Module 10 Problem 2

Using the 1-M relationship rule for all relationships:

- The Student table has no crow's feet symbol of any M-N relationship attached to it so there are no foreign keys.
- The Lender table has no crow's feet symbol of any M-N relationship attached to it so there are no foreign keys.
- The Institution table has no crow's feet symbol of any M-N relationship attached to it so there are no foreign keys.
- The Loan table has 3 crow's feet symbol attached to it from Student, Lender and Institution. So, the primary keys of these three tables StdNo , LenderNo and InstID become foreign keys for this table. Also, since the three M-N relationships have the minimum cardinality of 1 on the 1 side so all these three foreign keys will have the not null constraint applicable.
- The DisburseLine table has 1 crow's feet symbol attached to it from Loan table. So, *LoanNo* becomes the foreign key for this table and also since the minimum cardinality is 1 on the Loan side so not null constraint is also applicable.

The following are the final tables obtained with their FOREIGN KEYS and NOT NULL constraints:

- Student (StdNo, StdName, StdAddress, StdCity, StdState, StdZip, StdEmail)
- Lender (LenderNo, LendName)
- Institution (InstID, InstName, InstMascot)
- Loan (LoanNo, *StdNo* , *LenderNo* , *InstID* , ProcDate, DisbMethod, DisbBank, DateAuth, NoteValue, Subsidized, Rate)
  - FOREIGN KEY (StdNo) REFERENCES Student
  - FOREIGN KEY (LenderNo) REFERENCES Lender
  - FOREIGN KEY (InstID) REFERENCES Institution
  - StdNo NOT NULL
  - LenderNo NOT NULL
  - InstID NOT NULL
- DisburseLine (DateSent, *LoanNo* , Amount, OrigFee, GuarFee)
  - FOREIGN KEY (LoanNo) REFERENCES Loan
  - LoanNo NOT NULL

Note: For *DisburseLine, LoanNo* will be set as the primary key later in the identification dependency rule so it is set as NOT NULL here.