2665140 Lab 6

Question 1

a) 1. ISBN, Author_Num -> BookTitle represents a functional dependency.

2. ISBN, Author_Num -> LastName represents a functional dependency.

3. ISBN, Author_Num -> Publisher represents a functional dependency.

4. ISBN, Author_Num -> Royalty represents a functional dependency.

5. ISBN, Author_Num -> Edition represents a functional dependency.

6.ISBN -> BookTitle represents a partial dependency.

7.ISBN -> Publisher represents a partial dependency.

8. ISBN -> Edition represents a partial dependency.

9. Author_Num -> LastName represents a partial dependency.

10. BookTitle -> Publisher represents a transitive dependency.

b)

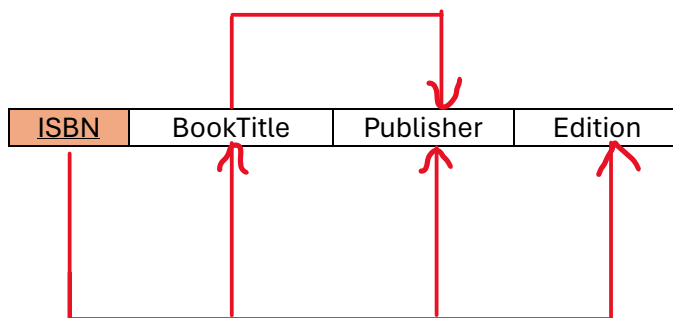| ISBN	BookTitle	Publisher	Edition

Table 1:

Primary Key: ISBN

Foreign Key: None

Normal Form: 2NF because of transitive dependency BookTitle->Publisher

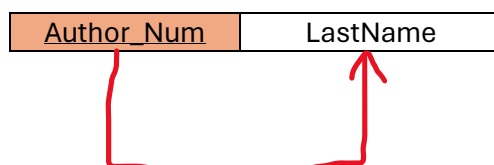| Author_Num	LastName

Table 2:

Primary Key: Author_Num

Foreign Key: None

Normal Form: 3NF

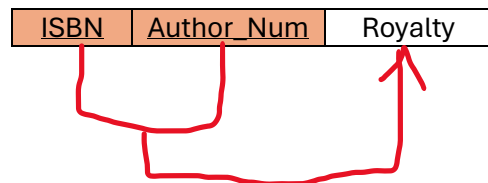| ISBN	Author_Num	Royalty

Table 3:

Primary Key: ISBN + Author_Num

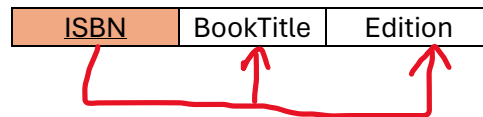Foreign Key: ISBN (to table 1) and Author_Num(to table 2)

Normal Form: 3NF

c)

ISBN	BookTitle	Edition

Table 1:

Primary Key: ISBN

Foreign Key: None

Normal Form: 3NF

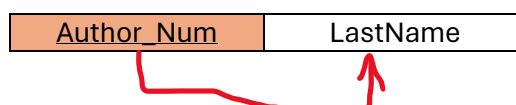| Author_Num	LastName

Table 2:

Primary Key: Author_Num

Foreign Key: None

Normal Form: 3NF

ISBN	Author_Num	Royalty

Table 3:

Primary Key: ISBN and Author_Num

Foreign Key: ISBN (to table 1) and Author_Num (to table 2)

Normal Form: 3NF

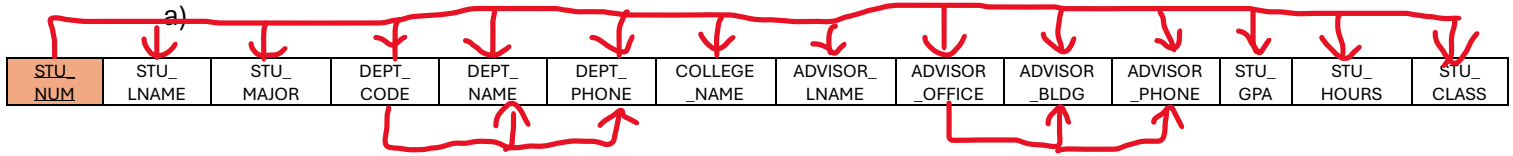| BookTitle	Publisher

Table 4:

Primary Key: BookTitle

Foreign Key: None

Normal Form: 3NF

Question 2

STU_NUM	STU_LNAME	STU_MAJOR	DEPT_CODE	DEPT_NAME	DEPT_PHONE	COLLEGE_NAME	ADVISOR_LNAME	ADVISOR_OFFICE	ADVISOR_BLDG	ADVISOR_PHONE	STU_GPA	STU_HOURS	STU_CLASS

Relational schema: 1NF (STU_NUM, STU_LNAME, STU_MAJOR, DEPT_CODE, DEPT_NAME, DEPT_PHONE, COLLEGE_NAME, ADVISOR_LNAME, ADVISOR_OFFICE, ADVISOR_BLDG, ADVISOR_PHONE, STU_GPA, STU_HOURS, STU_CLASS)

STU_NUM -> , STU_LNAME, STU_MAJOR, DEPT_CODE, DEPT_NAME, DEPT_PHONE, COLLEGE_NAME, ADVISOR_LNAME, ADVISOR_OFFICE, ADVISOR_BLDG, ADVISOR_PHONE, STU_GPA, STU_HOURS, STU_CLASS (Functional Dependency)

DEPT_CODE -> DEPT_NAME, DEPT_PHONE (Transitive Dependency)

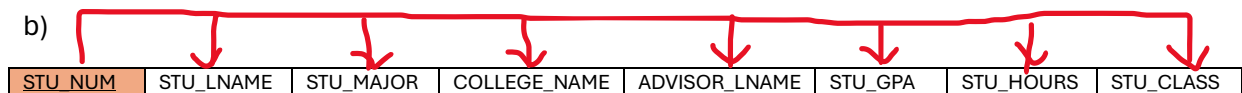ADVISOR_OFFICE -> ADVISOR_BLDG, ADVISOR_PHONE (Transitive Dependency)

b)

STU_NUM	STU_LNAME	STU_MAJOR	COLLEGE_NAME	ADVISOR_LNAME	STU_GPA	STU_HOURS	STU_CLASS

Table 1:

Primary Key: STU_NUM

Foreign Key: None

Normal Form: 3NF

DEPT_CODE	DEPT_NAME	DEPT_PHONE

Table 2:

Primary Key: DEPT_CODE

Foreign Key: None

Normal Form: 3NF

ADVISOR_OFFICE	ADVISOR_BLDG	ADVISOR_PHONE

Table 3:

Primary Key: ADVISOR_OFFICE

Foreign Key: None

Normal Form: 3NF