202409SDSC5003 Assignment 1

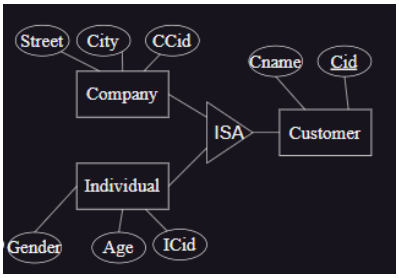
CHEN Ziang 59019080

Assignment 1 requires the design of a banking system that aims to draw an E-R diagram to show the relationship between *Customers* (including *Companies* and *Individuals*), *Accounts*, *Loans* and *Payments* and *Branches*, including the start date and *Pin* code of the accounts owned by the *Customer*, and the association between the *Loan* and the *Branch*.

My steps are as follows:

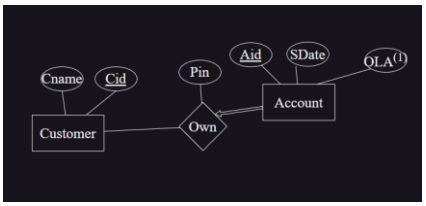
1 ***Company & Individual*:** There are two types of accounts, Company Account and Individual Account, and I see them as subcategories of Customers and connect them with ISA.

- *Customers (Cid, Cname, Pin)*
- *Company (CCid(CID), City, Street)*
- *Individual (ICid(CID), Gender, Age)*



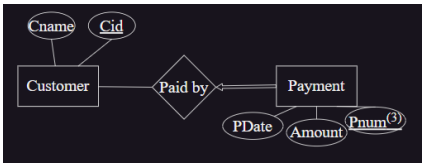
2 ***Own Account:*** A customer can own multiple accounts, but an account can only be owned by one ustomer. There is no account without an owner. At which the account was opened, and a pin number that gives the customer access to the account.

- *Own_Account (Aid, Cid(FK), SDate, Pin, OLA)*



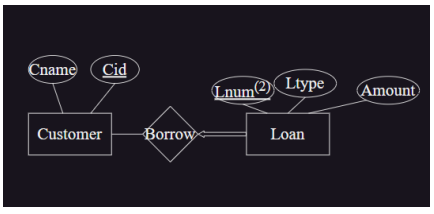
3 ***Payment :*** Each payment is made by the customer's entity, and there is no payment that does not correspond to one customer. It's also important to note that there may be duplicates of payment numbers for different customers, and (Cid, Pnum) needs to be used as the joint primary key in this table.

- *Payment ((Cid, Pnum), PDate, Amount)*



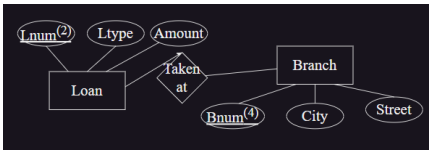
4 ***Loan:*** Like payment, each loan corresponds to a customer, and there is no loan that does not correspond to one customer. Unlike the previous article, the loan number is unique, so you only need Lnum as the primary key

- *Loan (Lnum, Ltype, Amount, Cid(FK))*



5 *Loan_in_Brach: In order to avoid oversizing, I made a separate table of the relationship between the loan and the branch.*

- *Loan_in_Branch ((Bnum,Lnum(FK)), City, Street)*



名称	类型	架构
Company		CREATE TABLE "Company" ("CCid" INTEGER NOT NULL UNIQUE, "City" char(50) NOT NULL, "Street" char(50) NOT NULL, PRIMARY KEY("CCid"), FOREIGN KEY("CCid") REFERENCES "Customer"("Cid"))
CCid	INTEGER	"CCid" INTEGER NOT NULL UNIQUE
City	char(50)	"City" char(50) NOT NULL
Street	char(50)	"Street" char(50) NOT NULL
Customer		CREATE TABLE "Customer" ("Cid" INTEGER NOT NULL UNIQUE, "Cname" char(50) NOT NULL, "Pin" INTEGER NOT NULL, PRIMARY KEY("Cid"))
Cid	INTEGER	"Cid" INTEGER NOT NULL UNIQUE
Cname	char(50)	"Cname" char(50) NOT NULL
Pin	INTEGER	"Pin" INTEGER NOT NULL
Individual		CREATE TABLE "Individual" ("ICid" INTEGER NOT NULL UNIQUE, "Gender" char(1) NOT NULL, "Age" char(50) NOT NULL, PRIMARY KEY("ICid"), FOREIGN KEY("ICid") REFERENCES "Customer"("Cid"))
ICid	INTEGER	"ICid" INTEGER NOT NULL UNIQUE
Gender	char(1)	"Gender" char(1) NOT NULL
Age	char(50)	"Age" char(50) NOT NULL
Loan		CREATE TABLE "Loan" ("Lnum" INTEGER NOT NULL UNIQUE, "Ltype" CHAR(50) NOT NULL, "Amount" NUMERIC NOT NULL, "Cid" INTEGER NOT NULL, PRIMARY KEY("Cid","Lnum"), FOREIGN KEY("Cid") REFERENCES "Customer"("Cid"))
Lnum	INTEGER	"Lnum" INTEGER NOT NULL UNIQUE
Ltype	CHAR(50)	"Ltype" CHAR(50) NOT NULL
Amount	NUMERIC	"Amount" NUMERIC NOT NULL
Cid	INTEGER	"Cid" INTEGER NOT NULL
Loan_in_Branch		CREATE TABLE "Loan_in_Branch" ("Bnum" INTEGER NOT NULL UNIQUE, "City" char(50) NOT NULL, "Street" char(50) NOT NULL, "Lnum" char(50) NOT NULL, PRIMARY KEY("Bnum","Lnum"), FOREIGN KEY("Lnum") REFERENCES "Loan"("Lnum"))
Bnum	INTEGER	"Bnum" INTEGER NOT NULL UNIQUE
City	char(50)	"City" char(50) NOT NULL
Street	char(50)	"Street" char(50) NOT NULL
Lnum	char(50)	"Lnum" char(50) NOT NULL
Own_Account		CREATE TABLE "Own_Account" ("Aid" INTEGER NOT NULL UNIQUE, "OLA" NUMERIC NOT NULL, "Cid" INTEGER NOT NULL, "SDate" NUMERIC NOT NULL, "Pin" INTEGER NOT NULL, PRIMARY KEY("Aid"), FOREIGN KEY("Cid") REFERENCES "Customer"("Cid"))
Aid	INTEGER	"Aid" INTEGER NOT NULL UNIQUE
OLA	NUMERIC	"OLA" NUMERIC NOT NULL
Cid	INTEGER	"Cid" INTEGER NOT NULL
SDate	NUMERIC	"SDate" NUMERIC NOT NULL
Pin	INTEGER	"Pin" INTEGER NOT NULL
Payment		CREATE TABLE "Payment" ("Pnum" INTEGER NOT NULL UNIQUE, "PDate" char(50) NOT NULL, "Amount" NUMERIC NOT NULL, "Cid" INTEGER NOT NULL, PRIMARY KEY("Pnum","Cid"), FOREIGN KEY("Cid") REFERENCES "Customer"("Cid"))
Pnum	INTEGER	"Pnum" INTEGER NOT NULL UNIQUE
PDate	char(50)	"PDate" char(50) NOT NULL