

Name: Tamyra
Date: May 31, 2022

Functional Dependencies and Anomalies

In this document, we will dissect the functional dependencies and find anomalies from the result of our ER diagram in Figure 1 below.

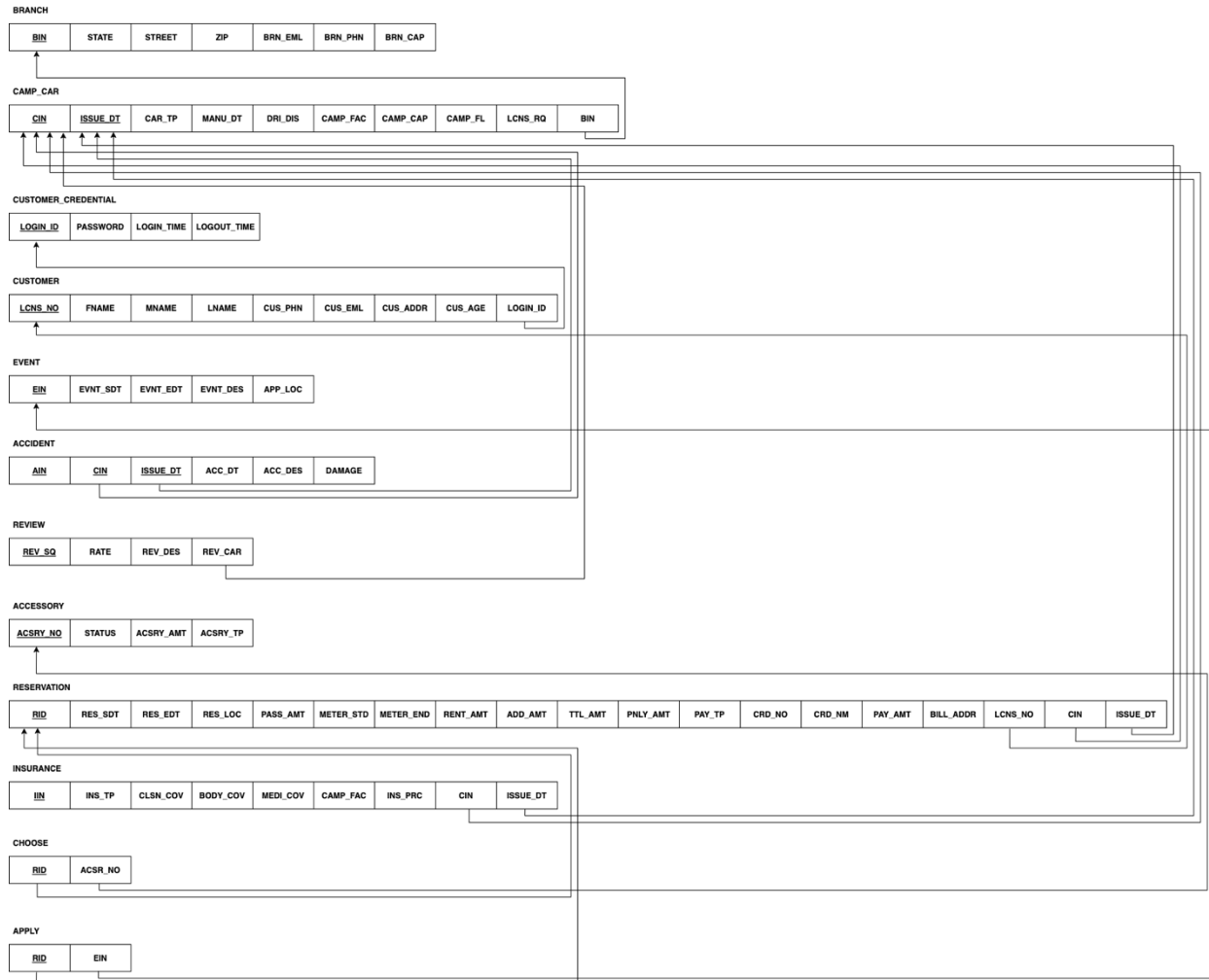


Figure 1

1. Functional dependencies

From the attributes, we will identify the functional dependencies to verify the primary key in our ER diagram.

a. Branch

<u>BIN</u>	STATE	STREET	ZIP	BRN_EML	BRN_PHN	BRN_CAP
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Branch ID -> branch state, branch street, branch zip code, branch email, branch phone, branch capacity

Name: Tamyra
Date: May 31, 2022

b. Camping car

<u>CIN</u>	<u>ISSUE_DT</u>	CAR_TP	MANU_DT	DRI_DIS	CAMP_FAC	CAMP_CAP	CAMP_FL	LCNS_RQ	BIN
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Camping car ID -> issue date, car type, manufacture date, distance driven, facilities, passenger, availability, required license, branch ID

c. Customer credentials

<u>LOGIN_ID</u>	PASSWORD	LOGIN_TIME	LOGOUT_TIME
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Login ID -> password, login time, logout time

d. Customer name

<u>LCNS_NO</u>	FNAME	MNAME	LNAME	CUS_PHN	CUS_EML	CUS_ADDR	CUS_AGE	LOGIN_ID
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License number -> First name, middle name, last name, phone number, email, address, age, login ID

e. Event

<u>EIN</u>	EVNT_SDT	EVNT_EDT	EVNT_DES	APP_LOC
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Event ID -> Event start date, event end date, event description, event applied location

f. Accident

<u>AIN</u>	<u>CIN</u>	<u>ISSUE_DT</u>	ACC_DT	ACC_DES	DAMAGE
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Accident ID -> Camping car ID, issue date, accident date, accident description, damage

g. Review

<u>REV_SQ</u>	RATE	REV_DES	REV_CAR
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Review ID -> rate of service, review description, camping car reviewed

Name: Tamyra
Date: May 31, 2022

h. Accessory

<u>ACSRY_NO</u>	STATUS	ACSRY_AMT	ACSRY_TP
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Accessory ID -> accessory status, accessory amount, accessory type

i. Reservation

<u>RID</u>	RES_SDT	RES_EDT	RES_LOC	PASS_AMT	METER_STD	METER_END	RENT_AMT	ADD_AMT	TTL_AMT	PNLY_AMT	PAY_TP	CRD_NO	CRD_NM	PAY_AMT	BILL_ADDR	LCNS_NO	CIN	ISSUE_DT
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Reservation ID -> reservation start date, reservation end date, reservation start location, passenger number, meter start, meter end, rental amount, additional amount, total amount, penalty amount, payment type, card number, card name, pay amount, billing address, license number, camping car ID, issue date.

j. Insurance

<u>IIN</u>	INS_TP	CLSN_COV	BODY_COV	MEDI_COV	CAMP_FAC	INS_PRC	CIN	ISSUE_DT
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Insurance ID -> insurance type, collision coverage, body coverage, medical coverage, camping car facilities, insurance price, camping car ID, issue date.

k. Choose

<u>RID</u>	ACSR_NO
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Reservation ID -> accessory number

l. Apply

<u>RID</u>	EIN
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Reservation ID -> Event ID

2. Anomalies

From here, we can analyze and anomalies we might have in our structure. There are two types of anomalies in this structure.

1. Expected insertion anomalies
 - a. Camping car: distance driven.
 - b. Customer credential: login time and logout time.
 - c. Reservation: Meter end, penalty amount, pay amount.

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These attributes should be updated after the service has been used. Data for these attributes may not be available, and we will keep that in mind when building our database.

2. Insertion anomalies that need to be resolved

- a. In case of payment type being other than card, card number, card name, and billing address will not be available.

3. Resolution

To resolve the payment section in the reservation table, we will create a **Pay** table and **Pay Type** table. After separating the attributes related to the pay and pay type table, from the reservation table, reservation table will have Pay ID as foreign key, that is related to the Pay table, and then in the Pay table we have the Pay type as foreign key which is related to the Pay Type table.

PAY_TYPE

<u>PAY_TP</u>	PAY_NM
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PAY

<u>PAY_ID</u>	PAY_TP	PAY_AMT	PAY_DT
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4. Final form

