DATABOOK PART -2 :DATABOOK ENTITY RELATIONSHIP DIAGRAMS

RELATIONAL SCHEMA

CUSTOMER_INDIVIDUAL(**CUSIN_ID**, CUSIN_FNAME, CUSIN_LNAME, CUSIN_MOBILENO, CUSIN_EMAILID,CUSIN_GENDER, CUSIN_ADDRESS, CUSIN_CITY, CUSIN_ZIPCODE, CUSIN_STATE, CUSIN_DRIVER_LICNO)

CUSTOMER_ENTITY(**CUSEN_ID**, **CUSIN_ID**, CUSEN_NAME, CUSEN_BRANCH, CUSEN_PERSON_CONTACT, CUSEN_MOBILENO, CUSEN_GSTNO, CUSEN_ADDRESS, CUSEN_CITY, CUSEN_ZIPCODE, CUSEN_STATE)

SERVICE_PROVIDER_INDIVIDUAL(**SPIN_ID**,SPIN_FNAME, SPIN_LNAME, SPIN_MOBILENO, SPIN_EMAILID, SPIN_GENDER, SPIN_ADDRESS, SPIN_CITY, SPIN_ZIPCODE, SPIN_STATE, SPIN_JOIN_DATE)

SERVICE_PROVIDER_ENTITY(**SPEN_ID. SPIN_ID**, SPEN_NAME, SPEN_BRAMCH, SPEN_PERSON_CONTACT, SPEN_MOBILENO, SPEN_GSTNO, SPEN_ADDRESS, SPEN_CITY, SPEN_STATE, SPEN_ZIPCODE, SPEN_JOIN_DATE)

CLIENT(**CLIENT_ID**, CLIENT_PERSON_CONTACT, CLIENT_NAME, CLIENT_BRANCH, CLIENT_SUBPLAN_CODE, CLIENT_EMP_ID)

EMPLOYEE(**EMP_ID,** EMP_FNAME, EMP_LNAME, EMP_AADHARNO, EMP_MOBILENO, EMP_DOB, EMP_GENDER, EMP_JOB_CODE, EMP_EMAILID, EMP_ADDRESS, EMP_CITY, EMP_ZIPCODE, EMP_MONTHLY_SALARY, EMP_JOB_TITLE

SUBSCRIPTION_PLAN(**SUBPLAN_CODE**, SUBPLAN_PRICE, SUBPLAN_DESC)

INVOICE(**INV_NO**, INV_REF_ID, INV_BILL_AMOUNT, INV_SATAUS, INV_DATETIME)

RIDE(**RIDE_ID**, DRIVER_ID, VEHICLE_ID, RIDE_START_TIME, RIDE_END_TIME, RIDE_START_LOC_LONG, RIDE_START_LOC_LAT, RIDE_END_LOC_LONG, RIDE_END_LOC_LAT, RIDE_MEANS)

BOOKING(**BOOK_ID**, CUSIN_ID, BOOK_TYPE, BOOK_DATETIME, BOOK_VEH_TYPE)

RENTAL(**BOOK_ID**, RENT_PICK_LOC, RENT_DROP_LOC, RENT_VISIT_LOC)

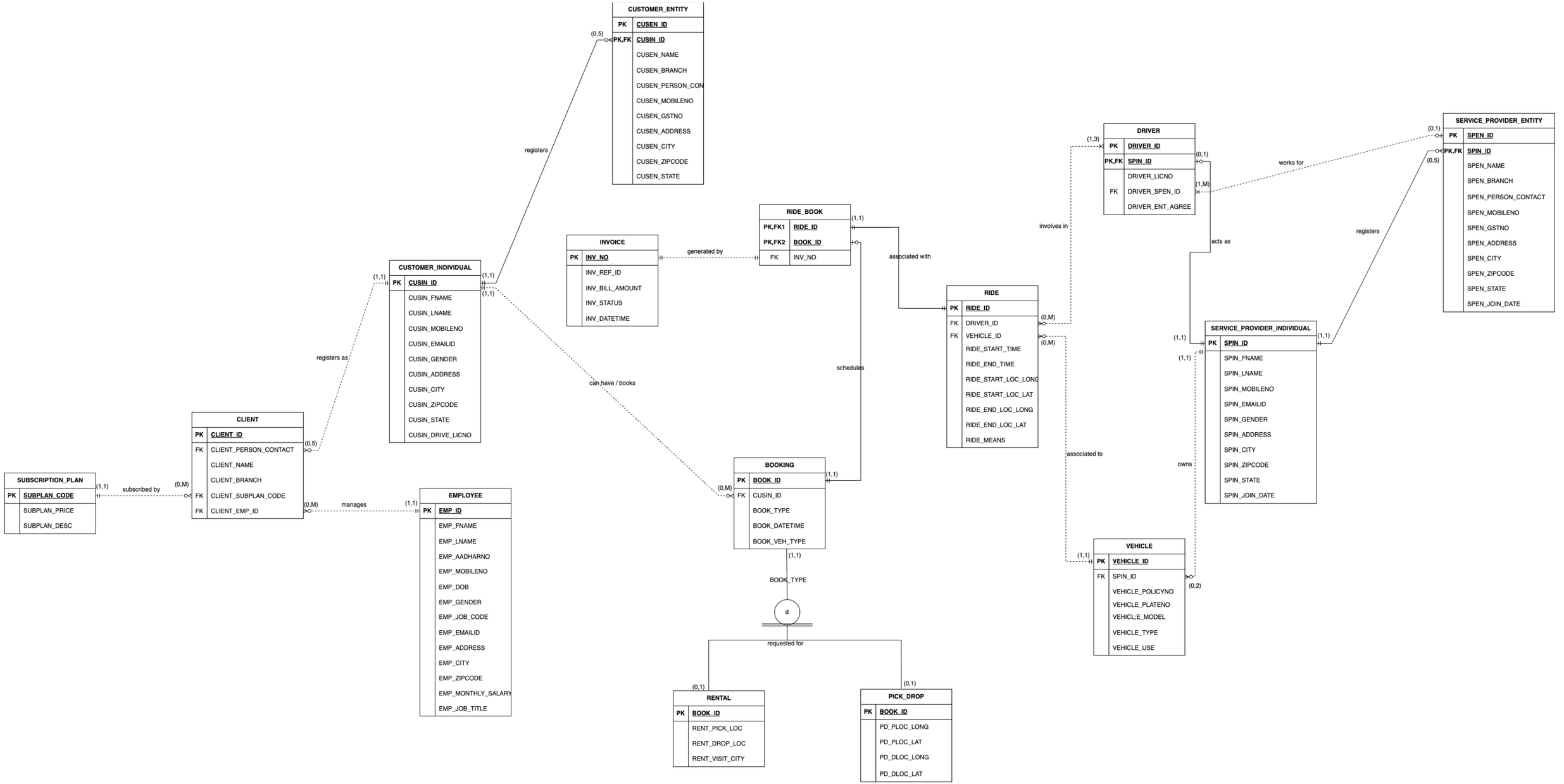
PICK_DROP(**BOOK_ID**, PD_PLOC_LONG, PD_PLOC_LAT, PD_DLOC_LONG, PD_DLOC_LAT)

VEHICLE(**VEHICLE_ID**, SPIN_ID, VEHICLE_POLICYNO, VEHICLE_PLATENO, VEHICLE_MODEL, VEHICLE_TYPE, VEHICLE_USE)

DRIVER(**DRIVER_ID**, **SPIN_ID**, DRIVER_LICNO, DRIVER_SPEN_ID, DRIVER_ENT_AGREE)

RIDE_BOOK(**RIDE_ID**, **BOOK_ID**, INV_NO)

ER DIAGRAM



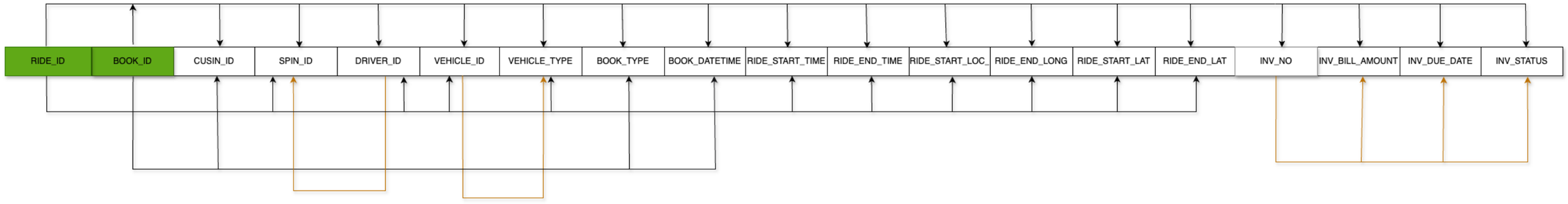
PRE-NORMALIZATION

RIDE_ID	BOOK_ID	CUS_ID	SPIN_ID	DRIVER_ID	VEHICLE_ID	VEHICLE_TYPE	BOOK_TYPE	BOOK_DATAETIME	RIDE_START_TIME	RIDE_END_TIME	RIDE_START_LOC_LONG	RIDE_END_LONG	RIDE_START_LAT	RIDE_END_LAT	INV_ID	INV_BILL_AMOUNT	INV_DUE_DATE
10401028092024000001	AA90201	CI000001	SP100101	DR456212	MV325791	Mini Van	Rental	2024-09-29 10:31:42	2024-09-30 05:21:09	2024-10-01 16:23:57	78.468901	78.478102	17.397132	17.380132	00000002	19,080	2024-10-01
10401028092024000002	AA123431	CI0121119	SP291837	DR384671	SC5556290	Sedan	Pick-Drop	2024-09-29 11:34:03	2024-09-29 11:40:09	2024-09-29 12:12:37	78.468991	78.488902	17.411145	17.411203	000001	235	2024-09-30
10401028092024000003	AA122231	CI128911	SP291837	DR384671	SC5556290	Sedan	Pick-Drop	2024-09-29 11:35:03	2024-09-29 11:41:59	2024-09-29 12:18:10	78.468990	78.488950	17.411145	17.411210	000002	268	2024-09-30
10401028092024000004	AA345162	CI345217	SP334556	DR982314	SC4562109	Sedan	Pick-Drop	2024-10-01 20:23:57									
10401028092024000005	AA340062	CI758201	SP112225	DR888833	UC238945	SUV	Pick-Drop	2024-10-01 20:25:20	2024-10-01 20:27:51		78.468901		17.397132				

The Table below is recorded the information associated to four latest rides information. The records are sorted according to booking time. The first row is associated to a Rental two-day trip. The second row and third row are sharing rides for two different unrelated customers.
For row four and five there are missing values as these bookings and rides information as these bookings are happening real time.

1NF Normalization

The First Normal Form is same as the pre-normal form. As there are no repeting groups which needs to be filled
RIDE_ID and BOOK_ID together uniquely identifies all the attributes of the 1NF



1NF (**<u>RIDE_ID, BOOK_ID</u>,** CUSIN_ID, SPIN_ID, DRIVER_ID, VEHICLE_ID, VEHICLE_TYPE, BOOK_TYPE, BOOK_DATETIME, RIDE_START_TIME, RIDE_END_TIME, RIDE_START_LOC_LONG, RIDE_START_LOC_LAT, RIDE_END_LOC_LONG, RIDE_END-LOC_LAT, INV_NO, INV_BILL_AMOUNT, INV_DUE_DATE, INV_STATUS)

Partial Dependency:
(RIDE_ID ---> SPIN_ID, DRIVER_ID, VEHICLE_TYPE, RIDE_START_TIME, RIDE_END_TIME, RIDE_START_LOC_LONG, RIDE_START_LOC_LAT, RIDE_END_LOC_LONG, RIDE_END_LOC_LAT)
(BOOK_ID ---> CUSIN_ID, BOOK_TYPE, BOOK_DATETIME)

Transitive Dependency:
(DRIVER_ID --> SPIN_ID)
(VEHICLE_ID ---> VEHICLE_TYPE)
(INV_NO --> INV_BILL_AMOUNT, INV_DUE_DATE, INV_STATUS)

The first normal form is given us all the dependencies in one table
Since, the pre-normal form of the table has no required missing values, we must determine the prime attributes for further normalizations stages.
These (RIDE_ID, BOOK_ID) attributes together can determine all the other attributes of the table.

2NF NORMALIZATION: In the second normal form, the partial dependencies are separated and are made into two new entity tables. RIDE TABLE, BOOK TABLE are generated and main table is reduced into RIDE_BOOK TABLE.

RIDE_BOOK TABLE:

RIDE_ID	BOOK_ID	INV_NO	INV_BILL_AMOUNT	INV_DUE_DATE
10401028092024000001	AA90201	00000002	19,080	2024-10-01
10401028092024000002	AA123431	000001	235	2024-09-30
10401028092024000003	AA122231	000002	268	2024-09-30
1040102809202000004	AA345162			
10401028092024000005	AA340062			

RIDE TABLE:

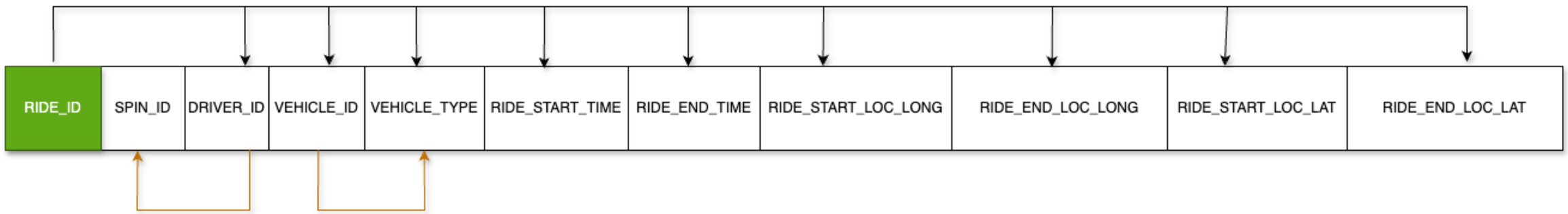
RIDE_ID	VEHICLE_ID	VEHICLE_TYPE	RIDE_START_TIME	RIDE_END_TIME	RIDE_START_LOC_LONG	RIDE_END_LONG	RIDE_START_LAT	RIDE_END_LAT
10401028092024000001	MV325791	Mini Van	2024-09-30 05:21:09	2024-10-01 16:23:57	78.468901	78.478102	17.397132	17.380132
10401028092024000002	SC5556290	Sedan	2024-09-29 11:40:09	2024-09-29 12:12:37	78.468991	78.488902	17.411145	17.411203
10401028092024000003	SC5556290	Sedan	2024-09-29 11:41:59	2024-09-29 12:18:10	78.468990	78.488950	17.411145	17.411210
1040102809202000004	SC4562109	Sedan						
10401028092024000005	UC238945	SUV	2024-10-01 20:27:51		78.468901		17.397132	

BOOKING TABLE:

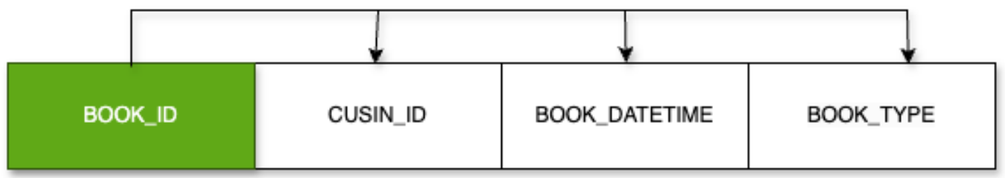
BOOK_ID	CUS_ID	BOOK_TYPE	BOOK_DATAETIME
AA90201	CI000001	Rental	2024-09-29 10:31:42
AA123431	CI0121119	Pick-Drop	2024-09-29 11:34:03
AA122231	CI128911	Pick-Drop	2024-09-29 11:35:03
AA345162	CI345217	Pick-Drop	2024-10-01 20:23:57
AA340062	CI758201	Pick-Drop	2024-10-01 20:25:20

2NF Normalization

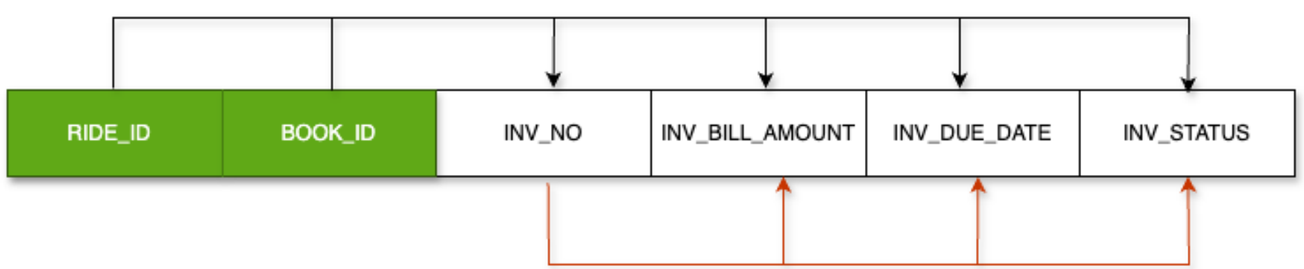
RIDE : (**RIDE_ID**, SPIN_ID, DRIVER_ID, VEHICLE_TYPE, RIDE_START_TIME, RIDE_END_TIME, RIDE_START_LOC_LONG, RIDE_START_LOC_LAT, RIDE_END_LOC_LONG, RIDE_END_LOC_LAT)



BOOKING(**BOOK_ID**, CUSIN_ID, BOOK_TYPE, BOOK_DATETIME)



RIDE_BOOK(**RIDE_ID**, **BOOK_ID**, INV_NO, INV_BILL_AMOUNT, INV_DUE_DATE, INV_STATUS



3NF NORMALIZATION:

3NF: The transitive dependencies are reduced to have their own table/entities. In this case, DRIVER, INVOICE, & VEHICLE TABLES are generated to represent the Pre-Normalized table.

VEHICLE TABLE:

VEHICLE_ID	VEHICLE_TYPE
MV325791	Mini Van
SC5556290	Sedan
SC5556290	Sedan
SC4562109	Sedan
UC238945	SUV

DRIVER TABLE:

DRIVER_ID	SPIN_ID
DR456214	SP100101
DR384671	SP291837
DR384671	SP291837
DR982314	SP334556
DR888833	SP112225

INVOICE TABLE:

INV_NO	INV_BILL_AMOUNT	INV_DUE_DATE
00000002	19,080	2024-10-01
000001	235	2024-09-30
000002	268	2024-09-30

RIDE_BOOK TABLE:

RIDE_ID	BOOK_ID	INV_NO
10401028092024000001	AA90201	00000002
10401028092024000002	AA123431	000001
10401028092024000003	AA122231	000002
1040102809202000004	AA345162	
10401028092024000005	AA340062	

RIDE TABLE:

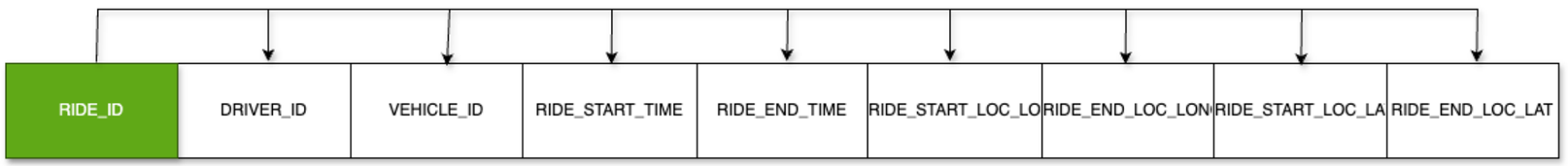
RIDE_ID	VEHICLE_ID	VEHICLE_TYPE	RIDE_START_TIME	RIDE_END_TIME	RIDE_START_LOC_LONG	RIDE_END_LONG	RIDE_START_LAT	RIDE_END_LAT
10401028092024000001	MV325791	Mini Van	2024-09-30 05:21:09	2024-10-01 16:23:57	78.468901	78.478102	17.397132	17.380132
10401028092024000002	SC5556290	Sedan	2024-09-29 11:40:09	2024-09-29 12:12:37	78.468991	78.488902	17.411145	17.411203
10401028092024000003	SC5556290	Sedan	2024-09-29 11:41:59	2024-09-29 12:18:10	78.468990	78.488950	17.411145	17.411210
1040102809202000004	SC4562109	Sedan						
10401028092024000005	UC238945	SUV	2024-10-01 20:27:51		78.468901		17.397132	

BOOKING TABLE:

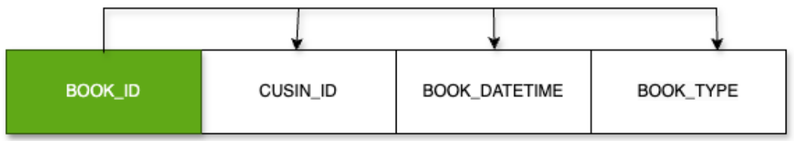
BOOK_ID	CUS_ID	BOOK_TYPE	BOOK_DATAETIME
AA90201	CI000001	Rental	2024-09-29 10:31:42
AA123431	CI0121119	Pick-Drop	2024-09-29 11:34:03
AA122231	CI128911	Pick-Drop	2024-09-29 11:35:03
AA345162	CI345217	Pick-Drop	2024-10-01 20:23:57
AA340062	CI758201	Pick-Drop	2024-10-01 20:25:20

3NF Normalization

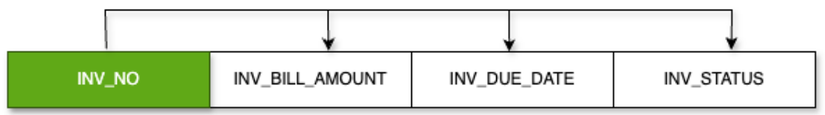
RIDE : (**RIDE_ID**, DRIVER_ID, VEHICLE_ID, RIDE_START_TIME, RIDE_END_TIME, RIDE_START_LOC_LONG, RIDE_START_LOC_LAT, RIDE_END_LOC_LONG, RIDE_END_LOC_LAT)



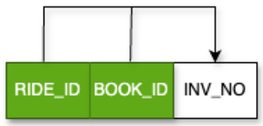
BOOKING(**BOOK_ID**, CUSIN_ID, BOOK_TYPE, BOOK_DATETIME)



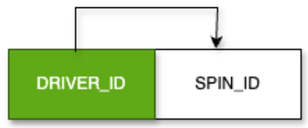
INVOICE(**INV_NO**, INV_BILL_AMOUNT, INV_DUE_DATE, INV_STATUS)



RIDE-BOOK(**RIDE_ID, BOOK_ID**, INV_NO)



DRIVER(**DRIVER_ID**, SPIN_ID)



VEHICLE(**VEHICLE_ID**, VEHICLE_TYPE)