birthday: Date, registration_date: Date)

<u>user_id</u> → username, password_hash, email, birthday, registration_date

username → user_id

email → user_id

Since username and email are unique and not null, they are candidate keys, despite not being primary keys. Already in BCNF.

Vehicles(<u>vin: String</u>, make: String, model: String, year: Integer)

<u>vin</u> → make, model, year

Already in BCNF Normal Form.

Owns(<u>user_id: Integer, vin: String</u>, start_date: Date, end_date: Date)

FK (user_id: Integer) references Users(user_id: Integer)

FK (vin: String) references Vehicles(vin: String)

(<u>user_id, vin</u>) → start_date, end_date

Already in BCNF Normal Form.

CarShops(<u>car_shop_id: Integer</u>, name: String, street: String, city: String, state: String, zip_code: String, phone_number: String)

<u>car_shop_id</u> → name, street, city, state, zip_code, phone_number

Already in BCNF Normal Form.

Mechanics(<u>mechanic_id: Integer</u>, car_shop_id: Integer, name: String, phone_number: String, email: String)

FK (car_shop_id: Integer) references CarShops(car_shop_id: Integer)

mechanic_id → car_shop_id, name, phone_number, email

Already in BCNF Normal Form, by removing uniqueness from Mechanic's email since it is only used for contact information.

ServiceRecords(service_id: Integer, vin: String, service_date: Date, current_mileage: Integer, cost: Float, description: String)

FK (vin: String) references Vehicles(vin: String)

service_id → vin, service_date, current_mileage, cost, description

Already in BCNF Normal Form.

WorkedOn(mechanic_id: Integer, service_id: Integer)

FK (mechanic_id: Integer) references Mechanics(mechanic_id: Integer)

FK (service_id: Integer) references ServiceRecords(service_id: Integer)

(mechanic_id, service_id) → ∅

Already in BCNF Normal Form.

ServiceTypes(service_type: String)

service_type → ∅

Already in BCNF Normal Form.

ServiceRecords_ServiceTypes(service_id: Integer, service_type: String)

FK (service_id: Integer) references ServiceRecords(service_id: Integer)

FK (service_type: String) references ServiceTypes(service_type: String)

(service_id, service_type) → ∅

Already in BCNF Normal Form.

Parts(part_id: Integer, name: String, manufacturer: String, part_number: String, unit_price: Float)

part_id → name, manufacturer, part_number, unit_price

Already in BCNF Normal Form.

ServiceRecords_Parts(service_id: Integer, part_id: Integer)

FK (service_id: Integer) references ServiceRecords(service_id: Integer)

FK (part_id: Integer) references Parts(part_id: Integer)

(service_id, part_id) → ∅

Already in BCNF Normal Form.

Expenses(expense_id: Integer, vin: String, date: Date, category: String, amount: Float, description: String)

FK (vin: String) references Vehicles(vin: String)

expense_id → vin, date, category, amount, description

Already in BCNF Normal Form.

FuelLog(fuel_log_id: Integer, vin: String, date_filled: Date, current_mileage: Integer, gallons: Float, total_cost: Float, fuel_type: String)

FK (vin: String) references Vehicles(vin: String)

<u>fuel_log_id</u> → vin, date_filled, current_mileage, gallons, total_cost, fuel_type

Already in BCNF Normal Form.

MaintenanceEvents(<u>event_id: Integer</u>, user_id: Integer, vin: String, rec_date: Date, rec_mileage: Integer, status: String)

FK (user_id: Integer) references Users(user_id: Integer)

FK (vin: String) references Vehicles(vin: String)

<u>event_id</u> → user_id, vin, rec_date, rec_mileage, status

Already in BCNF Normal Form.

MaintenanceEvents_ServiceTypes(<u>event_id: Integer, service_type: String</u>)

FK (event_id: Integer) references MaintenanceEvents(event_id: Integer)

FK (service_type: String) references ServiceTypes(service_type: String)

(<u>event_id, service_type</u>) → ∅

Already in BCNF Normal Form.

Reminder(<u>reminder_id: Integer</u>, event_id: Integer, message: String, send_date: Date, is_sent: Boolean)

FK (event_id: Integer) references MaintenanceEvents(event_id: Integer)

<u>reminder_id</u> → event_id, message, send_date, is_sent

Already in BCNF Normal Form.