FD's & BCNF Normalization Proof

A Relation R is in BCNF if :

1. Realtion is already in 3NF.
2. For all FDs X $\longrightarrow$ Y , X should be a super key.

- Customer (c_id, fname, lname, dob, gender, steert, city, state, pincode, pan_no, ph_no, b_code) :

  c_id $\longrightarrow$ pan_no
  pan_no $\longrightarrow$ {c_id, fname, lname, dob, gender, city, state, pincode, ph_no, b_code}

  Key : c_id , pan_no

  Relation is in BCNF.

- Vehicle (vin_no, reg_no, reg_date, dealer_name, manuf_year, v_class, v_type, model_name, brand, fuel_type , owner-id, b_code) :

  vin_no $\longrightarrow$ reg_no
  reg_no $\longrightarrow$ {vin_no, reg_date, dealer_name, manuf_year, v_class, v_type, model_name, brand, fuel_type , owner-id, b_code}

  Keys : vin_no , reg_no

  Relation is in BCNF.

- RTO_BRANCH (b_code, b_name, b_pincode, street, city, std-code, ph_no) :

  b_code $\longrightarrow$ b_pincode
  b_pincode {b_name, b_code, street, city, std-code, ph_no}

  Keys : b_code , b_pincode

  Relation is in BCNF.

- Driving License (dl_no, dl_type, dl_class, expiry_date, c_id, b_code) :

  dl_no $\longrightarrow$ {dl_type, dl_class, expiry_date, c_id, b_code }

  Keys : dl_no

Relation is in BCNF.

- Insurance (I_id, I_type, I_amount, I_date, I_company, I_period) :

  I_id ⟶ {I_type, I_amount, I_date, I_company, I_period }

  Keys : I_id

  Relation is in BCNF.

- Contract Permission (vin_no, b_code, no_of_days, amount_per_seat, permit_type):

  { Vin_no, b_code } ⟶ { no_of_days, amount_per_seat, permit_type}

  Keys : { Vin_no, b_code }

  Realtion is in BCNF.

- Renewal (b_code , c_id , extended_period) :

  { b_code, c_id } ⟶ extended_period

  Keys : {b_code , c_id}

  Relation is in BCNF.