ASSIGNMENT 1

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Unit number and title	**Unit 04: Database Design & Development**		
Submission date	29/10/2019	**Date Received 1st submission**	
Re-submission Date		**Date Received 2nd submission**	
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Student declaration I certify that the assignment submission is entirely my own work and I fully understand the consequences of plagiarism. I understand that making a false declaration is a form of malpractice.			
		Student's signature	

Grading grid

P1	M1	D1

☼ Summative Feedback:	☼ Resubmission Feedback:

Grade:	Assessor Signature:	Date:
Signature & Date:		

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INTRODUCTION

Nowadays, the demand for reading books as well as specialized materials of students at universities is increasing. But recently, finding books at major school libraries has taken a lot of students time, and sometimes books cannot be found because someone has borrowed them. so I built an online library system to make books easier to manage, as well as faster student lending. This document is used to describe the requirements and logical design of the database of this Online Library System.

1. STATEMENT OF WORK

1.1. History

For a long time, borrowing books at libraries often takes a lot of time for readers (especially large libraries). Readers have to go to the libraries to find the titles they want, the huge amount of books at the libraries can sometimes make it difficult to find. Sometimes the books we want are borrowed first and we are forced to wait. Signing up for books can also be time-consuming. Book losses can sometimes occur because loan subscriptions are made on paper only.

An online library is something that most students agree on, which benefits students in using the library at the school. For librarians, they think this system is necessary to manage information. Book information and borrowed information

1.2. Scope

An online library database will manage all the books in the school library. It will track additional updates of new books. It will also manage borrowing and returnning book of students, this information will be private and will only be used to create general reports. The database also keeps track of whether students returned books on time.

1.3. Constraints

The database can be used to display the names of students who borrowed books, but it will not process the display of individual student information.

1.4. Objectives

+ Shorten borrowing and reading time of users.

+ Keep track of student requests for more matching book genres.

+ Easier to manage books, update information, store or delete old information

1.5. Task and timeline

Data collection: This task will include a number of interviews, interviews and remarks. Regulation of time: 3 weeks. Can be supplied.

Data analysis: The data collected will be analyzed to identify business rules and preliminary data modeling. Time regulation: 2 weeks.

Distributable: List of business rules, entities and their basic properties will be reviewed.

Normalization: The data model will be completed with standardized entities and relationships. Time regulation: 1 week.

Building a physical database: The data model will be translated into RDBMS. The tables contain columns with specific data types and relational and other constraints are created. Time regulation: 3 days.

Testing and security: Sample data will be entered and each rule and business request will be checked. General database security and security related to business rules will also be checked. Regulation of the time: 3 weeks.

Complete and install the database: Final changes and modifications are made. The sample data will be deleted and the database installed on the server. Final test for server access and connectivity. Time regulation: 2 weeks.

2. User of requirement

- Allow the students to search book in database and display the correct results such as title, category, author, etc.
- A student may borrow several books at a time.

- Allow librarians to manage borrowing and returning books.
- Allows librarians to manage book information, update information, store or delete old titles.
- Allow students to find and borrow books.
- allow the operator to check the reports sent from the students will complete the system organization

3. System of Requirement

- The system is available 100% for the user and used 24 hours a day and 365 days a year.
- This system will allow students to search books by title quickly and conveniently.
- Help manage the huge book system in the library.
- Manage the borrowing and returning of books as quickly and conveniently as possible.

4. Business rules

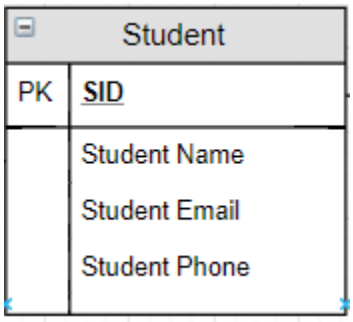
The database will create some rules:

- Students will have to register to be able to borrow books at the library.
- A student can borrow several times at the library.
- A student can borrow many books at a time.
- Books at the library can also be borrowed by many students.

5. ERD – Entity Relationship Diagram

5.1. Entity List

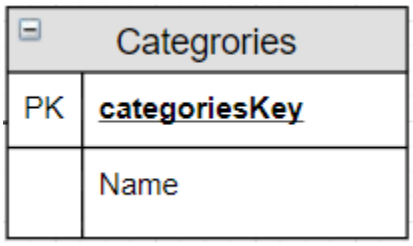
1. Student



Student entity displays student details such as student ID, date of birth, and email. Help manage student information on the system better

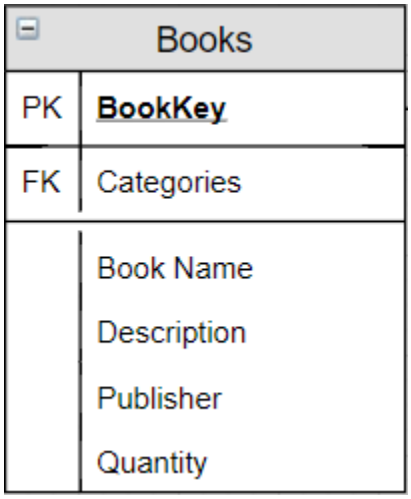
2. Categories

This table will display the category names of the books.



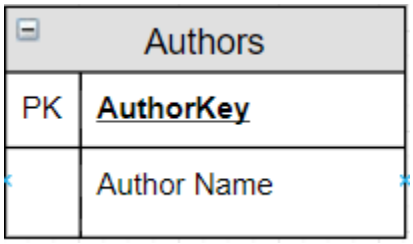
3. Books

Book entities display information about the author, title, Categories, Book description, and publisher



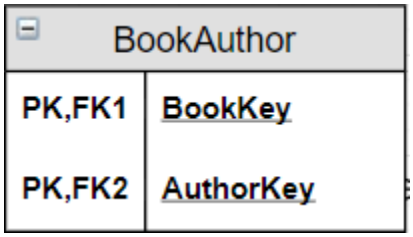
4. Author

The author entity displays information about the author's name. The primary key is " AuthorKey"



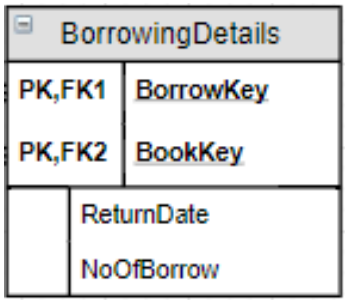
5. BookAuthor

Table "BookAuthor: contains two foreign keys: BookKey linked to table" Book "and AuthorKey table to table" Author ". This link will allow to save information about which author wrote which book (in case of multiple authors)



6. BorrowingDetails

This table will have 2 primary keys: BorrowKey will link to the "Borrow-Return Books" table and BookKey will link to the "Books" table. This relationship will allow to save information borrowed books at the library. This table will allow students to borrow many books at one time.



7. Feedbacks

This table display ID students and shown feedback for book from student to Librarians

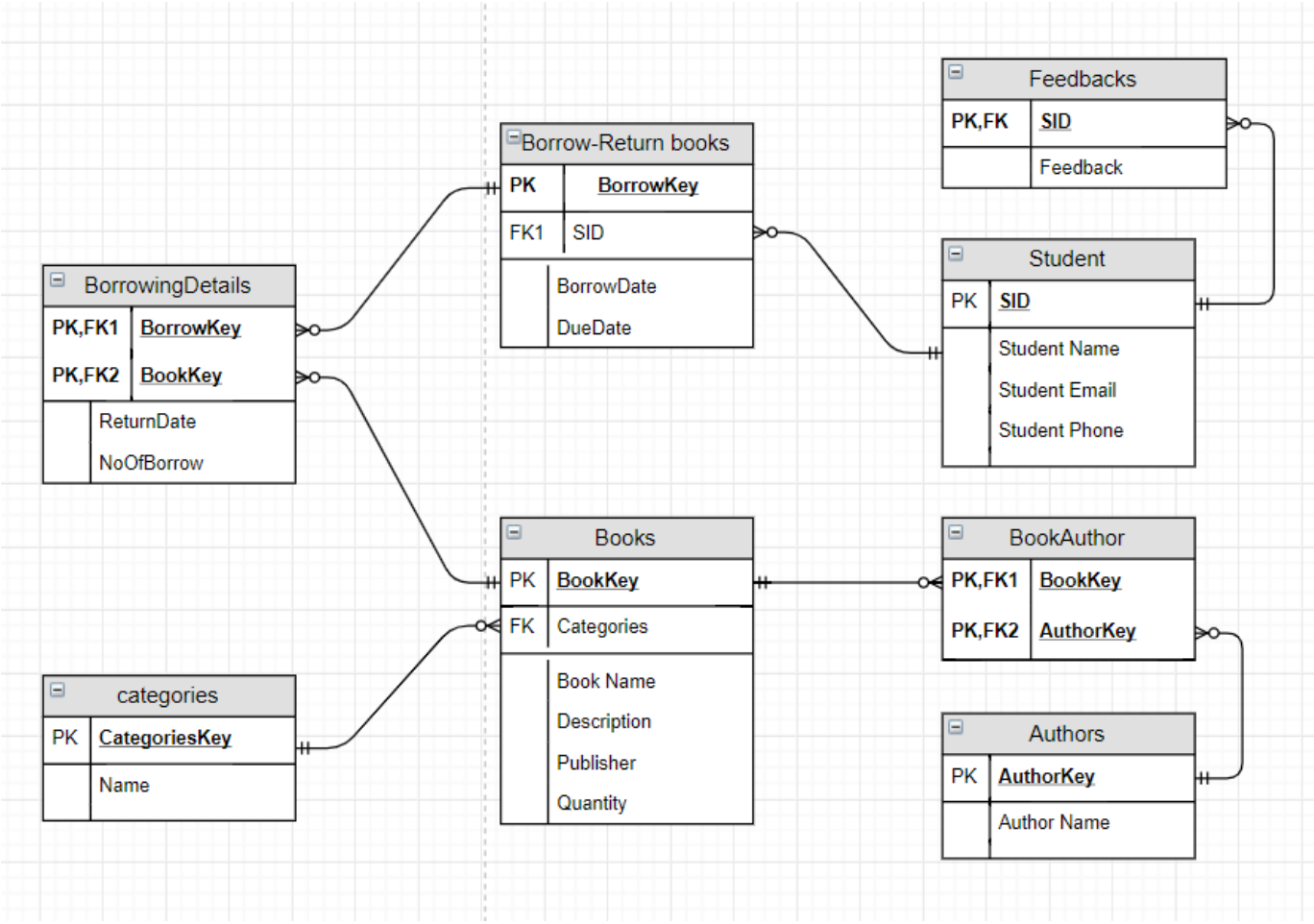
Feedbacks	
PK,FK	SID
	Feedback

8. Borrow-Return Book

This table includes BorrowingKey, SID, BorrowDate, DueDate. BorrowKey is the primary key while StudentID is the foreign key associated with the “Student” table, “Book” table. The "DueDate" attribute represents the due date that user is required to return the books.

Borrow-Return books	
PK	BorrowKey
FK1	SID
	BorrowDate
	DueDate

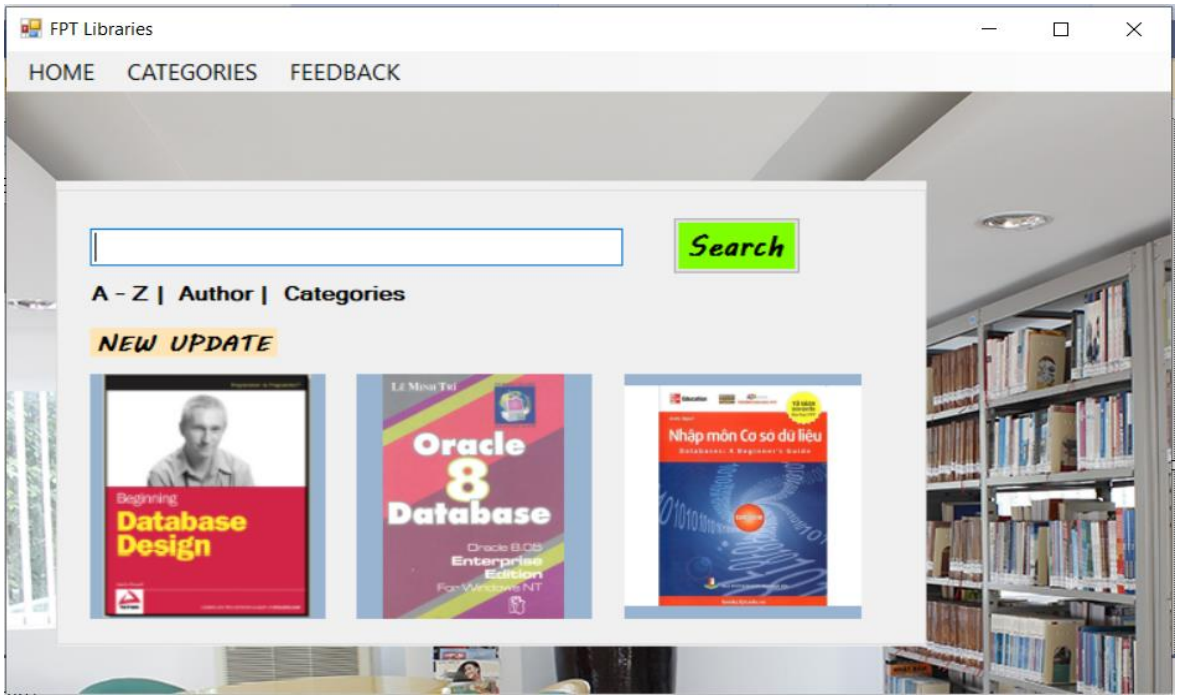
5.2. Diagram


Feedbacks
PK,FK
SID
Feedback
Borrow-Return books
PK
BorrowKey
FK1
SID
BorrowDate
DueDate
Student
PK
SID
Student Name
Student Email
Student Phone
BorrowingDetails
PK,FK1
BorrowKey
PK,FK2
BookKey
ReturnDate
NoOfBorrow
Books
PK
BookKey
FK
Categories
Book Name
Description
Publisher
Quantity
BookAuthor
PK,FK1
BookKey
PK,FK2
AuthorKey
categories
PK
CategoriesKey
Name
Authors
PK
AuthorKey
Author Name

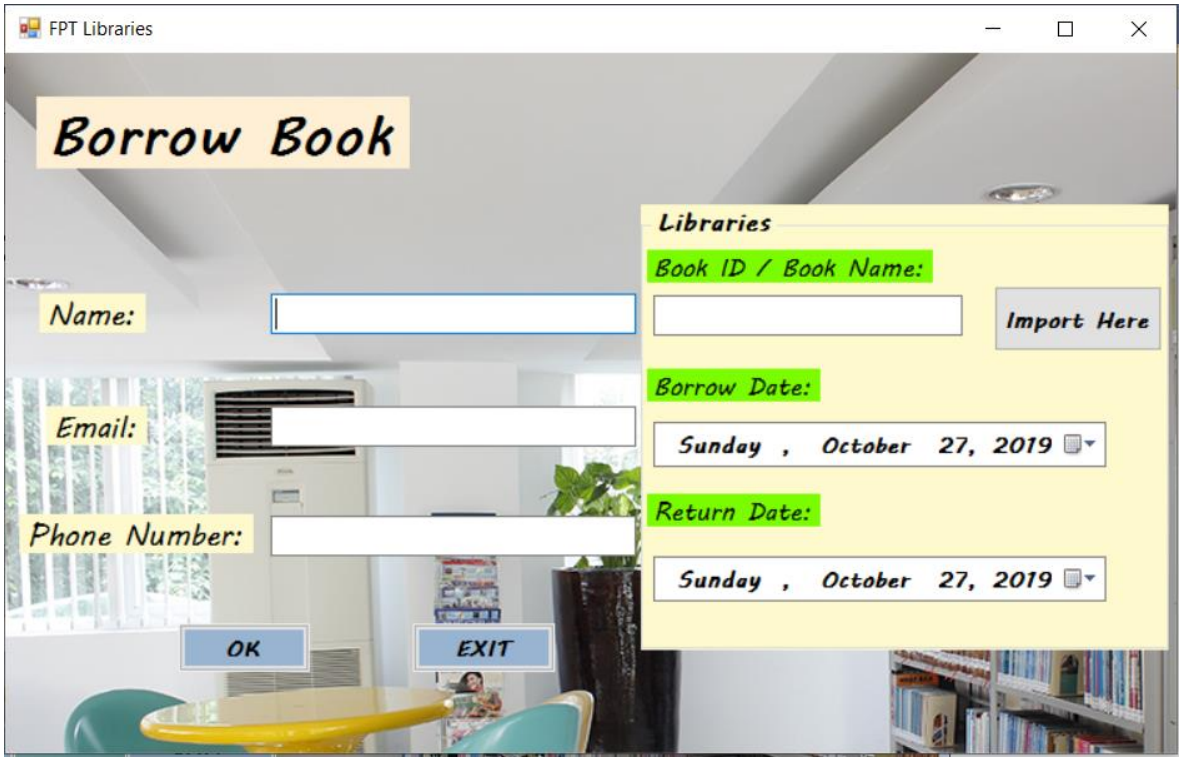
6. User interface and data

6.1. User Interface

The login interface of the user will display the school's logo, the "Log in with email FPT" button will be displayed for the user to login. When users click on it will be redirected to the main interface page.



The homepage is designed based on the requirements of the user. The homepage will show the newly updated books. In addition, the search engine will help users find books quickly and easily. Users will select the books they want, then if they want to borrow books, a loan request will be created.



6.2. Data Validation

Table	Name	Data type	Null	Primary Key / Foreign Key
Student	SID	Varchar (8)	Not Null	Primary Key
	Student Name	Varchar (50)	Not Null	
	Student Email	Varchar (100)	Not Null	
	Student Phone	Varchar (10)	Null	
Book	BookKey	Varchar (7)	Not Null	Primary Key
	Categories	Varchar (7)	Not Null	Foreign Key
	Book Name	Varchar (50)	Not Null	
	Description	Varchar (200)	Not Null	
	Publisher	Varchar (50)	Not Null	
	Quantity	int	Not Null	
Author	Author Key	Varchar (8)	Not Null	Primary Key

	Author name	Varchar (50)	Not Null	
Borrow – return Book	BookKey	Varchar (8)	Not Null	Primary Key
	SID	Varchar(8)	Not Null	Foreign Key
	Borrow Date	Date	Not Null	
	DueDate	Date	Not Null	
Feedback	SID	Varchar (8)	Not Null	Primary Key, Foreign Key
	Feedback	Varchar (200)	Null	
BookAuthor	BookKey	Varchar (8)	Not Null	Primary Key, Foreign Key
	AuthorKey	Varchar (8)	Not Null	Primary Key, Foreign Key
BorrowingDetails	BorrowKey	Varchar (8)	Not Null	Primary Key, Foreign Key
	BookKey	Varchar (8)	Not Null	Primary Key, Foreign Key
	ReturnDate	Date	Not Null	
	NoOfBorrow	Int	Not Null	
Categories	CategoriesKey	Varchar (8)	Not Null	Primary Key
	Name	Varchar (50)	Not Null	

7. Evaluation

- **Advantages:** Looking at the details, this is going to be a great teachers and librarians assistant. There will also be a great system for students, helping them in reading and homework. Students can now select the appropriate class and author they want through the Librarians classification system not only to control the number of books in the library, but also to check the borrowing and reading processes of the students. Librarians will therefore remind students to return books via email on time.

- **Disadvantages:** The process is not yet optimal as students can borrow books without any assurances or commitments for a long time. In the case that the book is lost, ripped and returned beyond the time limit, no punishment is fair for the pupil.

  The system does not have the purpose of defining a book's barcode, so if the picture and the device book title are not known, it will be difficult to reach the barcode.