Loan Servicing Database

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OPIM 5272 - Data Management and Business Process Modeling

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May 10, 2019

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Database Introduction

We, Team MOCHI+, have created a database that will serve as the foundation for a consumer loan servicing system. This system can be used by a local or regional small lender, specializing in consumer installment lending (auto, boat, unsecured, etc.). Loans can be placed directly with consumers or through intermediaries (dealerships).

The database we have created is appropriate for fully-amortizing, balloon-payment, or interest-only loans, and is not appropriate for residential lending or complicated commercial loan transactions.

Benefits/Need

Consumer loan servicing applications tend to be quite costly and include several "bells and whistles" that a pure loan servicer would not need, including elements relating to originations, closing, escrow and compliance. A platform based around a relatively uncomplicated database would be more than adequate for a small servicing organization at substantially lower cost. The database we created provides an affordable, user-friendly, and powerful solution that is specifically designed for the small lender.

Description

Our loan servicing database supports multiple loan types based on collateral. (Different collateral types require different means of securitization.) At a high level, the database would need a customer information file entity (CIF), loan file entity, and an entity detailing loan types with subtype entities for each collateral type (except unsecured). There are various other entities, including an employee entity, a collection management entity and a loan type entity to better record data pertaining to loan servicing. Our database helps drive operational efficiency and ensures information completeness and integrity.

Business Rules & User Requirements

Business Rules

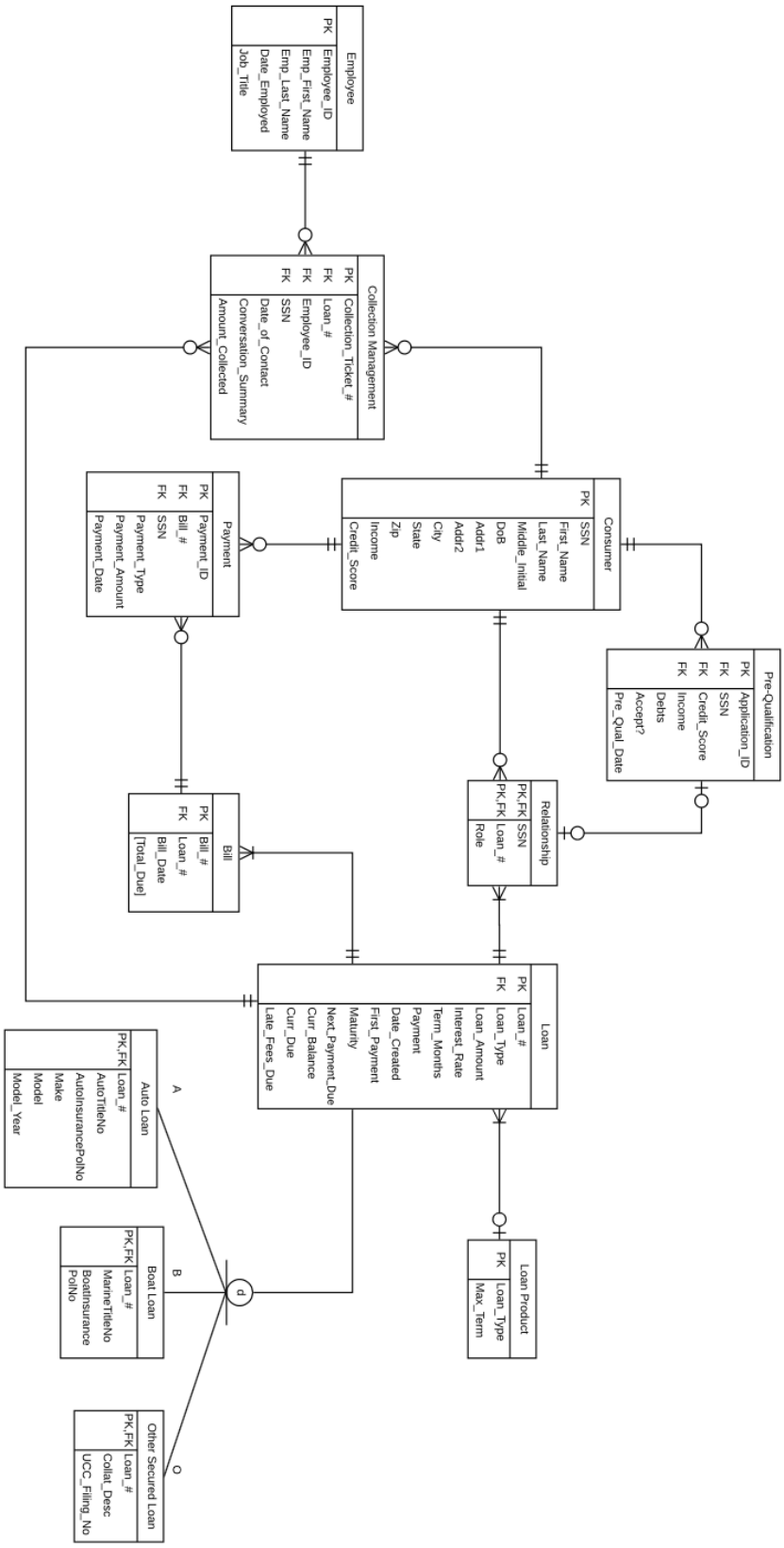
- Users of the database are restricted to employees of the company;
- The consumer can have multiple loan accounts and can have a maximum of 5 loans outstanding at one time. Satisfied (paid-off) loans do not count against this total;
- Consumer information collected and stored will include information needed to uniquely identify the consumer (name, address, date of birth, Social Security number, etc.) and information used to approve the application (credit score, income, etc.);
- A consumer must be between the ages of 18 and 70;
- A loan can be shared by a maximum of 5 consumers;
- Roles on the loan are restricted to borrower, co-borrower and guarantor;
- The first loan payment is due 1 month after the origination date. For example, a loan closed on January 12 has a first payment due date of February 12. A loan closed on January 29, 30 or 31 of a non-leap year would be due on March 1;
- Interest is collected and billed in arrears;
- Interest is always fixed-rate;
- Payment amounts are fixed and do not change based on principal prepayments;
- Interest is calculated on a simple interest basis; interest due equals the principal balance the day before the due date, multiplied by the interest rate, and divided by 12;
- Payoffs are calculated by pro-rating the due date interest due over the number of days between the first of the month and the payoff date, inclusive. For example, a loan paid off on January 2nd would include interest equal to [month-end balance x interest rate % / 12 x (2 / 31)];

- A loan is considered late if 10 days have passed since the payment due date;
- A late fee equal to 5% of the past-due amount is assessed for past due loans, which is added to the payment due;
- Interest does not accrue on late fees; however, any late fees must be satisfied before the loan is considered paid off;
- The loan is considered in default when it reaches 60 days past due;
- Internal collection staff will attempt to collect on a loan when it reaches 60 days past due. If collection efforts fail, the collateral will be flagged for repossession at the discretion of an employee.

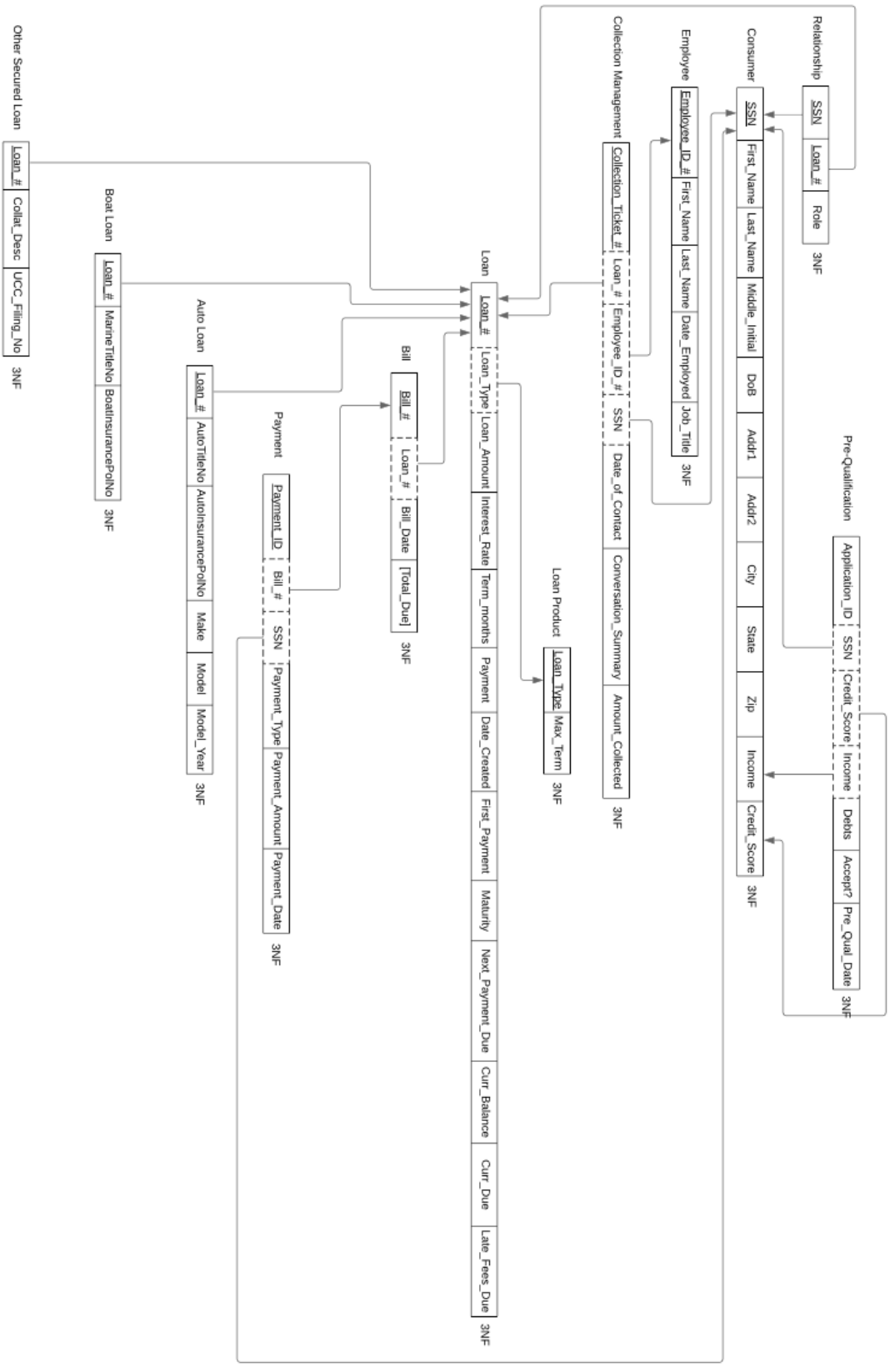
User Requirements

- The system supports auto loans, boat loans, other secured loans, and unsecured loans;
- Authorized users are employees of the loan servicing company;
- Employees must successfully complete the training program in order to use the database system and be an authorized user;
- 20 authorized users can use the database concurrently without noticeable system delays;
- The system is only accessible to authorized users via a company computer;
- The system can only be accessed in the United States;
- The hours that the system should be available are from 9am to 5pm Eastern Daylight Time, Monday to Friday, with the exception of nationally recognized holidays;
- The system should be able to hold at least 5,000 records at its initial stage;
- The system should be able to hold all the details about a consumer's loan;
- A record should be fully available up to 7 years after a loan had been paid off;
- Employees should be able to use the system to obtain meaningful information and reports regarding consumers and loans;
- All collections-related activity should be logged in the database in the collection management entity. Each contact should be a separate log entry, which must include the contact date, the employee, the customer they spoke to, and a narrative summary of the conversation;
- Members of the data entry group can enter requests, but cannot delete requests;
- Members of administration group cannot enter or delete requests;
- The system should maintain database compliance, meet regulatory requirements and support regulatory mandates.

Enhanced Entity Relation Diagram (EERD)



Relational Schema



Definitions of Entities and Attributes in the Diagram

Entities that only have Primary Keys

Entities Attributes	**Definition**
Consumer	a person that has a loan relationship with the lender
SSN (PK)	consumer's Social Security Number
First_Name	consumer's first name
Last_Name	consumer's last name
Middle_Initial	first initial of consumer's middle name
DoB	consumer's date of birth
Addr1	first line of consumer's address
Addr2	second line of consumer's address
City	consumer's city of residence
State	consumer's state of residence
Zip	consumer's zip code of residence
Income	consumer's income
Credit_Score	consumer's credit score
Employee	a person who works for the lender
Employee_ID (PK)	a unique number assigned to the employee at hire by the lender
Emp_First_Name	employee's first name
Emp_Last_Name	employee's last name
Date_Employed	employee's start date of employment
Job_Title	employee's position
Loan Product	loan types that are offered by the lender

Loan_Type (PK)	type of loan, differentiated by collateral type (e.g. auto, boat, unsecured)
Max_Term	maximum number of months for the loan type

Entities that have Primary Keys and Foreign Keys

Entities Attributes	**Definition**
Auto_Loan	the loan is secured by a motor vehicle
Loan_Number (PK,FK)	a unique number assigned to an approved loan (from Loan entity)
Auto_Title_No	the unique title information provided by the motor vehicle's state of registration
Auto_Insurance_Pol_No	information about the insurance policy that protects the collateral
Make	the brand of the motor vehicle
Model	the model of the motor vehicle
Model_Year	the year of the motor vehicle
Bill	a loan generates a bill, a printed/written statement of charges
Bill_# (PK)	a unique number assigned to the bill
Loan_# (FK)	a unique number assigned to an approved loan (from Loan entity)
Bill_Date	the date the bill is assigned
[Total_Due]	the current amount due and payable (equal to Curr_Due plus Late_Fees_Due from the Loan entity)
Boat_Loan	the loan is secured by a water craft
Loan_Number (PK,FK)	a unique number assigned to an approved loan (from Loan entity)
Marine_Title_No	the unique title information provided by the boat's state of registration

Boat_Insurance_Pol_No	information about the insurance policy that protects the collateral
Collection Management	entity that facilitates the collection of payment
Collection_Ticket_# (PK)	a unique number assigned to a collection ticket
Loan_# (FK)	a unique number assigned to an approved loan (from Loan entity)
Employee_ID (FK)	a unique number assigned to the employee at hire by the lender (from Employee entity)
SSN (FK)	candidate's Social Security number (from Consumer entity)
Date_of_Contact	date the contact between the collection management and the consumer is made
Conversation_Summary	summary of conversation between employee and consumer
Amount_Collected	amount of money collected as a result of this contact
Loan	a singular extension of credit to a consumer or group of consumers
Loan_# (PK)	a unique number assigned to an approved loan
Loan_Type (FK)	classification of loan, differentiated by collateral type (e.g. auto, boat, secured, unsecured)
Loan_Amount	the original amount provided to the consumer by the lender
Interest_Rate	rate of interest charged on the loan
Term_Months	the number of months over which term the loan will be repaid
Payment	the fixed amount (dollars and cents) of the monthly payment due
Date_Created	date the loan was created and the loan amount was disbursed to the consumer
First_Payment	the first payment due date
Maturity	the date the final payment is scheduled to be due
Next_Payment_Due_Date	the date the next payment is scheduled to be due

Curr_Balance	current balance of the loan
Curr_Due	the amount currently due on the loan (principal plus interest)
Late_Fees_Due	penalties accrued but not paid for late payments
Other_Secured_Loan	the loan is secured by other collateral using a UCC filing
Loan_# (PK,FK)	type of loan (from Loan_Products entity)
Collat_Desc	description of the collateral
UCC_Filing_No	the unique filing number used to secure the collateral
Payment	payment received from a consumer applied to a loan bill that satisfies part or all of the current amount due
PaymentID (PK)	a unique identifying number assigned to a payment
Bill_# (FK)	a unique number assigned to the bill (from Bill entity)
SSN (FK)	the consumer's Social Security number (from Consumer entity)
Payment_Type	form of payment (cash, credit, debit, check)
Payment_Amount	amount of the payment
Payment_Date	date the payment is made
Pre-Qualification	consumer's eligibility for a loan
Application_ID (PK)	a unique number assigned at application
SSN (FK)	candidate's Social Security number (from Consumer entity)
Credit_Score	candidate's credit score
Income	candidate's annual income
Debts	candidate's debts (monthly debt load)
Accept	consumer accepted offer (Y or N)
Prequal_Date	date application is submitted

Relationship	defines the relationship between a consumer and a loan; one borrower can have multiple loans, and one loan can have multiple borrowers
SSN (PK,FK)	the consumer's Social Security number (from Consumer entity)
Loan_# (PK,FK)	a unique number assigned to the loan (from Loan entity)
Role	the borrower's role on the loan (e.g. borrower, co-borrower, guarantor)

Definitions of Relationships in the Diagram

Relationship	Definition
Consumer : Relationship	A consumer can have multiple loan relationships. Each instance of a relationship may have a different role (e.g. borrower, guarantor)
Loan : Relationship	A loan can have multiple consumers (borrowers). Each instance of a consumer relationship may have a different role
Consumer : Pre-Qualification	A consumer may be pre-qualified for a loan. A consumer may never be pre-qualified for a loan or may be pre-qualified more than once.
Pre-Qualification : Relationship	A pre-qualification may (or may not) lead to a loan relationship. A loan relationship need not be pre-qualified.
Loan Product : Loan	A loan must have one (and only one) loan product type. It is possible that at any given time there are loan products with no open loans.
Loan Product : [Loan Types]	There are four broadly-defined loan types: auto loan, boat loan, and other secured loan (collateralized loan); and unsecured loan. Collateralized loan types require a relationship between the Loan Product entity and a corresponding Loan Type entity. This allows recording of information documenting the collateral used to secure the loan.
Loan : Bill	A loan will have one or more bills, one for each month the loan is open. Each bill will relate to exactly one open loan.
Bill : Payment	When a payment is received, it relates to a specific bill (generally the last bill issued). A single bill can result in multiple payments, although this is unusual.
Consumer : Payment	Tracks the consumer who made a particular payment. If there are multiple borrowers (consumers) on a loan, payments may not always be made by the same consumer.
Loan : Collection Management	If a loan becomes past due, it goes into collections. The Collection Management entity is used to record contacts between borrowers and collection agents (employees). An

	instance of a Collection Management entity must relate to a specific loan. It is possible for a loan to never have had any Collection Management relationships.
Collection Management : Consumer	The Collection Management entity records which consumer the collection agent (employee) spoke with in connection with the past-due loan. An instance of a Collection Management entity must identify the consumer spoken with. It is possible for a consumer to never have spoken with a collection agent.
Employee : Collection Management	A given instance of Collection Management must record the employee that spoke with the past-due customer. Not all employees are collection agents, so not all employees will have a Collection Management relationship.

Screenshots of Tables and Records

1. Table: Consumer

Consumer Description:

Name	Null?	Type
SSN	NOT NULL	CHAR(9)
FIRST_NAME		VARCHAR2(50)
LAST_NAME		VARCHAR2(50)
MIDDLE_INITIAL		CHAR(1)
DOB		DATE
ADDR_1		VARCHAR2(100)
ADDR_2		VARCHAR2(100)
CITY		VARCHAR2(100)
STATE		CHAR(2)
ZIP		CHAR(5)
INCOME		NUMBER(8)
CREDIT_SCORE		NUMBER(3)

Consumer Records:

	SSN	FIRST_NAME	LAST_NAME	MIDDLE_INITIAL	DOB	ADDR_1	ADDR_2	CITY	STATE	ZIP	INCOME	CREDIT_SCORE
1	004571073	Aiden	Schroeder	B	31-AUG-55	6649 N Blue Gum St	(null)	New Orleans	LA	70122	100000	700
2	926862928	Lucas	McKinney	J	19-MAR-63	4B Blue Ridge Blvd	(null)	Brighton	MI	48116	125000	750
3	612160290	Ben	Simmons	A	28-SEP-70	8 W Cerritos Ave	(null)	Bridgeport	NJ	08014	95000	727
4	749585360	Khloe	Buchanan	L	24-MAR-80	639 Main St	Unit #54	Anchorage	AK	99501	80000	699
5	002169202	Jordan	Carter	P	15-DEC-67	34 Center St	(null)	Hamilton	OH	45013	110000	742
6	223692959	Desi	Perkins	M	17-SEP-76	3 Mcauley Dr	(null)	Marlborough	CT	06447	175000	758
7	559529231	Tinashe	Kachingwe	E	23-FEB-70	7 Eads St	Apt 4C	Chicago	IL	60616	60000	740
8	308819168	Alexander	McQueen	N	03-DEC-81	7 W Jackson Blvd	#88	San Jose	CA	95122	78000	722
9	247958170	Lisa	Lee	(null)	28-JUL-77	20 Hammond Pl	(null)	Moraga	CA	94556	95000	738
10	409711848	Jackson	Cooper	P	13-MAY-97	228 Runamuck Pl	Unit #2808	Baltimore	MD	21231	53000	777
11	071543914	Keira	Beck	S	26-AUG-70	2371 Jerrold Ave	(null)	Kulpsville	PA	19446	110000	781
12	736576599	Daisy	Marquez	W	25-MAR-89	37275 S Rt 17	Building M	Middle Island	NY	11953	72000	758
13	093872951	Gabriel	Zamora	H	10-MAR-73	6 Greenleaf Ave	(null)	Santa Clara	CA	95111	118000	652
14	596261957	Carli	Bybel	O	17-OCT-80	618 W Yakima Ave	(null)	Dallas	TX	75062	250000	760
15	184326908	Ellen	Marchese	J	13-SEP-75	74 S Westgate St	Building D	Albany	NY	12204	89000	697
16	992514512	Brent	Faiyaz	M	19-SEP-89	3273 State St	(null)	Middlesex	NJ	8846	145000	770
17	303261905	Damian	Lillard	(null)	15-JUL-90	1 Central Ave	(null)	Portage	WI	54481	94000	693
18	236367286	Nancy	Cruz	M	12-MAY-77	86 Nw 66th St	Unit #8673	Johnson	KS	66218	115000	730
19	472300902	Sydney	Lillian	R	24-NOV-69	2 Cedar Ave	#84	Talbot	MD	21601	82000	710
20	633820135	Lily	Duong	T	05-AUG-89	90991 Thorburn Ave	(null)	New York	NY	10011	164000	732
21	170220857	Sophie	McQueen	A	11-NOV-58	12 Hillside Ave	(null)	Santa Clara	CA	95129	65000	700
22	226190841	Tanya	Bradstreet	R	12-JUN-77	74 S Westgate St	Building D	Albany	NY	12204	84000	697
23	842017297	Barbara	McKinney	Q	21-JAN-69	4B Blue Ridge Boulevard	(null)	Brighton	MI	48116	96000	688
24	620787963	Robert	Lillard	J	27-AUG-65	68 Oak Street	(null)	Baraboo	WI	53913	75000	720

2. Table: Loan_Product

Loan_Product Description:

Name	Null?	Type
LOAN_TYPE	NOT NULL	VARCHAR2(10)
MAX_TERM		NUMBER(38)

Loan_Product Records:

	LOAN_TYPE	MAX_TERM
1	Auto	60
2	Boat	60
3	Secured	48
4	Unsecured	36

3. Table: Employee

Employee Description:

Name	Null?	Type
EMPLOYEE_ID	NOT NULL	CHAR(4)
EMP_FIRST_NAME		VARCHAR2(50)
EMP_LAST_NAME		VARCHAR2(50)
DATE_EMPLOYED		DATE
JOB_TITLE		VARCHAR2(50)

Employee Records:

	EMPLOYEE_ID	EMP_FIRST_NAME	EMP_LAST_NAME	DATE_EMPLOYED	JOB_TITLE
1	0001	Maribel	Cox	09-JUL-90	President
2	0002	Sydnee	Abbott	04-NOV-99	Controller
3	0003	Ali	Wong	11-AUG-12	Originator
4	0004	Skylar	Hughes	10-NOV-04	Servicer
5	0005	Jacquelyn	Pace	07-FEB-06	Collector
6	0006	Joel	Embiid	25-MAR-15	Collector
7	0007	Ernest	Clouter	05-JUN-14	Underwriter
8	0008	Ugo	Etudo	09-JUL-10	Vice President
9	0009	Jennifer	Eigo	24-APR-05	Controller
10	0010	Chris	Field	16-OCT-17	Underwriter

4. Table: Pre_Qualification

Pre_Qualification Description:

```
Name           Null?    Type
-------------- -------- ------------
APPLICATION_ID NOT NULL CHAR(9)
SSN                     CHAR(9)
CREDIT_SCORE            NUMBER(38)
INCOME                  NUMBER(10,2)
DEBTS                   NUMBER(10,2)
ACCEPT                  CHAR(1)
PREQUAL_DATE            DATE
```

Pre_Qualification Records:

	APPLICATION_ID	SSN	CREDIT_SCORE	INCOME	DEBTS	ACCEPT	PREQUAL_DATE
1	000000357	926862928	750	125000	1354.16	Y	03-MAR-17
2	000000630	612160290	727	95000	2612.5	N	20-JUN-17
3	000001459	749585360	699	80000	1680	N	20-APR-18
4	000001505	223692959	758	175000	4375	N	20-APR-18
5	000001943	559529231	740	60000	1750	Y	01-MAY-18
6	000002077	247958170	738	95000	2770.83	N	01-MAY-18
7	000002089	409711848	777	53000	1502.68	N	01-MAY-18
8	000002161	071543914	781	110000	2200	Y	01-MAY-18

5. Table: Loan

Loan Description:

```
Name             Null?    Type
---------------- -------- ------------
LOAN_NUMBER      NOT NULL CHAR(9)
LOAN_TYPE                 VARCHAR2(10)
LOAN_AMOUNT               NUMBER(7,2)
INTEREST_RATE             NUMBER(5,3)
TERM_MONTHS               NUMBER(3)
PAYMENT                   NUMBER(6,2)
DATE_CREATED              DATE
FIRST_PAYMENT             DATE
MATURITY                  DATE
NEXT_PAYMENT_DUE          DATE
CURR_BALANCE              NUMBER(7,2)
CURR_DUE                  NUMBER(7,2)
LATE_FEES_DUE             NUMBER(6,2)
```

Loan Records:

	LOAN_NUMBER	LOAN_TYPE	LOAN_AMOUNT	INTEREST_RATE	TERM_MONTHS	PAYMENT	DATE_CREATED	FIRST_PAYMENT	MATURITY	NEXT_PAYMENT_DUE	CURR_BALANCE	CURR_DUE	LATE_FEES_DUE
1	000958757	Auto	7500	4.75	36	223.94	11-SEP-15	11-OCT-15	11-SEP-18	11-OCT-18	0	0	0
2	001830745	Auto	10000	4.125	60	184.73	30-OCT-16	30-NOV-16	30-OCT-21	30-APR-19	4293.24	184.73	0
3	003402184	Auto	30000	4.25	60	555.89	07-MAY-17	07-JUN-17	07-MAY-22	07-MAY-19	18268.1	555.89	0
4	006817077	Auto	12000	5.625	48	276.76	16-AUG-18	16-SEP-18	16-AUG-22	16-MAY-19	9716.68	0	0
5	008728142	Auto	8000	5.375	60	152.35	01-NOV-18	01-DEC-18	01-NOV-23	01-MAY-19	7293.44	152.35	0
6	009061384	Auto	17800	5.25	60	337.95	13-JAN-19	13-FEB-19	13-JAN-25	13-FEB-19	17278.86	1013.85	50.69
7	181736352	Boat	75000	5.875	144	727.05	05-DEC-11	05-JAN-12	05-DEC-23	05-MAR-19	34981.79	1454.1	72.71
8	390903722	Boat	40000	6.625	120	456.74	20-JUL-13	20-AUG-13	20-JUL-23	20-MAY-19	19562.06	0	0
9	582327841	Boat	62000	6.75	144	629.36	07-OCT-14	07-NOV-14	07-OCT-26	07-MAY-19	44350.42	629.36	0
10	649891495	Boat	56000	7.125	144	579.63	21-MAY-17	21-JUN-17	21-MAY-29	21-MAY-19	49361.5	0	0
11	685099491	Boat	40000	7.25	120	469.6	02-JUL-17	02-AUG-17	02-JUL-27	02-MAY-19	34393.81	0	0
12	928635275	Boat	25000	6.875	96	339.29	02-APR-19	02-MAY-19	02-APR-27	02-MAY-19	25000	0	0
13	082267982	Secured	40000	6.75	48	953.22	02-JUN-15	02-JUL-15	02-JUN-19	02-MAY-19	948.25	0	0
14	205166892	Secured	10000	6.25	24	444.33	14-DEC-16	14-JAN-17	14-DEC-18	14-JAN-19	0	0	0
15	222528863	Secured	14000	10	36	451.74	18-FEB-17	18-MAR-17	18-FEB-20	18-APR-19	4317.34	451.74	22.59
16	521761793	Secured	36000	8.25	48	883.1	22-MAY-18	22-JUN-18	22-MAY-22	22-MAR-19	28762.84	1766.2	44.16
17	524316780	Secured	18000	7.625	48	436.27	22-APR-19	22-MAY-19	22-APR-23	22-MAY-19	18000	0	0
18	488087360	Unsecured	15000	15.25	36	521.84	13-SEP-16	13-OCT-16	13-SEP-19	13-MAY-19	1526.26	0	0
19	582327842	Unsecured	14000	14.5	36	481.89	10-APR-17	10-MAY-17	10-APR-20	10-APR-19	4513.69	481.89	24.09
20	685099492	Unsecured	7000	10.125	24	323.42	06-JUL-18	06-AUG-18	06-JUL-20	06-MAY-19	3966.37	0	0
21	805000796	Unsecured	20000	15.75	36	700.67	06-JAN-19	06-FEB-19	06-JAN-22	06-MAY-19	17751.11	0	0

6. Table: Relationship

Relationship Description:

```
Name          Null?    Type
------------- -------- ------------
SSN           NOT NULL CHAR(9)
LOAN_NUMBER   NOT NULL CHAR(9)
ROLE                   VARCHAR2(20)
```

Relationship Records:

	SSN	LOAN_NUMBER	ROLE
1	303261905	001830745	Borrower
2	620787963	001830745	Guarantor
3	926862928	003402184	Borrower
4	093872951	006817077	Borrower
5	559529231	009061384	Borrower
6	071543914	008728142	Borrower
7	596261957	000958757	Borrower
8	236367286	685099491	Borrower
9	736576599	390903722	Borrower
10	472300902	181736352	Borrower
11	926862928	582327841	Borrower
12	842017297	582327841	Co-Borrower
13	004571073	928635275	Borrower
14	308819168	649891495	Borrower
15	559529231	205166892	Borrower
16	633820135	082267982	Borrower
17	184326908	521761793	Borrower
18	226190841	521761793	Co-Borrower
19	992514512	524316780	Borrower
20	633820135	222528863	Borrower
21	093872951	488087360	Borrower
22	004571073	685099492	Borrower
23	308819168	805000796	Borrower
24	170220857	805000796	Guarantor
25	002169202	582327842	Borrower

7. Table: Auto_Loan

Auto_Loan Description:

Name	Null?	Type
LOAN_NUMBER	NOT NULL	CHAR(9)
AUTO_TITLE_NO		VARCHAR2(12)
AUTO_INSURANCE_POL_NO		VARCHAR2(12)
MAKE		VARCHAR2(20)
MODEL		VARCHAR2(20)
MODEL_YEAR		CHAR(4)

Auto_Loan Records:

	LOAN_NUMBER	AUTO_TITLE_NO	AUTO_INSURANCE_POL_NO	MAKE	MODEL	MODEL_YEAR
1	000958757	TX014551041	12796993	Subaru	Legacy	2015
2	001830745	WI26313306	04781665	Chevrolet	Camaro	2016
3	003402184	MI2666276A	6963502148	BMW	Series Sedan	2017
4	006817077	CA0052420219	32201247	Lexus	ES	2018
5	008728142	PA77237417	2778541369	Toyota	Avalon	2018
6	009061384	IL078973719	81794470	Audi	A4	2019

8. Table: Boat_Loan

Boat_Loan Description:

Name	Null?	Type
LOAN_NUMBER	NOT NULL	CHAR(9)
MARINE_TITLE_NO		VARCHAR2(12)
BOAT_INSURANCE_POL_NO		VARCHAR2(12)

Boat_Loan Records:

	LOAN_NUMBER	MARINE_TITLE_NO	BOAT_INSURANCE_POL_NO
1	181736352	MD0148735316	163464023
2	390903722	NY0865943021	743049774
3	582327841	MI311869384	410157561
4	649891495	CA0782935027	665788024
5	685099491	KS0031532	972259339
6	928635275	LA767694532	927168568

9. Table: Other_Secured_Loan

Other_Secured_Loan Description:

Name	Null?	Type
LOAN_NUMBER	NOT NULL	CHAR(9)
COLLAT_DESC		VARCHAR2(50)
UCC_FILING_NO		VARCHAR2(10)

Other_Secured_Loan Records:

	LOAN_NUMBER	COLLAT_DESC	UCC_FILING_NO
1	082267982	Stock certificate	39639120
2	205166892	Inventory	34827909
3	222528863	Personal watercraft	91085016
4	521761793	Backhoe	3591447
5	524316780	Home equity	5476499

10. Table: Collection_Management

Collection_Management Description:

Name	Null?	Type
COLLECTION_TICK_NUMBER	NOT NULL	CHAR(9)
LOAN_NUMBER		CHAR(9)
EMPLOYEE_ID		CHAR(4)
SSN		CHAR(9)
DATE_OF_CONTACT		DATE
CONVERSATION_SUMMARY		CHAR(500)
AMOUNT_COLLECTED		NUMBER(6,2)

Collection_Management Records:

	COLLECTION_TICK_NUMBER	LOAN_NUMBER	EMPLOYEE_ID	SSN	DATE_OF_CONTACT	CONVERSATION_SUMMARY	AMOUNT_COLLE...
1	000001263	009061384	0005	559529231	28-MAY-12	Confirmed identity of customer and customer contact infomation. Co...	55
2	000002912	390903722	0006	736576599	05-MAY-14	Confirmed identity of customer and customer contact infomation. Co...	0
3	000004312	649891495	0005	308819168	02-JUL-18	Confirmed identity of customer and customer contact infomation. Co...	125
4	000007334	521761793	0004	226190841	23-FEB-19	Confirmed identity of customer and customer contact infomation. Co...	0
5	000003245	390903722	0006	736576599	12-MAY-14	Confirmed identity of customer and customer contact information. C...	2000
6	000007335	521761793	0004	226190841	02-MAR-19	Confirmed identity of customer and customer contact infomation. Co...	0
7	000007336	521761793	0004	226190841	09-MAR-19	Confirmed identity of customer and customer contact infomation. Co...	80

11. Table: Bill

Bill Description:

Name	Null?	Type
BILL_NUMBER	NOT NULL	CHAR(9)
LOAN_NUMBER		CHAR(9)
BILL_DATE		DATE
TOTAL_DUE		NUMBER(6,2)

Bill Records:

	BILL_NUMBER	LOAN_NUMBER	BILL_DATE	TOTAL_DUE
1	689400001	000958757	11-SEP-18	223.94
2	689400002	205166892	14-DEC-18	444.33
3	689500001	008728142	01-APR-19	152.35
4	689500002	685099491	02-APR-19	469.6
5	689500003	082267982	02-APR-19	948.25
6	689500004	181736352	05-APR-19	1526.81
7	689500005	685099492	06-APR-19	323.42
8	689500006	805000796	06-APR-19	700.67
9	689500007	003402184	07-APR-19	555.89
10	689500008	582327841	07-APR-19	629.36
11	689500009	582327842	10-APR-19	481.89
12	689500010	009061384	13-APR-19	1064.54
13	689500011	488087360	13-APR-19	521.84
14	689500012	006817077	16-APR-19	276.76
15	689500013	222528863	18-APR-19	451.74
16	689500014	390903722	20-APR-19	456.74
17	689500015	649891495	21-APR-19	579.63
18	689500016	521761793	22-APR-19	1810.36
19	689500017	524316780	22-APR-19	436.27
20	689500018	001830745	30-APR-19	184.73

12. Table: Payment

Payment Description:

Name	Null?	Type
PAYMENTID	NOT NULL	CHAR(9)
BILL_NUMBER		CHAR(9)
SSN		CHAR(9)
PAYMENT_TYPE		CHAR(9)
PAYMENT_AMOUNT		NUMBER(6,2)
PAYMENT_DATE		DATE

Payment Records:

	PAYMENTID	BILL_NUMBER	SSN	PAYMENT_TYPE	PAYMENT_AMOUNT	PAYMENT_DATE
1	701980001	689400001	596261957	Credit	223.94	15-SEP-18
2	701980002	689400002	559529231	Credit	444.33	21-DEC-18
3	701990001	689500001	071543914	Credit	152.35	10-APR-19
4	701990002	689500002	236367286	Credit	469.6	03-APR-19
5	701990003	689500003	633820135	Check	953.22	12-APR-19
6	701990004	689500004	472300902	Credit	727.05	08-MAR-19
7	701990005	689500005	004571073	Credit	323.42	10-APR-19
8	701990006	689500006	308819168	Credit	700.67	10-APR-19
9	701990007	689500007	926862928	Credit	555.89	09-APR-19
10	701990008	689500008	926862928	Check	629.36	13-APR-19
11	701990009	689500009	002169202	Credit	481.89	15-APR-19
12	701990010	689500010	559529231	Credit	337.95	17-FEB-19
13	701990011	689500011	093872951	Credit	521.84	23-APR-19
14	701990012	689500012	093872951	Credit	276.76	23-APR-19
15	701990013	689500013	633820135	Check	451.74	24-MAR-19
16	701990014	689500014	736576599	Credit	456.74	25-APR-19
17	701990015	689500015	308819168	Check	579.63	22-APR-19
18	701990016	689500016	184326908	Credit	883.1	27-MAR-19
19	701990017	689500017	992514512	Credit	436.27	29-APR-19
20	701990018	689500018	303261905	Credit	184.73	09-MAY-19

Data Exploration

Queries without multiple table joins

1. What was the average credit score of the pre-qualified candidates who accepted the loan offer?

	AVG(CREDIT_SCORE)
1	757

2. Which loan type is the most common, and what is the total loan amount for each loan?

	LOAN_TYPE	COUNT(LOAN_TYPE)	SUM(LOAN_AMOUNT)
1	Auto	6	85300
2	Boat	6	298000
3	Secured	5	118000
4	Unsecured	4	56000

3. For which conversations was the employee able to successfully collect money for a late loan from a consumer?

	COLLECTION_TICK_NUMBER	AMOUNT_COLLECTED
1	000001263	55
2	000004312	125
3	000003245	2000
4	000007336	80

4. List all the loans with monthly interest more than $200. [Interest = ((Current balance * Interest rate)/100) /12]

	LOAN_NUMBER	INTEREST
1	582327841	249.47
2	649891495	293.08
3	685099491	207.8
4	805000796	232.98

5. List all the loans pending payoff (current balance is less than three months' payments).

	LOAN_NUMBER	CURR_BALANCE	MATURITY	PAYMENT
1	082267982	948.25	02-JUN-19	953.22
2	488087360	1526.26	13-SEP-19	521.84

Queries with multiple table joins

6. List the consumers who took out the biggest loans each year.

	RN	SSN	FIRST_NAME	LAST_NAME	LOAN_AMOUNT	C_YEAR
1	1	472300902	Sydney	Lillian	75000	2011
2	1	736576599	Daisy	Marquez	40000	2013
3	1	926862928	Lucas	McKinney	62000	2014
4	1	842017297	Barbara	McKinney	62000	2014
5	1	633820135	Lily	Duong	40000	2015
6	1	093872951	Gabriel	Zamora	15000	2016
7	1	308819168	Alexander	McQueen	56000	2017
8	1	184326908	Ellen	Marchese	36000	2018
9	1	226190841	Tanya	Bradstreet	36000	2018
10	1	004571073	Aiden	Schroeder	25000	2019

7. List the states and how many of each type of loan has been taken out in that state.

	STATE	LOAN_TYPE	COUNT(LOAN_TYPE)
1	CA	Auto	1
2	CA	Boat	1
3	CA	Unsecured	3
4	IL	Auto	1
5	IL	Secured	1
6	KS	Boat	1
7	LA	Boat	1
8	LA	Unsecured	1
9	MD	Boat	1
10	MI	Auto	1
11	MI	Boat	2
12	NJ	Secured	1
13	NY	Boat	1
14	NY	Secured	4
15	OH	Unsecured	1
16	PA	Auto	1
17	TX	Auto	1
18	WI	Auto	2

8. What is the maximum amount of money that an employee is able to collect on a late loan from a consumer?

	EMP_FIRST_NAME	EMP_LAST_NAME	MAX(X.AMOUNT_COLLECTED)
1	Jacquelyn	Pace	180
2	Skylar	Hughes	80
3	Joel	Embiid	2000

9. List of primary borrowers: List of loans and primary borrower information.

	LOAN_NUMBER	LOAN_TYPE	LAST_NAME	FIRST_NAME	MI
1	000958757	Auto	Bybel	Carli	O
2	001830745	Auto	Lillard	Damian	(null)
3	003402184	Auto	McKinney	Lucas	J
4	006817077	Auto	Zamora	Gabriel	H
5	008728142	Auto	Beck	Keira	S
6	009061384	Auto	Kachingwe	Tinashe	E
7	082267982	Secured	Duong	Lily	T
8	181736352	Boat	Lillian	Sydney	R
9	205166892	Secured	Kachingwe	Tinashe	E
10	222528863	Secured	Duong	Lily	T
11	390903722	Boat	Marquez	Daisy	W
12	488087360	Unsecured	Zamora	Gabriel	H
13	521761793	Secured	Marchese	Ellen	J
14	524316780	Secured	Faiyaz	Brent	M
15	582327841	Boat	McKinney	Lucas	J
16	582327842	Unsecured	Carter	Jordan	P
17	649891495	Boat	McQueen	Alexander	N
18	685099491	Boat	Cruz	Nancy	M
19	685099492	Unsecured	Schroeder	Aiden	B
20	805000796	Unsecured	McQueen	Alexander	N
21	928635275	Boat	Schroeder	Aiden	B

10. Loan balance report: Provides a high-level overview of every loan in the portfolio.

	LOAN_NUMBER	LAST_NAME	LOAN_TYPE	LOAN_AMOUNT	INTEREST_RATE	CURRENT_BALANCE	PAYMENT	CURRENT_DUE	LATE_FEES_DUE	DATE_CREATED	MATURITY
1	000958757	Bybel	Auto	7500	4.75	0	223.94	0	0	11-SEP-15	11-SEP-18
2	001830745	Lillard	Auto	10000	4.125	4293.24	184.73	184.73	0	30-OCT-16	30-OCT-21
3	003402184	McKinney	Auto	30000	4.25	18268.1	555.89	555.89	0	07-MAY-17	07-MAY-22
4	006817077	Zamora	Auto	12000	5.625	9716.68	276.76	0	0	16-AUG-18	16-AUG-22
5	008728142	Beck	Auto	8000	5.375	7293.44	152.35	152.35	0	01-NOV-18	01-NOV-23
6	009061384	Kachingwe	Auto	17800	5.25	17278.86	337.95	1013.85	50.69	13-JAN-19	13-JAN-25
7	082267982	Duong	Secured	40000	6.75	948.25	953.22	0	0	02-JUN-15	02-JUN-19
8	181736352	Lillian	Boat	75000	5.875	34981.79	727.05	1454.1	72.71	05-DEC-11	05-DEC-23
9	205166892	Kachingwe	Secured	10000	6.25	0	444.33	0	0	14-DEC-16	14-DEC-18
10	222528863	Duong	Secured	14000	10	4317.34	451.74	451.74	22.59	18-FEB-17	18-FEB-20
11	390903722	Marquez	Boat	40000	6.625	19562.06	456.74	0	0	20-JUL-13	20-JUL-23
12	488087360	Zamora	Unsecured	15000	15.25	1526.26	521.84	0	0	13-SEP-16	13-SEP-19
13	521761793	Marchese	Secured	36000	8.25	28762.84	883.1	1766.2	44.16	22-MAY-18	22-MAY-22
14	524316780	Faiyaz	Secured	18000	7.625	18000	436.27	0	0	22-APR-19	22-APR-23
15	582327841	McKinney	Boat	62000	6.75	44350.42	629.36	629.36	0	07-OCT-14	07-OCT-26
16	582327842	Carter	Unsecured	14000	14.5	4513.69	481.89	481.89	24.09	10-APR-17	10-APR-20
17	649891495	McQueen	Boat	56000	7.125	49361.5	579.63	0	0	21-MAY-17	21-MAY-29
18	685099491	Cruz	Boat	40000	7.25	34393.81	469.6	0	0	02-JUL-17	02-JUL-27
19	685099492	Schroeder	Unsecured	7000	10.125	3966.37	323.42	0	0	06-JUL-18	06-JUL-20
20	805000796	McQueen	Unsecured	20000	15.75	17751.11	700.67	0	0	06-JAN-19	06-JAN-22
21	928635275	Schroeder	Boat	25000	6.875	25000	339.29	0	0	02-APR-19	02-APR-27

11. Loans to one borrower report: For each borrower, lists how many loans s/he has along with the total loan balance.

	FIRST_NAME	LAST_NAME	MI	SSN	NO_OF_LOANS	TOTAL_OUTSTANDING
1	Jordan	Carter	P	002169202	1	4513.69
2	Ellen	Marchese	J	184326908	1	28762.84
3	Tanya	Bradstreet	R	226190841	1	28762.84
4	Damian	Lillard	(null)	303261905	1	4293.24
5	Lily	Duong	T	633820135	2	5265.59
6	Lucas	McKinney	J	926862928	2	62618.52
7	Tinashe	Kachingwe	E	559529231	1	17278.86
8	Brent	Faiyaz	M	992514512	1	18000
9	Aiden	Schroeder	B	004571073	2	28966.37
10	Daisy	Marquez	W	736576599	1	19562.06
11	Nancy	Cruz	M	236367286	1	34393.81
12	Robert	Lillard	J	620787963	1	4293.24
13	Keira	Beck	S	071543914	1	7293.44
14	Sydney	Lillian	R	472300902	1	34981.79
15	Gabriel	Zamora	H	093872951	2	11242.94
16	Alexander	McQueen	N	308819168	2	67112.61
17	Barbara	McKinney	Q	842017297	1	44350.42
18	Sophie	McQueen	A	170220857	1	17751.11

12. Past-due loan report: Lists the loans, their current balances, and the current dates of loans that are more than ten days past the due date (assume current date is May 1, 2019).

	LOAN_NUMBER	LAST_NAME	FIRST_NAME	NEXT_PAYMENT_DUE	DAYS_PAST_DUE	CURR_DUE	LATE_FEES_DUE	TOTAL_DUE
1	582327842	Carter	Jordan	10-APR-19	21	481.89	24.09	505.98
2	009061384	Kachingwe	Tinashe	13-FEB-19	77	1013.85	50.69	1064.54
3	521761793	Marchese	Ellen	22-MAR-19	40	1766.2	44.16	1810.36
4	181736352	Lillian	Sydney	05-MAR-19	57	1454.1	72.71	1526.81
5	222528863	Duong	Lily	18-APR-19	13	451.74	22.59	474.33

13. Late loan report: Lists loans with a current balance and a current date more than N days past the due date (assume current date is May 1, 2019).

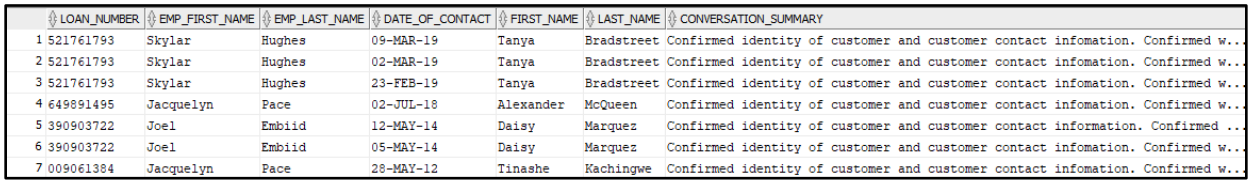
Note: for the purpose of this query, we entered 45 days as &days_past_due.

	LOAN_NUMBER	LAST_NAME	FIRST_NAME	NEXT_PAYMENT_DUE	DAYS_PAST_DUE	CURR_DUE	LATE_FEES_DUE	TOTAL_DUE
1	009061384	Kachingwe	Tinashe	13-FEB-19	77	1013.85	50.69	1064.54
2	181736352	Lillian	Sydney	05-MAR-19	57	1454.1	72.71	1526.81

14. Collateral report: List of collateral used for loans that are secured by collateral (secured loans only).

	LOAN_NUMBER	LOAN_TYPE	MAKE	MODEL	MODEL_YEAR	AUTO_TITLE_NO	MARINE_TITLE_NO	COLLAT_DESC
1	001830745	Auto	Chevrolet	Camaro	2016	WI26313306	(null)	(null)
2	003402184	Auto	BMW	Series Sedan	2017	MI2666276A	(null)	(null)
3	006817077	Auto	Lexus	ES	2018	CA0052420219	(null)	(null)
4	008728142	Auto	Toyota	Avalon	2018	PA77237417	(null)	(null)
5	009061384	Auto	Audi	A4	2019	IL078973719	(null)	(null)
6	181736352	Boat	(null)	(null)	(null)	(null)	MD0148735316	(null)
7	390903722	Boat	(null)	(null)	(null)	(null)	NY0865943021	(null)
8	582327841	Boat	(null)	(null)	(null)	(null)	MI311869384	(null)
9	649891495	Boat	(null)	(null)	(null)	(null)	CA0782935027	(null)
10	685099491	Boat	(null)	(null)	(null)	(null)	KS0031532	(null)
11	928635275	Boat	(null)	(null)	(null)	(null)	LA767694532	(null)
12	082267982	Secured	(null)	(null)	(null)	(null)	(null)	Stock certificate
13	222528863	Secured	(null)	(null)	(null)	(null)	(null)	Personal watercraft
14	521761793	Secured	(null)	(null)	(null)	(null)	(null)	Backhoe
15	524316780	Secured	(null)	(null)	(null)	(null)	(null)	Home equity

15. Collection management report: List of collection activities with the names and titles of the collectors and the names.



	LOAN_NUMBER	EMP_FIRST_NAME	EMP_LAST_NAME	DATE_OF_CONTACT	FIRST_NAME	LAST_NAME	CONVERSATION_SUMMARY
1	521761793	Skylar	Hughes	09-MAR-19	Tanya	Bradstreet	Confirmed identity of customer and customer contact infomation. Confirmed w...
2	521761793	Skylar	Hughes	02-MAR-19	Tanya	Bradstreet	Confirmed identity of customer and customer contact infomation. Confirmed w...
3	521761793	Skylar	Hughes	23-FEB-19	Tanya	Bradstreet	Confirmed identity of customer and customer contact infomation. Confirmed w...
4	649891495	Jacquelyn	Pace	02-JUL-18	Alexander	McQueen	Confirmed identity of customer and customer contact infomation. Confirmed w...
5	390903722	Joel	Embiid	12-MAY-14	Daisy	Marquez	Confirmed identity of customer and customer contact information. Confirmed ...
6	390903722	Joel	Embiid	05-MAY-14	Daisy	Marquez	Confirmed identity of customer and customer contact infomation. Confirmed w...
7	009061384	Jacquelyn	Pace	28-MAY-12	Tinashe	Kachingwe	Confirmed identity of customer and customer contact infomation. Confirmed w...

16. Loan maturity report.

	FIRST_NAME	LAST_NAME	LOAN_NUMBER	DATE_CREATED	MATURITY	DAYS_TO_MATURITY
1	Aiden	Schroeder	928635275	02-APR-19	02-APR-27	2893
2	Aiden	Schroeder	685099492	06-JUL-18	06-JUL-20	432
3	Lucas	McKinney	582327841	07-OCT-14	07-OCT-26	2716
4	Lucas	McKinney	003402184	07-MAY-17	07-MAY-22	1102
5	Jordan	Carter	582327842	10-APR-17	10-APR-20	345
6	Tinashe	Kachingwe	009061384	13-JAN-19	13-JAN-25	2084
7	Alexander	McQueen	805000796	06-JAN-19	06-JAN-22	981
8	Alexander	McQueen	649891495	21-MAY-17	21-MAY-29	3673
9	Keira	Beck	008728142	01-NOV-18	01-NOV-23	1645
10	Daisy	Marquez	390903722	20-JUL-13	20-JUL-23	1541
11	Gabriel	Zamora	488087360	13-SEP-16	13-SEP-19	135
12	Gabriel	Zamora	006817077	16-AUG-18	16-AUG-22	1203
13	Ellen	Marchese	521761793	22-MAY-18	22-MAY-22	1117
14	Brent	Faiyaz	524316780	22-APR-19	22-APR-23	1452
15	Damian	Lillard	001830745	30-OCT-16	30-OCT-21	913
16	Nancy	Cruz	685099491	02-JUL-17	02-JUL-27	2984
17	Sydney	Lillian	181736352	05-DEC-11	05-DEC-23	1679
18	Lily	Duong	222528863	18-FEB-17	18-FEB-20	293
19	Lily	Duong	082267982	02-JUN-15	02-JUN-19	32
20	Sophie	McQueen	805000796	06-JAN-19	06-JAN-22	981
21	Tanya	Bradstreet	521761793	22-MAY-18	22-MAY-22	1117
22	Barbara	McKinney	582327841	07-OCT-14	07-OCT-26	2716
23	Robert	Lillard	001830745	30-OCT-16	30-OCT-21	913

17. Loan bills issued within last 30 days.

	FIRST_NAME	LAST_NAME	LOAN_NUMBER	BILL_NUMBER	BILL_DATE
1	Keira	Beck	008728142	689500001	01-APR-19
2	Nancy	Cruz	685099491	689500002	02-APR-19
3	Lily	Duong	082267982	689500003	02-APR-19
4	Sydney	Lillian	181736352	689500004	05-APR-19
5	Aiden	Schroeder	685099492	689500005	06-APR-19
6	Sophie	McQueen	805000796	689500006	06-APR-19
7	Alexander	McQueen	805000796	689500006	06-APR-19
8	Lucas	McKinney	003402184	689500007	07-APR-19
9	Barbara	McKinney	582327841	689500008	07-APR-19
10	Lucas	McKinney	582327841	689500008	07-APR-19
11	Jordan	Carter	582327842	689500009	10-APR-19
12	Tinashe	Kachingwe	009061384	689500010	13-APR-19
13	Gabriel	Zamora	488087360	689500011	13-APR-19
14	Gabriel	Zamora	006817077	689500012	16-APR-19
15	Lily	Duong	222528863	689500013	18-APR-19
16	Daisy	Marquez	390903722	689500014	20-APR-19
17	Alexander	McQueen	649891495	689500015	21-APR-19
18	Ellen	Marchese	521761793	689500016	22-APR-19
19	Tanya	Bradstreet	521761793	689500016	22-APR-19
20	Brent	Faiyaz	524316780	689500017	22-APR-19
21	Damian	Lillard	001830745	689500018	30-APR-19
22	Robert	Lillard	001830745	689500018	30-APR-19