

CS443 - Assignment 1

Question #1

a) Write the tables

ReceiptNumber: Sales Date

ReceiptNumber, ProductID: QuantitySold

ProductID: ProductDescription

ItemID: Item Description

ProductID, ItemNum: QuantityUsed

b) Place the tables in 3rd normal form (if necessary)

Receipt: ReceiptNumber, SalesDate

Sold: ReceiptNumber, ProductID, QuantitySold

Product: ProductID, ProductDescription

Item: ItemID, ItemDescription

used: ProductID, ItemNum, QuantityUsed

c) Create ERD based on the normalized tables

d) Write a script to create a database. Your script should create the tables and ensures that all constraints are set properly.

```
CREATE TABLE Receipt
(
  ReceiptNumber NUMBER,
  SalesDate DATE,
  CONSTRAINT ReceiptPK PRIMARY KEY(ReceiptNumber)
);
```

```
CREATE TABLE Product
(
  ProductID NUMBER,
  ProductDescription VARCHAR2(200),
  CONSTRAINT ProductPK PRIMARY KEY(ProductID)
);
```

```
CREATE TABLE Item
```

```
(  
ItemNum NUMBER NOT NULL,  
ItemDescription VARCHAR2(200),  
CONSTRAINT ItemPK PRIMARY KEY(ItemNum)  
);
```

```
CREATE TABLE Used  
(  
ItemNum NUMBER,  
ProductID NUMBER,  
QuantityUsed NUMBER,  
CONSTRAINT CheckUsed CHECK(QuantityUsed >=0),  
CONSTRAINT UsedPK PRIMARY KEY(ItemNum, ProductID),  
CONSTRAINT UsedFK1 FOREIGN KEY(ItemNum)  
REFERENCES Item(ItemNum),  
CONSTRAINT UsedFK2 FOREIGN KEY(ProductID)  
REFERENCES Product(ProductID)  
);
```

```
CREATE TABLE Sold  
(  
ReceiptNumber NUMBER,  
ProductID NUMBER,  
QuantitySold NUMBER  
CONSTRAINT CheckSold CHECK(QuantitySold >=0),  
CONSTRAINT SoldPK PRIMARY KEY(ReceiptNumber, ProductID),  
CONSTRAINT SoldFK1 FOREIGN KEY(ReceiptNumber)  
REFERENCES Receipt(ReceiptNumber),  
CONSTRAINT SoldFK2 FOREIGN KEY(ProductID)  
REFERENCES Product(ProductID)  
);
```

Question #2

- a) Change the ERD to tables

Physician : PhysID, PhysNames, PhysDept, DeptSupervisorID, TreatCost, TreatDesc, TreatID

Patient: PatientID, RoomPhone, RoomNo, RoomRate, AmountOwing, HospitalStayDays, PatientName, PatientAddress, AdminDate, PhysID

- b) Place the tables in 3rd normal form (if necessary)

Physician: PhysID, PhysName, PhysDept, TreatID

Treatment: TreatID, TreatCost, TreatDesc

Department: PhysDept, DeptSupervisorID,

Patients: PatientID, PatientName, PatientAddress, PatientName, AdminDate, HospitalStayDays, RoomNo, PhysID, TreatID

Room: RoomNo, RoomPhone, RoomRate

- c) Revise the given ERD based on the normalized tables (if necessary)

- d) Write a script to create a database. Your script should create the tables and ensures that all constraints are set properly

```
CREATE TABLE Treatment
(
    TreatID NUMBER,
    TreatCost NUMBER(10,2),
    TreatDesc VARCHAR2(200),
    CONSTRAINT CheckTreatCost CHECK(TreatCost >= 50.00),
    CONSTRAINT TreatmentPK PRIMARY KEY(TreatID)
);
```

```
CREATE TABLE Department
(
    PhysDept NUMBER,
    DeptSupervisorID NUMBER,
    CONSTRAINT DepartmentPK PRIMARY KEY(PhysDept)
```

```

);

CREATE TABLE Physician
(
PhysID NUMBER,
PhysName VARCHAR2(50) NOT NULL,
PhysDept NUMBER,
CONSTRAINT PhysicianFK FOREIGN KEY(PhysDept)
REFERENCES Department(PhysDept),
CONSTRAINT PhysicianPK PRIMARY KEY(PhysID)
);

CREATE TABLE Room
(
RoomNo NUMBER,
RoomPhone VARCHAR2(8),
RoomRate NUMBER(10,2),
CONSTRAINT CheckRoom CHECK(RoomNo >= 100 AND RoomNo<=999),
CONSTRAINT CheckRoomRate CHECK(RoomRate >= 30.00 AND RoomRate <=100.00),
CONSTRAINT RoomPK PRIMARY KEY(RoomNo)
);

CREATE TABLE Patient
(
PatientID NUMBER,
PatientName VARCHAR2(50) NOT NULL,
PatientAddress VARCHAR2(200) NOT NULL,
AdminDate DATE,
HospitalStayDays NUMBER,
PhysID NUMBER,
RoomNo NUMBER,
TreatID NUMBER,
CONSTRAINT CheckRoomNo CHECK(RoomNo >= 100 AND RoomNo<=999),
CONSTRAINT CheckHospitalStayDays CHECK(HospitalStayDays >= 0),
CONSTRAINT PatientPhysID FOREIGN KEY(PhysID)
REFERENCES Physician(PhysID),
CONSTRAINT PatientRoomNo FOREIGN KEY(RoomNo)
REFERENCES Room(RoomNo),
CONSTRAINT PatientTreatID FOREIGN KEY(TreatID)
REFERENCES Treatment(TreatID),
CONSTRAINT PatientPK PRIMARY KEY(PatientID)
);

```

Question #3

Create the tables related to the following ERD

B: B1, B2, A1, C1
A: A1, A2
C: C1, C2
D: D1, D5, D2 ,D3 ,D4

R3: C1, D1, D5, AttOfR3
E: (D1, D5)*, E1, E2, AttOfR4
F: (E1)*, F1, F2, F3, F4, AttOfR5

Question #4

Create the tables related to the following ERD

Bank: Code, Name, Addr

Account: AcctNo, Balance, Type, BranchNo, Code

Loan: LoanNo, Amount, Type, BranchNo, Code

Customer: SSN, Name, Addr, Phone

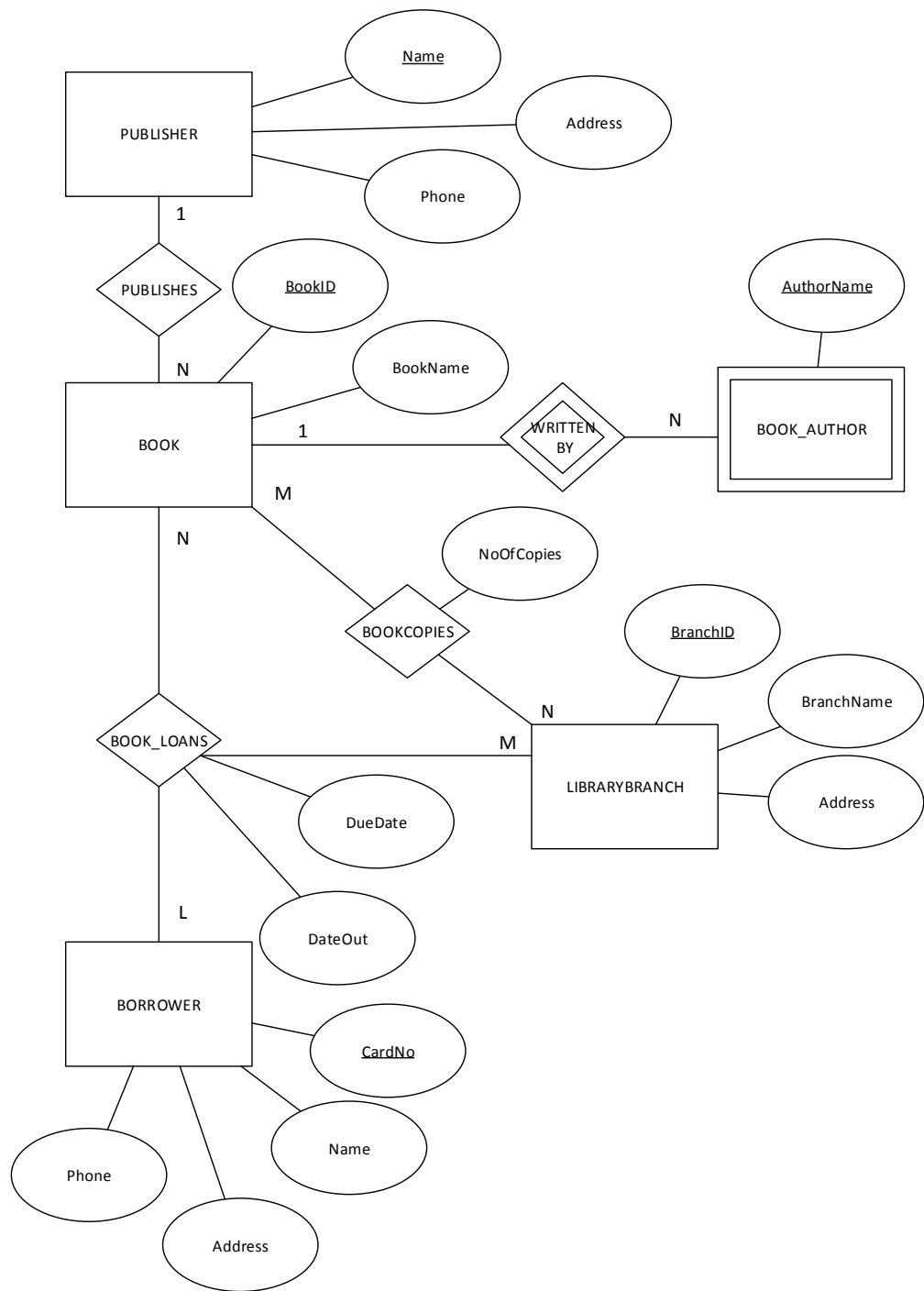
A-C: SSN, AcctNo

L-C: SSN, LoanNo

Bank-Branch: Code, BranchNo, Addr

Question #5

Create ERD based on the following tables. The underlines attributes are primary keys. The links are connection between primary keys and foreign keys



Question #6

Create ERD based on the following tables. The underlines attributes are primary keys. The links are connection between primary keys and foreign keys

