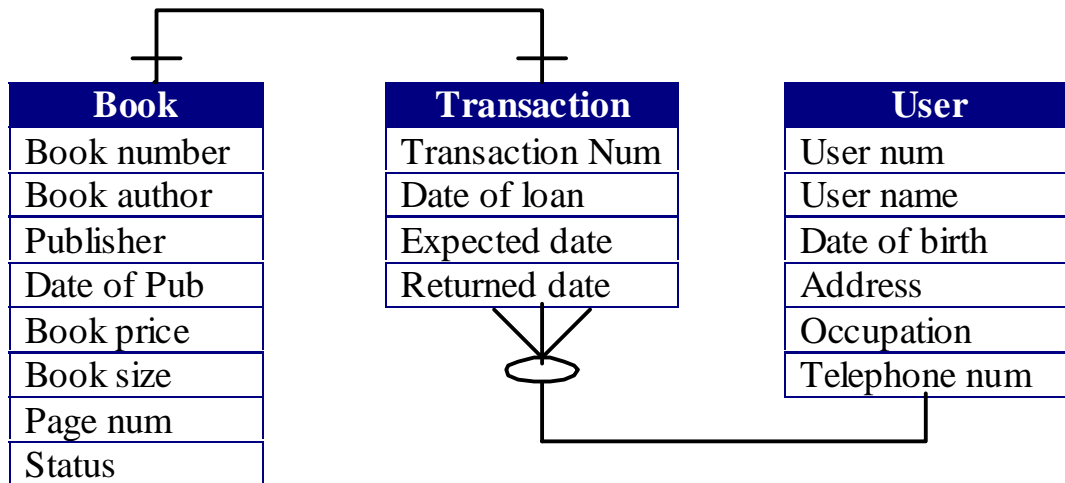


# Appendix

## LIBRARY MANAGEMENT SYSTEM

### CONCEPTUAL DESIGN



#### BOOK

<u>B-Num</u>	B-Titl	B-Author	B-Publ	B-Date	B-Price	B-Size	B-Page	B-Status

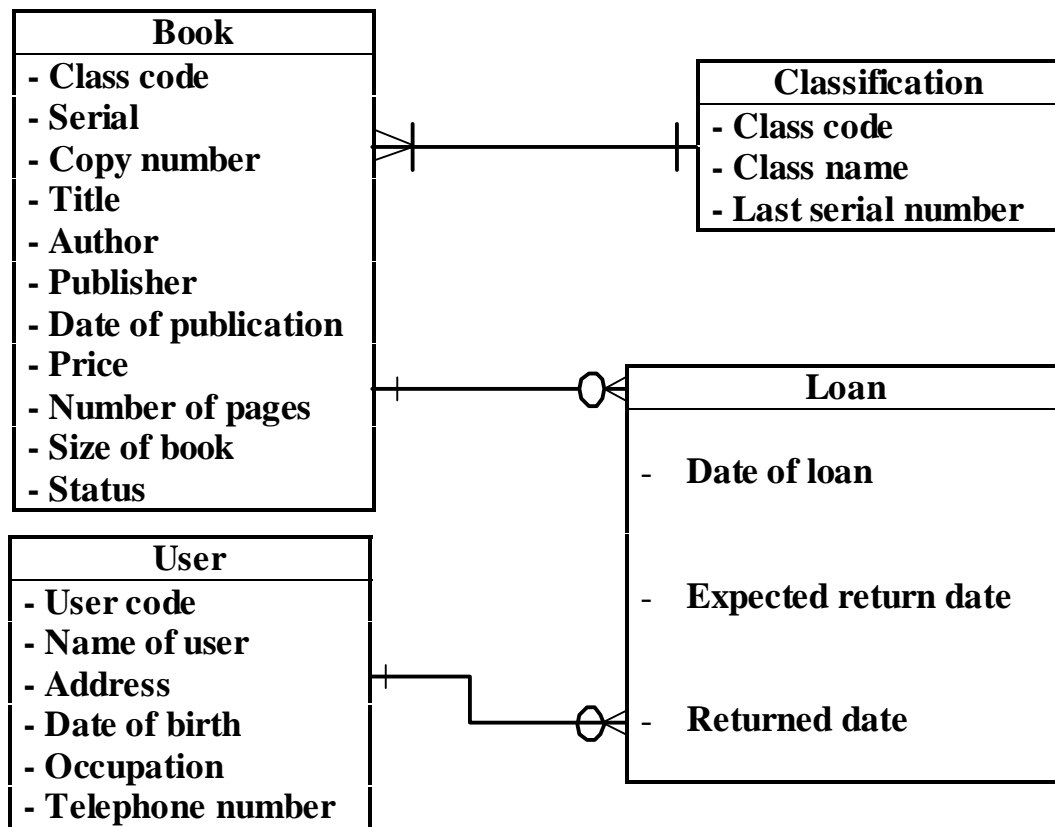
#### TRANSACTION

<u>T-Num</u>	D-Loan	Epx-Date	Re-Date	B-Num -----	U-Num .....

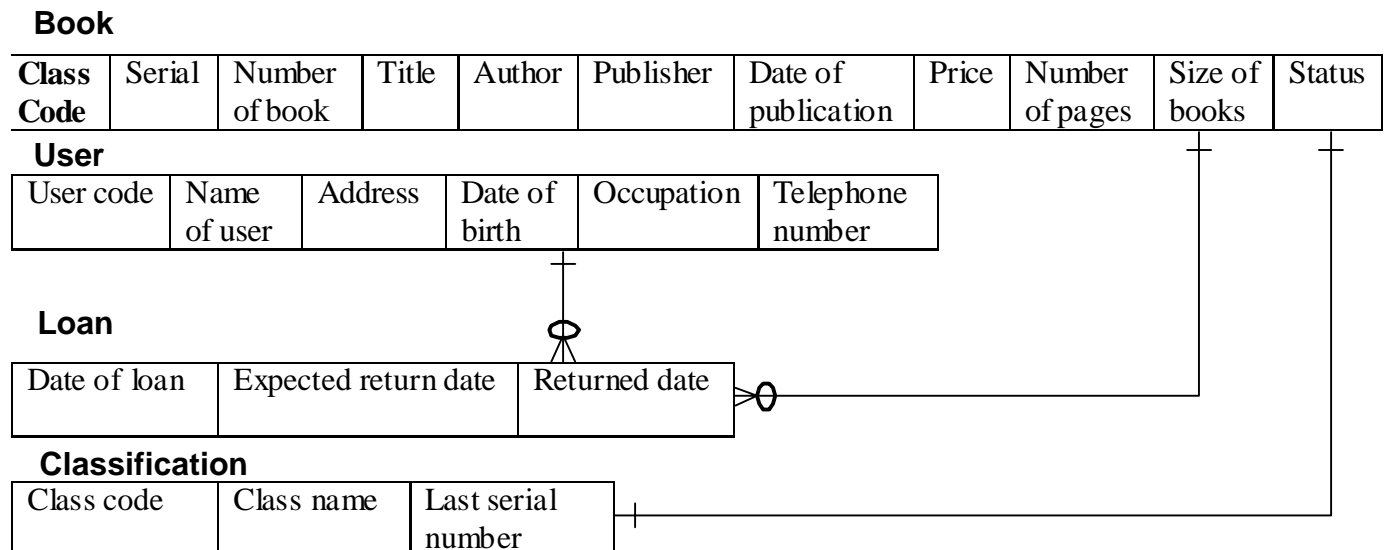
#### USER

<u>U-Num</u>	U-Name	U-Birth	U-Add	U-Add	U-Occu	U-Phone

**Ver 1. Conceptual design**  
**Entity Attribute Relationships**



**Logical design**



## Logical design: UnNormalized Form

### Book

Class Code	Serial	Copy number	Title	Author	Publisher	Date of publication	Price	Number of pages	Size of books	Status

### User

User code	Name of user	Address	Date of birth	Occupation	Telephone number

### Loan

Date of loan	Expected return date	Returned date	Load number	Class code	Serial	Number of book	User code

### Classification

Class code	Class name	Last serial number

## First Normalization

### Book

Class Code	Serial	Title	Author	Publisher	Date of publication	Price	Number of pages	Size of books

### Book library

Class code	Serial	Copy number	Status

### User

User code	Name of user	Address	Date of birth	Occupation	Telephone number

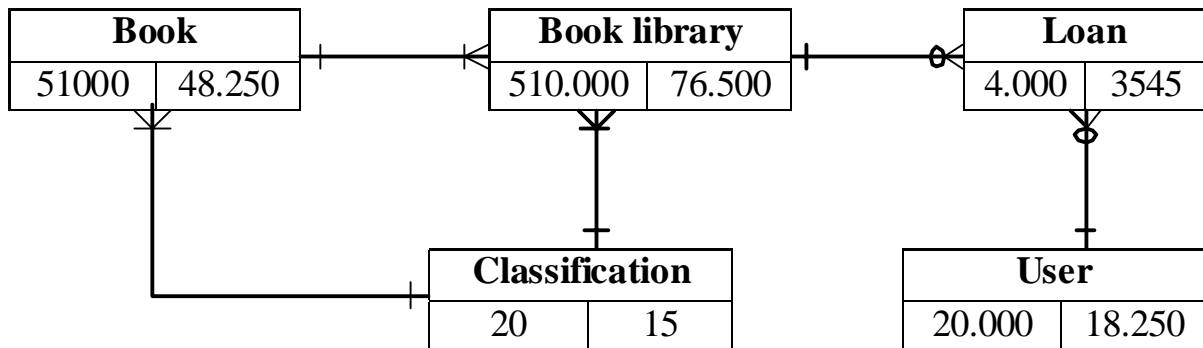
### Loan

Date of loan	Expected return date	Returned date	Load number	Class code	Serial	Number of book	User code

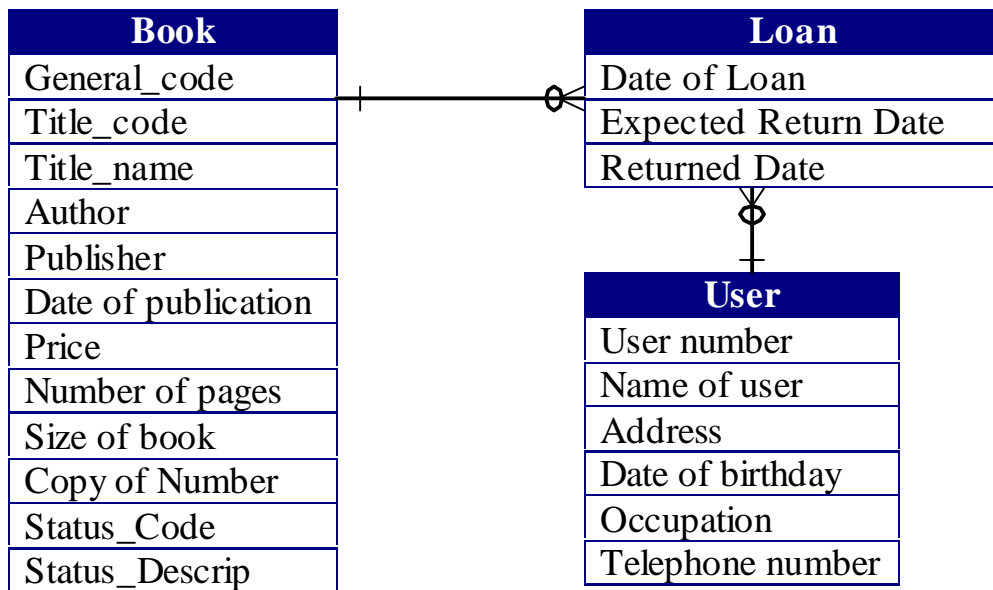
### Classification

Class code	Class name	Last serial number

### Process Design: The Entity Volume Diagram



### Ver 2. Library Management System (Conceptual Model)



## Logical Design

### Book

<b>General Code</b>	Title code	Title name	Author	Publisher	Date of publication	Price	Number of pages	Size book	Copy number	Status code	Status Descrip
---------------------	------------	------------	--------	-----------	---------------------	-------	-----------------	-----------	-------------	-------------	----------------

### Loan

Date of Loan	Expected Return Date	Returned Date
--------------	----------------------	---------------

### User

User number	Name of user	Address	Date of Birthday	Occupation	Telephone number
-------------	--------------	---------	------------------	------------	------------------

## Primary Keys

### Book

<b>General Code</b>	Title code	Title name	Author	Publisher	Date of publication	Price	Number of pages	Size book	Copy number	Status code	Status Descrip
---------------------	------------	------------	--------	-----------	---------------------	-------	-----------------	-----------	-------------	-------------	----------------

### Loan

<u>Date of Loan</u>	Expected Return Date	Returned Date
---------------------	----------------------	---------------

### User

<u>User number</u>	Name of user	Address	Date of Birthday	Occupation	Telephone number
--------------------	--------------	---------	------------------	------------	------------------

## Foreign keys

### Book

<u>General Code</u>	Title code	Title name	Author	Publisher	Date of publication	Price	Number of pages	Size book	Copy number	Status code	Status Descrip
---------------------	------------	------------	--------	-----------	---------------------	-------	-----------------	-----------	-------------	-------------	----------------

### Loan

Date of Loan	<u>General code</u>	<u>User number</u>	Expected Return Date	Returned Date
--------------	---------------------	--------------------	----------------------	---------------

### User

<u>User number</u>	Name of user	Address	Date of Birthday	Occupation	Telephone number
--------------------	--------------	---------	------------------	------------	------------------

(First Normal Form)

### Book

<u>General Code</u>	Title code	Title name	Author	Publisher	Date of publication	Price	Number of pages	Size book
---------------------	------------	------------	--------	-----------	---------------------	-------	-----------------	-----------

### Book\_Ident

<u>General code</u>	<u>Copy Number</u>	Status code	Status Descrip
---------------------	--------------------	-------------	----------------

### Loan

<u>General code</u>	<u>Copy number</u>	Date of Loan	<u>User number</u>	Expected Return Date	Returned Date
---------------------	--------------------	--------------	--------------------	----------------------	---------------

### User

<u>User number</u>	Name of user	Address	Date of birthday	Occupation	Telephone number
--------------------	--------------	---------	------------------	------------	------------------

## Second Normal Form

### Book

<u>General Code</u>	Title code	Title name	Author	Publisher	Date of publication	Price	Number of pages	Size book
---------------------	------------	------------	--------	-----------	---------------------	-------	-----------------	-----------

### Book\_Ident

<u>General code</u>	<u>Copy Number</u>	Status code
---------------------	--------------------	-------------

### Status

<u>Status code</u>	Status Descrip
--------------------	----------------

### Loan

<u>General code</u>	<u>Copy number</u>	<u>Date of Loan</u>	<u>User number</u>	<u>Expected Return Date</u>	<u>Returned Date</u>
---------------------	--------------------	---------------------	--------------------	-----------------------------	----------------------

### User

<u>User number</u>	Name of user	Address	Date of birthday	Occupation	Telephone number
--------------------	--------------	---------	------------------	------------	------------------

## Third Normal Form

### Book

<u>General Code</u>	Title code	Author	Publisher	Date of publication	Price	Number of pages	Size book
---------------------	------------	--------	-----------	---------------------	-------	-----------------	-----------

### Book\_Ident

<u>General code</u>	<u>Copy Number</u>	Status code
---------------------	--------------------	-------------

### Title

<u>Title code</u>	Title name
-------------------	------------

### Status

<u>Status code</u>	Status Descrip
--------------------	----------------

### Loan

<u>General code</u>	<u>Copy number</u>	<u>Date of Loan</u>	<u>User number</u>	<u>Expected Return Date</u>	<u>Returned Date</u>
---------------------	--------------------	---------------------	--------------------	-----------------------------	----------------------

### User

<u>User number</u>	Name of user	Address	Date of birthday	Occupation	Telephone number
--------------------	--------------	---------	------------------	------------	------------------