# Case Description

Student Loan Ltd. is a leading service provider for Guaranteed Student Loans (GSL) and other types of student loans. The GSL program was created to help students pay for their college education, and GSL loans are classified according to the subsidy status: subsidized and unsubsidized. The program is supported by different organizations that may play the role of lender, guarantor, and service provider.

To support the GSL program, students apply for loans from lenders, including banks, savings and loans, and credit unions. The Department of Education makes loans possible by guaranteeing repayment if certain conditions are met. Lenders ensure that applicants are eligible for the GSL program. The service provider tracks student status, calculates repayment schedules, and collects payments. The guarantor ensures that loans are serviced properly by monitoring the work of the service provider.

Student Loan Ltd. currently uses a legacy system with older file technology. To respond to new regulations easier as well as to pursue new business such as the direct lending program, Student Loan Ltd. wants to switch to a client-server architecture using a relational database system.

The new architecture should allow Student Loan Ltd. to streamline their operations, improve data management, and enhance customer service. With a relational database system, Student Loan Ltd. can manage multiple GSL loans with different interest rates and subsidy statuses for a given student. The system can track student status, calculate repayment schedules, and collect payments efficiently. Moreover, the new architecture can help Student Loan Ltd. to comply with new regulations easily and enable them to pursue new business opportunities.

By implementing a modern client-server architecture using a relational database system, Student Loan Ltd. can increase efficiency, reduce operational risk, and enhance their ability to serve their customers.

# Workflow

Processing of student loans follows the pattern shown in Figure 1. Students apply for a loan from a lender. In the approval process, the lender identifies a guarantor. If the loan is approved, the student signs a promissory note that describes the interest rate and repayment terms. After the promissory note is signed, the lender sends a loan origination form to Student Loan Ltd. Student Loan Ltd then disburses funds as specified in the loan origination form. Typically, funds are disbursed in each period of an academic year.
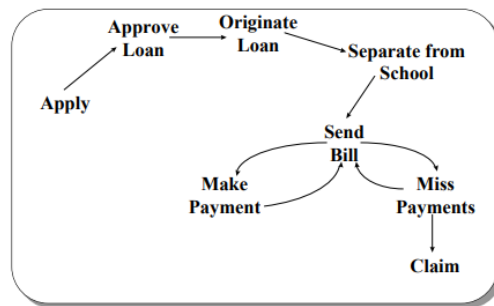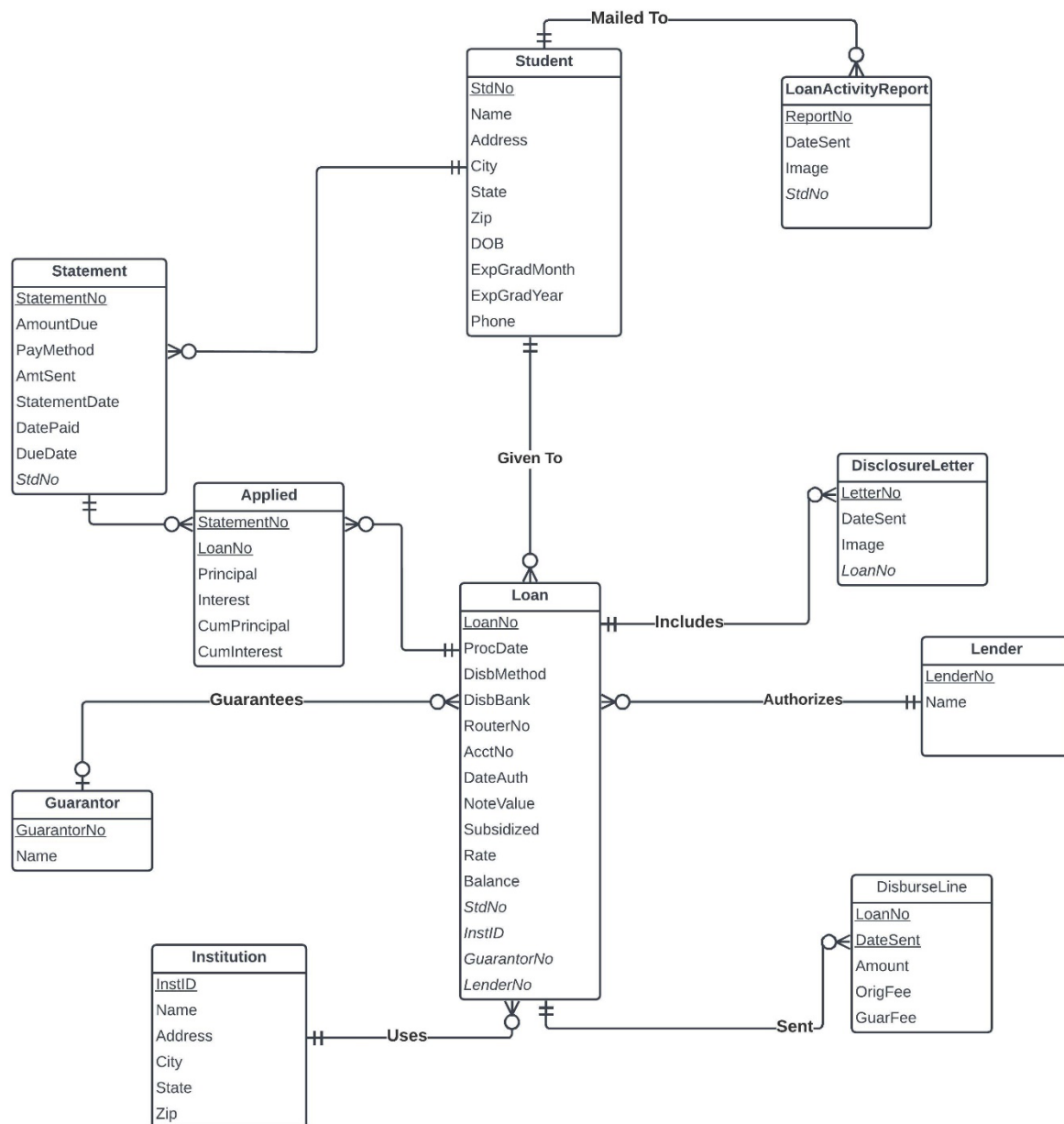
Figure 1: Loan Processing Work Flow

Upon separating from school (graduation or leaving school), the repayment process begins. Shortly after a student separates from school, Student Loan Ltd sends a disclosure letter. The disclosure letter provides an estimate of the monthly payment required to repay each outstanding loan by the end of the payment period. The student receives one disclosure letter per note except if the notes have been consolidated into a single note. Notes are consolidated if the interest rate, subsidy status, and repayment period are similar. About 6 months after separation, Student Loan Ltd sends the first bill. For convenience, Student Loan Ltd. sends one consolidated statement even if the student has multiple outstanding loans. With most students, Student Loan Ltd processes periodic bills and payments until all loans are repaid. If a student becomes delinquent, collection activities begin. If collection is successful, the student returns to the billing-payment cycle. Otherwise, the student enters claim (default) and the loan may be given to a collection agency.

# Business Rules

- Student can have 1 and only 1 institution but an institution can have many students.
- A student can have one and only 1 bank but a bank can have many students.
- A student can have many loans but a loan can have one and only one student.
- A loan can have one and only one lender but a lender can have many loans.
- A guarantor can have one or many loans but a loan can only have one guarantor.
- A lender can have one or many guarantors but a guarantor can have one or many lenders.
- A statement of account can have one and only one student but a student can have one or many statements of account.
- A loan can have one and only one statement of account but a statement of account can have many loans.
- A loan activity report can have one and only one loan but a loan can have one or many loan activity reports
- A disclosure letter can have one and only one loan but a loan can have one or many disclosure letters

# Conceptual Data Models (ERDs)



# Schema(s) and Normalized tables

Student (StdNo, Name, Address, Phone, City, State, Zip, ExpGradMonth, ExpGradYear, DOB)

Lender (LenderNo, Name)

Guarantor (GuarantorNo, Name)

Institution (InstID, Name, Address, City, State, Zip)

Loan (<u>LoanNo</u>, ProcDate, DisbMethod, DisbBank, RouteNo, AcctNo, DateAuth, NoteValue, Subsidized, Rate, Balance, *StdNo, InstID, CuarantorNo, LendNo)*

DiscLetter (<u>LetterNo</u>, DateSent, *LoanNo)*

LoanActivity (<u>ReportNo</u>, DateSent, *StdNo)*
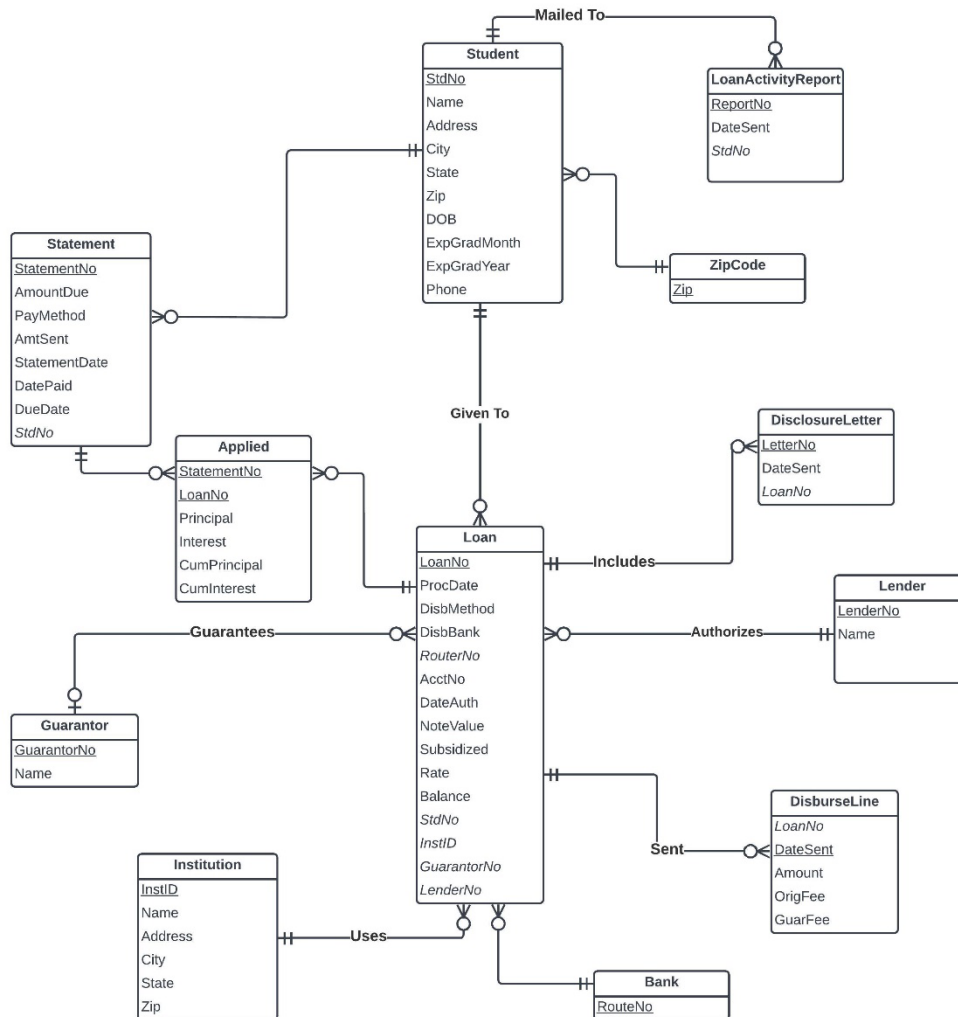
DisburseLine (*LoanNo*, <u>DateSent</u>, Amount, OrigFee, GuarFee)

Statement (<u>StatementNo</u>, AmtDue, PayMethod, AmtSent, StatementDate, DatePaid, DueDate,

*StdNo)*

Applied *(LoanNo, StatementNo,* Principal, Interest, CumPrincipal, CumInterest)

## ERDs after Normalization

The Zip table and the Bank table are added in the revised table design to remove redundancies.

## VIDEO TUTORIAL

Here is the video tutorial link of the database front-end that I did on Microsoft Access:

# https://drive.google.com/file/d/106MyTWHVf7c3vJsu6lm6 tTA74ek8ObrP/view?usp=sharing

## TECHNICAL MANUAL

```sql
CREATE TABLE Student (
  StdNo NUMBER(10) PRIMARY KEY NOT NULL,
  Name VARCHAR2(50) NOT NULL,
  Address VARCHAR2(100),
  City VARCHAR2(50),
  State VARCHAR2(2),
  Zip VARCHAR2(10),
  DOB DATE,
  ExpGradMonth VARCHAR2(10),
  ExpGradYear NUMBER(4),
  Phone VARCHAR2(20)
);

CREATE TABLE Statement (
    StatementNo NUMBER(10) NOT NULL,
    AmountDue NUMBER(10,2),
    PayMethod VARCHAR(20) CHECK (PayMethod IN ('cash', 'check')),
    AmountSent NUMBER(10,2) CHECK (AmountSent > 0),
    StatementDate DATE,
    DatePaid DATE,
    DueDate DATE,
    StdNo NUMBER(10) NOT NULL,
    CONSTRAINT pk_Statements PRIMARY KEY (StatementNo),
    CONSTRAINT fk_Statements_Student FOREIGN KEY (StdNo) REFERENCES Student (StdNo)
);
```

```sql
CREATE TABLE Report (
  ReportNo NUMBER(10) PRIMARY KEY,
  DateSent DATE,
  StdNo NUMBER(10) REFERENCES Student(StdNo)
);
CREATE TABLE Institution (
  InstID NUMBER NOT NULL PRIMARY KEY,
  Name VARCHAR2(50),
  Address VARCHAR2(100),
  City VARCHAR2(50),
  State VARCHAR2(2),
  Zip VARCHAR2(10)
);

CREATE TABLE Guarantor (
  GuarantorNo NUMBER(10) PRIMARY KEY,
  Name VARCHAR2(50) NOT NULL
);
CREATE TABLE Lender (
    LenderNo INT NOT NULL,
    Name VARCHAR2(50) NOT NULL,
    CONSTRAINT PK_Lender PRIMARY KEY (LenderNo)
);

CREATE TABLE Bank (
  RouterNo NUMBER(8) NOT NULL PRIMARY KEY
);
CREATE TABLE Loan (
    LoanNo NUMBER(10) NOT NULL,
    ProcDate DATE,
    DisbMethod VARCHAR2(20),
    DisbBank VARCHAR2(50),
    RouterNo NUMBER(10),
    AcctNo NUMBER(10),
    DateAuth DATE,
    NoteValue NUMBER(10,2),
    Subsidized VARCHAR2(3),
    Rate NUMBER(4,2),
    Balance NUMBER(10,2),
    StdNo NUMBER(10),
    InstID NUMBER(10),
    GuarantorNo NUMBER(10),
    LenderNo NUMBER(10),
    PRIMARY KEY (LoanNo),
    FOREIGN KEY (RouterNo) REFERENCES Bank(RouterNo),
    FOREIGN KEY (StdNo) REFERENCES Student(StdNo),
    FOREIGN KEY (InstID) REFERENCES Institution(InstID),
    FOREIGN KEY (GuarantorNo) REFERENCES Guarantor(GuarantorNo),
    FOREIGN KEY (LenderNo) REFERENCES Lender(LenderNo)
);
```

```sql
CREATE TABLE Zip (
  Zip NUMBER(5) NOT NULL,
  CONSTRAINT Zip_pk PRIMARY KEY (Zip)
);


CREATE TABLE DisburseLine (
    LoanNo INT REFERENCES Loan(LoanNo),
    DateSent DATE PRIMARY KEY,
    Amount NUMBER(10,2),
    OrigFee NUMBER(10,2),
    GuarFee NUMBER(10,2)
);

CREATE TABLE DisclosureLetter (
  LetterNo NUMBER(10) PRIMARY KEY,
  DateSent DATE,
  LoanNo NUMBER(10),
  FOREIGN KEY (LoanNo) REFERENCES Loan(LoanNo)
);



CREATE TABLE Applied (
  StatementNo INT NOT NULL,
  LoanNo INT NOT NULL,
  Principal NUMBER(10,2),
  Interest NUMBER(10,2),
  CumPrincipal NUMBER(10,2),
  CumInterest NUMBER(10,2),
  FOREIGN KEY (StatementNo) REFERENCES Statement (StatementNo),
  FOREIGN KEY (LoanNo) REFERENCES Loan (LoanNo)
);
```

```sql
INSERT INTO Student (StdNo, Name, Address, City, State, Zip, DOB, ExpGradMonth, ExpGradYear, Phone)
VALUES (1, 'John Smith', '123 Main St', 'Anytown', 'CA', '12345', TO_DATE('2002-05-01', 'YYYY-MM-DD'), 'May', 2023, '555-1234');

INSERT INTO Student (StdNo, Name, Address, City, State, Zip, DOB, ExpGradMonth, ExpGradYear, Phone)
VALUES (2, 'Jane Doe', '456 Oak Ave', 'Samllville', 'NY', '56789', TO_DATE('2001-08-15', 'YYYY-MM-DD'), 'June', 2022, '555-2345');

INSERT INTO Student (StdNo, Name, Address, City, State, Zip, DOB, ExpGradMonth, ExpGradYear, Phone)
VALUES (3, 'Bob Johnson', '789 Elm St', 'Big City', 'TX', '45678', TO_DATE('2003-01-30', 'YYYY-MM-DD'), 'December', 2023, '555-3456');

INSERT INTO Student (StdNo, Name, Address, City, State, Zip, DOB, ExpGradMonth, ExpGradYear, Phone)
VALUES (4, 'Emily Davis', '10 Maple Rd', 'Somewhere', 'FL', '34567', TO_DATE('2002-12-03', 'YYYY-MM-DD'), 'June', 2021, '555-4567');

INSERT INTO Student (StdNo, Name, Address, City, State, Zip, DOB, ExpGradMonth, ExpGradYear, Phone)
VALUES (5, 'Tom Wilson', '555 Pine St', 'Nowhere', 'AZ', '23456', TO_DATE('2001-04-20', 'YYYY-MM-DD'), 'May', 2024, '555-5678');

INSERT INTO Student (StdNo, Name, Address, City, State, Zip, DOB, ExpGradMonth, ExpGradYear, Phone)
VALUES (6, 'Sarah Lee', '777 Maple Ave', 'Anytown', 'CA', '12345', TO_DATE('2002-09-11', 'YYYY-MM-DD'), 'December', 2022, '555-6789');

INSERT INTO Student (StdNo, Name, Address, City, State, Zip, DOB, ExpGradMonth, ExpGradYear, Phone)
VALUES (7, 'Kevin Chen', '999 Oak St', 'Smallville', 'NY', '56789', TO_DATE('2003-06-08', 'YYYY-MM-DD'), 'June', 2023, '555-7890');

INSERT INTO Student (StdNo, Name, Address, City, State, Zip, DOB, ExpGradMonth, ExpGradYear, Phone)
VALUES (8, 'Grace Kim', '333 Elm St', 'Big City', 'TX', '45678', TO_DATE('2001-11-23', 'YYYY-MM-DD'), 'December', 2029, '555-8901');

INSERT INTO Student (StdNo, Name, Address, City, State, Zip, DOB, ExpGradMonth, ExpGradYear, Phone)
VALUES (9, 'Michael Brown', '222 Maple Rd', 'Somewhere', 'FL', '34567', TO_DATE('2002-02-14', 'YYYY-MM-DD'), 'May', 2025, '555-9012');

INSERT INTO Student (StdNo, Name, Address, City, State, Zip, DOB, ExpGradMonth, ExpGradYear, Phone)
VALUES (10, 'Kelly Chen', '444 Pine St', 'Nowhere', 'AZ', '23456', TO_DATE('2001-07-07', 'YYYY-MM-DD'), 'June', 2024, '555-0123');


INSERT INTO Statement (StatementNo, AmountDue, PayMethod, AmountSent, StatementDate, DatePaid, DueDate, StdNo)
VALUES
(1030, 1000.00, 'cash', 1000.00, TO_DATE('2022-01-01','YYYY-MM-DD'),TO_DATE ('2022-01-15','YYYY-MM-DD'), TO_DATE ('2022-02-01','YYYY-MM-DD

INSERT INTO Statement (StatementNo, AmountDue, PayMethod, AmountSent, StatementDate, DatePaid, DueDate, StdNo)
VALUES
(1031, 500.00, 'check', 500.00, TO_DATE ('2022-01-15','YYYY-MM-DD'), TO_DATE('2022-01-30','YYYY-MM-DD'), TO_DATE ('2022-02-15','YYYY-MM-DD

INSERT INTO Statement (StatementNo, AmountDue, PayMethod, AmountSent, StatementDate, DatePaid, DueDate, StdNo)
VALUES
(1032, 750.00, 'check', 750.00, TO_DATE ('2022-02-01','YYYY-MM-DD'), TO_DATE('2022-02-14','YYYY-MM-DD'), TO_DATE ('2022-03-01','YYYY-MM-DD

INSERT INTO Statement (StatementNo, AmountDue, PayMethod, AmountSent, StatementDate, DatePaid, DueDate, StdNo)
VALUES
(1033, 2000.00, 'cash', 2000.00, TO_DATE ('2022-02-15','YYYY-MM-DD'), TO_DATE('2022-03-01','YYYY-MM-DD'), TO_DATE ('2022-03-15','YYYY-MM-DI

INSERT INTO Statement (StatementNo, AmountDue, PayMethod, AmountSent, StatementDate, DatePaid, DueDate, StdNo)
VALUES
(1034, 100.00, 'cash', 100.00, TO_DATE ('2022-03-01','YYYY-MM-DD'), TO_DATE('2022-03-05','YYYY-MM-DD'), TO_DATE ('2022-04-1','YYYY-MM-DD'),

INSERT INTO Statement (StatementNo, AmountDue, PayMethod, AmountSent, StatementDate, DatePaid, DueDate, StdNo)
VALUES
(1035, 1500.00, 'check', 1500.00, TO_DATE ('2022-03-15','YYYY-MM-DD'), TO_DATE('2022-03-15','YYYY-MM-DD'), TO_DATE ('2022-04-14','YYYY-MM-I

INSERT INTO Statement (StatementNo, AmountDue, PayMethod, AmountSent, StatementDate, DatePaid, DueDate, StdNo)
VALUES
(1036, 800.00, 'check', 1300.00, TO_DATE ('2022-04-01','YYYY-MM-DD'), TO_DATE('2022-04-04','YYYY-MM-DD'), TO_DATE ('2022-05-1','YYYY-MM-DD
```

```sql
INSERT INTO Report (ReportNo, DateSent, StdNo)
VALUES (10012, TO_DATE('2022-01-15', 'YYYY-MM-DD'), 1);

INSERT INTO Report (ReportNo, DateSent, StdNo)
VALUES (10013, TO_DATE('2022-01-30', 'YYYY-MM-DD'), 2);

INSERT INTO Report (ReportNo, DateSent, StdNo)
VALUES (10014, TO_DATE('2022-02-15', 'YYYY-MM-DD'), 3);

INSERT INTO Report (ReportNo, DateSent, StdNo)
VALUES (10015, TO_DATE('2022-02-28', 'YYYY-MM-DD'), 4);

INSERT INTO Report (ReportNo, DateSent, StdNo)
VALUES (10016, TO_DATE('2022-03-15', 'YYYY-MM-DD'), 5);

INSERT INTO Report (ReportNo, DateSent, StdNo)
VALUES (10017, TO_DATE('2022-03-31', 'YYYY-MM-DD'), 6);

INSERT INTO Report (ReportNo, DateSent, StdNo)
VALUES (10018, TO_DATE('2022-04-15', 'YYYY-MM-DD'), 7);

INSERT INTO Report (ReportNo, DateSent, StdNo)
VALUES (10019, TO_DATE('2022-04-30', 'YYYY-MM-DD'), 8);

INSERT INTO Report (ReportNo, DateSent, StdNo)
VALUES (10020, TO_DATE('2022-05-15', 'YYYY-MM-DD'), 9);

INSERT INTO Institution (InstID, Name, Address, City, State, Zip) VALUES (1001, 'California Southern University', '123 Main St', 'Anytown', 'CA', '12345');
INSERT INTO Institution (InstID, Name, Address, City, State, Zip) VALUES (1002, 'Smalville College', '456 Oak Ave', 'Smallville', 'NY', '5...
INSERT INTO Institution (InstID, Name, Address, City, State, Zip) VALUES (1003, 'Rice Institute', '789 Elm St', 'Big City', 'TX', '45678'),
INSERT INTO Institution (InstID, Name, Address, City, State, Zip) VALUES (1004, 'Florida International Academy', '10 Maple Rd', 'Somewhere
INSERT INTO Institution (InstID, Name, Address, City, State, Zip) VALUES (1005, 'Arizona State University', '555 Pine St', 'Nowhere', 'AZ',
INSERT INTO Institution (InstID, Name, Address, City, State, Zip) VALUES (1006, 'San Diego College', '777 Maple Ave', 'Anytown', 'CA', '12
INSERT INTO Institution (InstID, Name, Address, City, State, Zip) VALUES (1007, 'Rochester Institute', '999 Oak St', 'Smallville', 'NY', '
INSERT INTO Institution (InstID, Name, Address, City, State, Zip) VALUES (1008, 'University of Houston', '333 Elm St', 'Big City', 'TX', '
INSERT INTO Institution (InstID, Name, Address, City, State, Zip) VALUES (1009, 'Pensacola Community College University', '222 Maple Rd',
INSERT INTO Institution (InstID, Name, Address, City, State, Zip) VALUES (1010, 'Paige College', '444 Pine St', 'Nowhere', 'AZ', '23456');

INSERT INTO Guarantor (GuarantorNo, Name)
VALUES (1, 'Nicole LeBlanc');

INSERT INTO Guarantor (GuarantorNo, Name)
VALUES (2, 'Nick Carter');

INSERT INTO Guarantor (GuarantorNo, Name)
VALUES (3, 'Mark Chu');

INSERT INTO Guarantor (GuarantorNo, Name)
VALUES (4, 'Kevin Gate');

INSERT INTO Guarantor (GuarantorNo, Name)
VALUES (5, 'Dwayne Johnson');


INSERT INTO Lender (LenderNo, Name) VALUES (3010, 'Chase Bank');
INSERT INTO Lender (LenderNo, Name) VALUES (3011, 'Federal Credit Union');
INSERT INTO Lender (LenderNo, Name) VALUES (3012, 'First National Bank');
INSERT INTO Lender (LenderNo, Name) VALUES (3013, 'State Farm Bank');
INSERT INTO Lender (LenderNo, Name) VALUES (3014, 'Community Bank');
```

```sql
INSERT INTO Bank (RouterNo)VALUES (12345678);
INSERT INTO Bank (RouterNo)VALUES (98765432);
INSERT INTO Bank (RouterNo)VALUES (24680135);
INSERT INTO Bank (RouterNo)VALUES (13579024);
INSERT INTO Bank (RouterNo)VALUES (86420953);
INSERT INTO Bank (RouterNo)VALUES (97531024);
INSERT INTO Bank (RouterNo)VALUES (12309845);
INSERT INTO Bank (RouterNo)VALUES (98765422);
INSERT INTO Bank (RouterNo)VALUES (86420954);
INSERT INTO Bank (RouterNo)VALUES (86420753);
```

```sql
INSERT INTO Loan (LoanNo, ProcDate, DisbMethod, DisbBank, RouterNo, AcctNo, DateAuth, NoteValue, Subsidized, Rate, Balance, StdNo, InstID,
VALUES (1001, TO_DATE('1/15/2022','MM/DD/YYYY'), 'Check', 'Chase Bank', '12345678', '10010001', TO_DATE('1/5/2022','MM/DD/YYYY'), 10000, '

INSERT INTO Loan (LoanNo, ProcDate, DisbMethod, DisbBank, RouterNo, AcctNo, DateAuth, NoteValue, Subsidized, Rate, Balance, StdNo, InstID,
VALUES (1002, TO_DATE('1/30/2022','MM/DD/YYYY'), 'Check', 'Federal Credit Union', '98765432', '20020002', TO_DATE('1/20/2022','MM/DD/YYYY')

INSERT INTO Loan (LoanNo, ProcDate, DisbMethod, DisbBank, RouterNo, AcctNo, DateAuth, NoteValue, Subsidized, Rate, Balance, StdNo, InstID,
VALUES (1003, TO_DATE('2/15/2022','MM/DD/YYYY'), 'EFT', 'First National Bank', '24680135', '30030003', TO_DATE('2/5/2022','MM/DD/YYYY'), 7

INSERT INTO Loan (LoanNo, ProcDate, DisbMethod, DisbBank, RouterNo, AcctNo, DateAuth, NoteValue, Subsidized, Rate, Balance, StdNo, InstID,
VALUES (1004, TO_DATE('2/28/2022','MM/DD/YYYY'), 'Check', 'State Farm Bank', '13579024', '40040004', TO_DATE('2/18/2022','MM/DD/YYYY'), 200

INSERT INTO Loan (LoanNo, ProcDate, DisbMethod, DisbBank, RouterNo, AcctNo, DateAuth, NoteValue, Subsidized, Rate, Balance, StdNo, InstID,
VALUES (1005, TO_DATE('3/15/2022', 'MM/DD/YYYY'), 'EFT', 'Community Bank', '86420953', '50050005', TO_DATE('3/5/2022', 'MM/DD/YYYY'), 1000,

INSERT INTO Loan (LoanNo, ProcDate, DisbMethod, DisbBank, RouterNo, AcctNo, DateAuth, NoteValue, Subsidized, Rate, Balance, StdNo, InstID,
VALUES (1006, TO_DATE('3/31/2022', 'MM/DD/YYYY'), 'Check', 'First National Bank', '97531024', '60060006', TO_DATE('3/21/2022', 'MM/DD/YYYY

INSERT INTO Loan (LoanNo, ProcDate, DisbMethod, DisbBank, RouterNo, AcctNo, DateAuth, NoteValue, Subsidized, Rate, Balance, StdNo, InstID,
VALUES (1007, TO_DATE('4/15/2022', 'MM/DD/YYYY'), 'EFT', 'Federal Credit Union', '12309845', '7007007', TO_DATE('4/5/2022', 'MM/DD/YYYY'),

INSERT INTO Loan (LoanNo, ProcDate, DisbMethod, DisbBank, RouterNo, AcctNo, DateAuth, NoteValue, Subsidized, Rate, Balance, StdNo, InstID,
VALUES (1008, TO_DATE('4/30/2022','MM/DD/YYYY'), 'Check', 'Community Bank', '98765422', '80080008', TO_DATE('4/20/2022','MM/DD/YYYY'), 1200

INSERT INTO Loan (LoanNo, ProcDate, DisbMethod, DisbBank, RouterNo, AcctNo, DateAuth, NoteValue, Subsidized, Rate, Balance, StdNo, InstID,
VALUES (1009, TO_DATE('5/15/2022','MM/DD/YYYY'), 'EFT', 'Chase Bank', '86420954', '80080010', TO_DATE('5/1/2022','MM/DD/YYYY'), 1500, 'No',

INSERT INTO Loan (LoanNo, ProcDate, DisbMethod, DisbBank, RouterNo, AcctNo, DateAuth, NoteValue, Subsidized, Rate, Balance, StdNo, InstID,
VALUES (1010, TO_DATE('5/20/2022','MM/DD/YYYY'), 'EFT', 'State Farm Bank', '86420753', '90090010', TO_DATE('5/20/2022','MM/DD/YYYY'), 1100,
```

```sql
INSERT INTO Zip (Zip) VALUES (12345);
INSERT INTO Zip (Zip) VALUES (56789);
INSERT INTO Zip (Zip) VALUES (45678);
INSERT INTO Zip (Zip) VALUES (34567);
INSERT INTO Zip (Zip) VALUES (23457);
INSERT INTO Zip (Zip) VALUES (12346);
INSERT INTO Zip (Zip) VALUES (56799);
INSERT INTO Zip (Zip) VALUES (45679);
INSERT INTO Zip (Zip) VALUES (34565);
INSERT INTO Zip (Zip) VALUES (23455);
```

```sql
INSERT INTO DisburseLine (LoanNo, DateSent, Amount, OrigFee, GuarFee)
VALUES (1001, TO_DATE('1/15/2022', 'MM/DD/YYYY'), 5000, 250, 100);

INSERT INTO DisburseLine (LoanNo, DateSent, Amount, OrigFee, GuarFee)
VALUES (1002, TO_DATE('2/21/2022', 'MM/DD/YYYY'), 7000, 350, 150);

INSERT INTO DisburseLine (LoanNo, DateSent, Amount, OrigFee, GuarFee)
VALUES (1003, TO_DATE('3/10/2022', 'MM/DD/YYYY'), 10000, 500, 200);

INSERT INTO DisburseLine (LoanNo, DateSent, Amount, OrigFee, GuarFee)
VALUES (1004, TO_DATE('4/5/2022', 'MM/DD/YYYY'), 4000, 200, 75);

INSERT INTO DisburseLine (LoanNo, DateSent, Amount, OrigFee, GuarFee)
VALUES (1005, TO_DATE('5/8/2022', 'MM/DD/YYYY'), 8000, 400, 175);

INSERT INTO DisburseLine (LoanNo, DateSent, Amount, OrigFee, GuarFee)
VALUES (1006, TO_DATE('6/12/2022', 'MM/DD/YYYY'), 6000, 300, 125);

INSERT INTO DisburseLine (LoanNo, DateSent, Amount, OrigFee, GuarFee)
VALUES (1007, TO_DATE('7/18/2022', 'MM/DD/YYYY'), 9000, 450, 225);

INSERT INTO DisburseLine (LoanNo, DateSent, Amount, OrigFee, GuarFee)
VALUES (1008, TO_DATE('8/20/2022', 'MM/DD/YYYY'), 12000, 600, 250);

INSERT INTO DisburseLine (LoanNo, DateSent, Amount, OrigFee, GuarFee)
VALUES (1009, TO_DATE('9/23/2022', 'MM/DD/YYYY'), 15000, 750, 300);

INSERT INTO DisburseLine (LoanNo, DateSent, Amount, OrigFee, GuarFee)
VALUES (1010, TO_DATE('10/28/2022', 'MM/DD/YYYY'), 10000, 500, 200);
```

```sql
INSERT INTO DisclosureLetter (LetterNo, DateSent, LoanNo) VALUES (1,TO_DATE ('2022/1/15', 'YYYY-MM-DD'), 1001);

INSERT INTO DisclosureLetter (LetterNo, DateSent, LoanNo)VALUES (2, TO_DATE('2022-02-21', 'YYYY-MM-DD'), 1002);

INSERT INTO DisclosureLetter (LetterNo, DateSent, LoanNo) VALUES (3, TO_DATE('2022-03-10', 'YYYY-MM-DD'), 1003);

INSERT INTO DisclosureLetter (LetterNo, DateSent, LoanNo) VALUES (4, TO_DATE('2022-04-05', 'YYYY-MM-DD'), 1004);

INSERT INTO DisclosureLetter (LetterNo, DateSent, LoanNo) VALUES (5, TO_DATE('2022-05-08', 'YYYY-MM-DD'), 1005);

INSERT INTO DisclosureLetter (LetterNo, DateSent, LoanNo) VALUES (6, TO_DATE('2022-06-12', 'YYYY-MM-DD'), 1006);

INSERT INTO DisclosureLetter (LetterNo, DateSent, LoanNo) VALUES (7, TO_DATE('2022-07-18', 'YYYY-MM-DD'), 1007);

INSERT INTO DisclosureLetter (LetterNo, DateSent, LoanNo) VALUES (8, TO_DATE('2022-08-20', 'YYYY-MM-DD'), 1008);

INSERT INTO DisclosureLetter (LetterNo, DateSent, LoanNo) VALUES (9, TO_DATE('2022-09-23', 'YYYY-MM-DD'), 1009);

INSERT INTO DisclosureLetter (LetterNo, DateSent, LoanNo) VALUES (10, TO_DATE('2022-10-28', 'YYYY-MM-DD'), 1010);
```

```sql
INSERT INTO Applied (StatementNo, LoanNo, Principal, Interest, CumPrincipal, CumInterest)
VALUES (1030, 1001, 10000, 500, 10000, 500);

INSERT INTO Applied (StatementNo, LoanNo, Principal, Interest, CumPrincipal, CumInterest)
VALUES (1031, 1002, 5000, 250, 5000, 250);

INSERT INTO Applied (StatementNo, LoanNo, Principal, Interest, CumPrincipal, CumInterest)
VALUES (1032, 1003, 7500, 375, 7500, 375);

INSERT INTO Applied (StatementNo, LoanNo, Principal, Interest, CumPrincipal, CumInterest)
VALUES (1033, 1004, 20000, 1000, 20000, 1000);

INSERT INTO Applied (StatementNo, LoanNo, Principal, Interest, CumPrincipal, CumInterest)
VALUES (1034, 1005, 1000, 50, 1000, 50);

INSERT INTO Applied (StatementNo, LoanNo, Principal, Interest, CumPrincipal, CumInterest)
VALUES (1035, 1006, 15000, 750, 15000, 750);

INSERT INTO Applied (StatementNo, LoanNo, Principal, Interest, CumPrincipal, CumInterest)
VALUES (1036, 1007, 8000, 400, 8000, 400);

INSERT INTO Applied (StatementNo, LoanNo, Principal, Interest, CumPrincipal, CumInterest)
VALUES (1037, 1008, 12000, 600, 12000, 600);

INSERT INTO Applied (StatementNo, LoanNo, Principal, Interest, CumPrincipal, CumInterest)
VALUES(1038, 1009, 2500, 125, 2500, 125);

SELECT * FROM Student
ORDER BY StdNo;
```

| STDNO | NAME | ADDRESS | CITY | STATE | ZIP | DOB | EXPGRADMONTH | EXPGRADYEAR | PHONE |
|---|---|---|---|---|---|---|---|---|---|
| 1 | John Smith | 123 Main St | Anytown | CA | 12345 | 01-MAY-02 | May | 2023 | 555-1234 |
| 2 | Jane Doe | 456 Oak Ave | Samllville | NY | 56789 | 15-AUG-01 | June | 2022 | 555-2345 |
| 3 | Bob Johnson | 789 Elm St | Big City | TX | 45678 | 30-JAN-03 | December | 2023 | 555-3456 |
| 4 | Emily Davis | 10 Maple Rd | Somewhere | FL | 34567 | 03-DEC-02 | June | 2021 | 555-4567 |
| 5 | Tom Wilson | 555 Pine St | Nowhere | AZ | 23456 | 20-APR-01 | May | 2024 | 555-5678 |
| 6 | Sarah Lee | 777 Maple Ave | Anytown | CA | 12345 | 11-SEP-02 | December | 2022 | 555-6789 |
| 7 | Kevin Chen | 999 Oak St | Smallville | NY | 56789 | 08-JUN-03 | June | 2023 | 555-7890 |
| 8 | Grace Kim | 333 Elm St | Big City | TX | 45678 | 23-NOV-01 | December | 2029 | 555-8901 |
| 9 | Michael Brown | 222 Maple Rd | Somewhere | FL | 34567 | 14-FEB-02 | May | 2025 | 555-9012 |
| 10 | Kelly Chen | 444 Pine St | Nowhere | AZ | 23456 | 07-JUL-01 | June | 2024 | 555-0123 |

```sql
SELECT * FROM Statement;
```

| STATEMENTNO | AMOUN... | PAYMETHOD | AMOUNTSENT | STATEMENTDATE | DATEPAID | DUEDATE | STDNO |
|---|---|---|---|---|---|---|---|
| 1030 | 1000 | cash | 1000 | 01-JAN-22 | 15-JAN-22 | 01-FEB-22 | 1 |
| 1031 | 500 | check | 500 | 15-JAN-22 | 30-JAN-22 | 15-FEB-22 | 2 |
| 1032 | 750 | check | 750 | 01-FEB-22 | 14-FEB-22 | 01-MAR-22 | 3 |
| 1033 | 2000 | cash | 2000 | 15-FEB-22 | 01-MAR-22 | 15-MAR-22 | 4 |
| 1034 | 100 | cash | 100 | 01-MAR-22 | 05-MAR-22 | 01-APR-22 | 5 |
| 1035 | 1500 | check | 1500 | 15-MAR-22 | 15-MAR-22 | 14-APR-22 | 6 |
| 1036 | 800 | check | 1300 | 01-APR-22 | 04-APR-22 | 01-MAY-22 | 7 |
| 1037 | 1200 | cash | 600 | 15-APR-22 | 19-APR-22 | 15-MAY-22 | 8 |
| 1038 | 250 | cash | 250 | 01-MAY-22 | 15-MAY-22 | 01-JUN-22 | 9 |
| 1039 | 1750 | check | 600 | 15-MAY-22 | 29-MAY-22 | 15-JUN-22 | 10 |

```sql
SELECT *FROM Report;
```

| REPORTNO | DATESENT | STDNO |
|---|---|---|
| 10012 | 15-JAN-22 | 1 |
| 10013 | 30-JAN-22 | 2 |
| 10014 | 15-FEB-22 | 3 |
| 10015 | 28-FEB-22 | 4 |
| 10016 | 15-MAR-22 | 5 |
| 10017 | 31-MAR-22 | 6 |
| 10018 | 15-APR-22 | 7 |
| 10019 | 30-APR-22 | 8 |
| 10020 | 15-MAY-22 | 9 |
| 10021 | 31-MAY-22 | 10 |

SELECT * FROM institution;

| INSTID | NAME | ADDRESS | CITY | STATE | ZIP |
|---|---|---|---|---|---|
| 1001 | California Southern University | 123 Main St | Anytown | CA | 12345 |
| 1002 | Smalville College | 456 Oak Ave | Smallville | NY | 56789 |
| 1003 | Rice Institute | 789 Elm St | Big City | TX | 45678 |
| 1004 | Florida International Academy | 10 Maple Rd | Somewhere | FL | 34567 |
| 1005 | Arizona State University | 555 Pine St | Nowhere | AZ | 23456 |
| 1006 | San Diego College | 777 Maple Ave | Anytown | CA | 12345 |
| 1007 | Rochester Institute | 999 Oak St | Smallville | NY | 56789 |
| 1008 | University of Houston | 333 Elm St | Big City | TX | 45678 |
| 1009 | Pensacola Community College University | 222 Maple Rd | Somewhere | FL | 34567 |
| 1010 | Paige College | 444 Pine St | Nowhere | AZ | 23456 |

SELECT * From Guarantor;

| GUARANTORNO | NAME |
|---|---|
| 1 | Nicole LeBlanc |
| 2 | Nick Carter |
| 3 | Mark Chu |
| 4 | Kevin Gate |
| 5 | Dwayne Johnson |

SELECT * FROM Lender;

| LENDERNO | NAME |
|---|---|
| 3010 | Chase Bank |
| 3011 | Federal Credit Union |
| 3012 | First National Bank |
| 3013 | State Farm Bank |
| 3014 | Community Bank |

```
SELECT * FROM Bank;
```

| ROUTERNO |
|----------|
| 12345678 |
| 86420753 |
| 98765432 |
| 24680135 |
| 13579024 |
| 86420953 |
| 97531024 |
| 12309845 |
| 98765422 |
| 86420954 |

```
SELECT * FROM Loan;
```

| LOANNO | PROCDATE | DISBMETHOD | DISBBANK | ROUTERNO | ACCTNO | DATEAUTH | NOTEVALUE | SUBSIDIZED | RATE | BALANCE | STDNO | INSTID | GUARANTORNO | LENDERNO |
|--------|----------|------------|----------|----------|--------|----------|-----------|------------|------|---------|-------|--------|-------------|----------|
| 1001 | 15-JAN-22 | Check | Chase Bank | 12345678 | 1001001 | 05-JAN-22 | 10000 | No | 3.5 | 10000 | 1 | 1001 | 1 | 3010 |
| 1002 | 30-JAN-22 | Check | Federal Credit Union | 98765432 | 2002002 | 20-JAN-22 | 5000 | Yes | 2.5 | 5000 | 2 | 1002 | 2 | 3011 |
| 1003 | 15-FEB-22 | EFT | First National Bank | 24680135 | 3003003 | 05-FEB-22 | 7500 | No | 4.5 | 7500 | 3 | 1003 | 1 | 3012 |
| 1004 | 28-FEB-22 | Check | State Farm Bank | 13579024 | 4004004 | 18-FEB-22 | 20000 | Yes | 3 | 20000 | 4 | 1004 | 3 | 3013 |
| 1005 | 15-MAR-22 | EFT | Community Bank | 86420953 | 5005005 | 05-MAR-22 | 1000 | Yes | 4 | 1000 | 5 | 1005 | 2 | 3014 |
| 1006 | 31-MAR-22 | Check | First National Bank | 97531024 | 6006006 | 21-MAR-22 | 15000 | No | 5 | 15000 | 6 | 1006 | 1 | 3010 |
| 1007 | 15-APR-22 | EFT | Federal Credit Union | 12309845 | 7007007 | 05-APR-22 | 8000 | Yes | 3.5 | 8000 | 7 | 1007 | 5 | 3011 |
| 1008 | 30-APR-22 | Check | Community Bank | 98765422 | 8008008 | 20-APR-22 | 12000 | No | 4.5 | 12000 | 8 | 1008 | 2 | 3012 |
| 1009 | 15-MAY-22 | EFT | Chase Bank | 86420954 | 8008001 | 01-MAY-22 | 1500 | No | 4.5 | 1100 | 9 | 1009 | 2 | 3013 |
| 1010 | 20-MAY-22 | EFT | State Farm Bank | 86420753 | 9009010 | 20-MAY-22 | 1100 | Yes | 2.5 | 1400 | 10 | 1010 | 4 | 3014 |

```
SELECT * From Zip;
_____
```

| ZIP |
|-----|
| 23456 |
| 12345 |
| 56789 |
| 45678 |
| 34567 |
| 12346 |
| 45679 |
| 34565 |
| 23455 |
| 56799 |

```sql
Select * From DisburseLine;
```

| LOANNO | DATESENT | AMOUNT | ORIGFEE | GUARFEE |
|--------|----------|--------|---------|---------|
| 1001 | 15-JAN-22 | 5000 | 250 | 100 |
| 1002 | 21-FEB-22 | 7000 | 350 | 150 |
| 1003 | 10-MAR-22 | 10000 | 500 | 200 |
| 1004 | 05-APR-22 | 4000 | 200 | 75 |
| 1005 | 08-MAY-22 | 8000 | 400 | 175 |
| 1006 | 12-JUN-22 | 6000 | 300 | 125 |
| 1007 | 18-JUL-22 | 9000 | 450 | 225 |
| 1008 | 20-AUG-22 | 12000 | 600 | 250 |
| 1009 | 23-SEP-22 | 15000 | 750 | 300 |
| 1010 | 28-OCT-22 | 10000 | 500 | 200 |

```sql
SELECT * From DisclosureLetter;
```

| LETTERNO | DATESENT | LOANNO |
|----------|----------|--------|
| 1 | 15-JAN-22 | 1001 |
| 2 | 21-FEB-22 | 1002 |
| 3 | 10-MAR-22 | 1003 |
| 4 | 05-APR-22 | 1004 |
| 5 | 08-MAY-22 | 1005 |
| 6 | 12-JUN-22 | 1006 |
| 7 | 18-JUL-22 | 1007 |
| 8 | 20-AUG-22 | 1008 |
| 9 | 23-SEP-22 | 1009 |
| 10 | 28-OCT-22 | 1010 |

```sql
Select * FROM Applied;
```

| STATEMENTNO | LO... | PRINCIPAL | INTEREST | CUMPRINCIPAL | CUMINTEREST |
|-------------|-------|-----------|----------|--------------|-------------|
| 1030 | 1001 | 10000 | 500 | 10000 | 500 |
| 1031 | 1002 | 5000 | 250 | 5000 | 250 |
| 1032 | 1003 | 7500 | 375 | 7500 | 375 |
| 1033 | 1004 | 20000 | 1000 | 20000 | 1000 |
| 1034 | 1005 | 1000 | 50 | 1000 | 50 |
| 1035 | 1006 | 15000 | 750 | 15000 | 750 |
| 1036 | 1007 | 8000 | 400 | 8000 | 400 |
| 1037 | 1008 | 12000 | 600 | 12000 | 600 |
| 1038 | 1009 | 2500 | 125 | 2500 | 125 |
| 1039 | 1010 | 17500 | 875 | 17500 | 875 |

```sql
SELECT Loan.LoanNo, DisburseLine.DateSent, DisburseLine.Amount
FROM Loan
JOIN DisburseLine
ON Loan.LoanNo = DisburseLine.LoanNo;
```

| LOANNO | DATESENT | AMOUNT |
|---|---|---|
| 1001 | 15-JAN-22 | 5000 |
| 1002 | 21-FEB-22 | 7000 |
| 1003 | 10-MAR-22 | 10000 |
| 1004 | 05-APR-22 | 4000 |
| 1005 | 08-MAY-22 | 8000 |
| 1006 | 12-JUN-22 | 6000 |
| 1007 | 18-JUL-22 | 9000 |
| 1008 | 20-AUG-22 | 12000 |
| 1009 | 23-SEP-22 | 15000 |
| 1010 | 28-OCT-22 | 10000 |

```sql
SELECT Loan.LoanNo, Bank.RouterNo, Student.StdNo
FROM Loan
JOIN Bank ON Loan.RouterNo = Bank.RouterNo
JOIN Student ON Loan.StdNo = Student.StdNo;
```

| LO... | ROUTERNO | STDNO |
|---|---|---|
| 1001 | 12345678 | 1 |
| 1002 | 98765432 | 2 |
| 1003 | 24680135 | 3 |
| 1004 | 13579024 | 4 |
| 1005 | 86420953 | 5 |
| 1006 | 97531024 | 6 |
| 1007 | 12309845 | 7 |
| 1008 | 98765422 | 8 |
| 1009 | 86420954 | 9 |
| 1010 | 86420753 | 10 |

```sql
SELECT Loan.LoanNo, Bank.RouterNo, Student.StdNo
FROM Loan
LEFT JOIN Bank ON Loan.LoanNo = Bank.RouterNo
LEFT JOIN Student ON Loan.StdNo = Student.StdNo;
```

| LO... | ROUTERNO | STDNO |
|-------|----------|-------|
| 1001  | (null)   | 1     |
| 1002  | (null)   | 2     |
| 1003  | (null)   | 3     |
| 1004  | (null)   | 4     |
| 1005  | (null)   | 5     |
| 1006  | (null)   | 6     |
| 1007  | (null)   | 7     |
| 1008  | (null)   | 8     |
| 1009  | (null)   | 9     |
| 1010  | (null)   | 10    |

```sql
SELECT Loan.LoanNo, Bank.RouterNo, Student.StdNo
FROM Loan
RIGHT JOIN Bank ON Loan.RouterNo = Bank.RouterNo
RIGHT JOIN Student ON Loan.StdNo = Student.StdNo;
```

| LOANNO | ROUTERNO | STDNO |
|--------|----------|-------|
| 1001   | 12345678 | 1     |
| 1002   | 98765432 | 2     |
| 1003   | 24680135 | 3     |
| 1004   | 13579024 | 4     |
| 1005   | 86420953 | 5     |
| 1006   | 97531024 | 6     |
| 1007   | 12309845 | 7     |
| 1008   | 98765422 | 8     |
| 1009   | 86420954 | 9     |
| 1010   | 86420753 | 10    |

```sql
SELECT Loan.LoanNo, Bank.RouterNo, Student.StdNo
FROM Loan, Bank, Student

WHERE Loan.Balance > 10000;
```

| LOANNO | ROUTERNO | STDNO |
|--------|----------|-------|
| 1004 | 12309845 | 1 |
| 1004 | 12309845 | 2 |
| 1004 | 12309845 | 3 |
| 1004 | 12309845 | 4 |
| 1004 | 12309845 | 5 |
| 1004 | 12309845 | 6 |
| 1004 | 12309845 | 7 |
| 1004 | 12309845 | 8 |
| 1004 | 12309845 | 9 |
| 1004 | 12309845 | 10 |
| 1004 | 12345678 | 1 |
| 1004 | 12345678 | 2 |
| 1004 | 12345678 | 3 |
| 1004 | 12345678 | 4 |
| 1004 | 12345678 | 5 |
| 1004 | 12345678 | 6 |
| 1004 | 12345678 | 7 |
| 1004 | 12345678 | 8 |
| 1004 | 12345678 | 9 |
| 1004 | 12345678 | 10 |
| 1004 | 13579024 | 1 |
| 1004 | 13579024 | 2 |
| 1004 | 13579024 | 3 |
| 1004 | 13579024 | 4 |
| 1004 | 13579024 | 5 |

```sql
SELECT *
From Loan
WHERE InstID = 1001;
```

| LOANNO | PROCDATE | DISBMETHOD | DISBBANK | ROUTERNO | ACCTNO | DATEAUTH | NOTEVALUE | SUBSIDIZED | RATE | BALANCE | STDNO | INSTID | GUARANTORNO | LENDERNO |
|--------|----------|------------|----------|----------|--------|----------|-----------|-----------|------|---------|-------|--------|-------------|----------|
| 1001 | 15-JAN-22 | Check | Chase Bank | 12345678 | 1001001 | 05-JAN-22 | 10000 | No | 3.5 | 10000 | 1 | 1001 | 1 | 3010 |