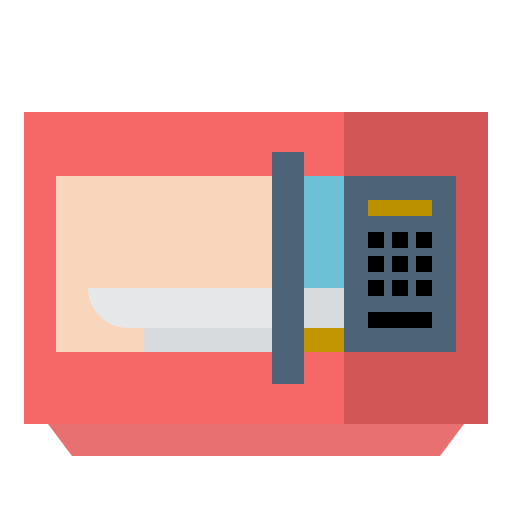
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**MICROWAVE**

# Library Management System

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Project Proposal

Assignment # 1

## Introduction

The library management system will maintain information related to readers and books in a library. It will store data in the SQLite database. For user interface, C# will be used. The details of the project are given below:

## List of Objects

The project mainly consists of following entities.

1. Book
2. User
3. Author
4. Publisher
5. Category
6. Shelf
7. Department
8. Employee
9. Penalties
10. Penalty Card
11. Receipt Type
12. Receipt Card
13. Popularity
14. State of Existence

*-More classes and methods may be added while the project is progressing.*

**Detailed Functions**

**1. Book**

|  |  |
| --- | --- |
| **Function Name** | **Description** |
| Edit | Edits the book properities by new values. |
| Add | Adds book to system and user interface. |
| Add\_Book\_To\_Database | Adds a new book to database. |
| Update\_Book\_In\_Database | Updates book and set new values. |
| Delete\_from\_Database | Deletes book from database. |
| Join\_Tables\_For\_Names | Takes Author name, Publisher name, Category name, Shelf name, Popularity name by joining Books table with their tables. |
| Add\_Cover\_Pic\_To\_Image\_List | Adds a book cover Picture to the main image list |
| Show\_User\_List | Shows users which have that book currently. |
| Decrease\_Book\_Count | Decreases book count when a user takes a book. |
| Calculate\_Popularity\_Score | Increases or decreases popularity score when a book is taken or given back. |
| Change\_Popularity\_Stat | Changes popularity status in database according to the popularity score. |
| Give\_Book\_To\_User | Gives the book to a user. |
| Read\_Users\_From\_Database | Reads users which have that book currently from database and returns a datatable. |
| Search\_Book\_By\_Name | Searches book by name in database and returns a datatable. |
| Search\_Book\_By\_ID | Searches book by ID in database and returns a datatable. |
| Search\_Book\_By\_Author | Searches book by Author in database and returns a datatable. |
| Search\_Book\_By\_Publisher | Searches book by Publisher in database and returns a datatable. |
| Search\_Book\_By\_Category | Searches book by Category in database and returns a datatable. |
| Search\_Book\_By\_Shelf | Searches book by Shelf in database and returns a datatable. |
| Search\_Book\_By\_Popularity | Searches book by Popularity in database and returns a datatable. |
| Read\_All\_Books | Reads all books from database and returns a datatable. |

### 2. User

|  |  |
| --- | --- |
| **Function Name** | **Description** |
| Edit | Edits the user properities by new values. |
| Add | Adds user to system and user interface. |
| Add\_User\_To\_Database | Adds a new user to database. |
| Update\_User\_In\_Database | Updates user and set new values. |
| Delete\_User\_From\_Database | Deletes user from database. |
| Read\_Books\_From\_Database | Reads books which that user currently have. |
| Show\_Book\_List | Shows the user list which have that book currently. |
| Give\_Book\_Back | Gives a book back to the library. |
| Calculate\_Fee | Calculates fee the user has. |
| Check\_Is\_Valid\_Email | Checks if an email is valid or not. |
| Search\_User\_By\_Name | Searches user by name in database and returns a datatable. |
| Search\_User\_By\_Surname | Searches user by surname in database and returns a datatable. |
| Search\_User\_By\_Email | Searches user by email in database and returns a datatable. |
| Search\_User\_By\_ID | Searches user by ID in database and returns a datatable. |
| Search\_User\_By\_Age | Searches user by age in database and returns a datatable. |
| Read\_All\_Users | Reads all users from database and returns a datatable. |

**3. Author**

|  |  |
| --- | --- |
| **Function Name** | **Description** |
| Edit | Edits the author properities by new values. |
| Add | Adds author to system and user interface. |
| Add\_Author\_To\_Database | Adds a new author to database. |
| Update\_Author\_In\_Database | Updates author and set new values. |
| Delete\_Author\_from\_Database | Deletes author from database. |
| Add\_Pic\_To\_Image\_List | Adds author’s picture to the main image list |
| Show\_Book\_List | Shows books which that author composed. |
| Reads\_Books\_From\_Database | Reads books which that author composed. |
| Calculate\_Popularity\_Score | Increases or decreases popularity score of that author when him/her book is taken or given back. |
| Change\_Popularity\_Stat | Changes popularity status in database according to the popularity score. |
| Search\_Author\_By\_Name | Searches author by name in database and returns a datatable. |
| Search\_Author\_By\_Nation | Searches author by nation in database and returns a datatable. |
| Search\_Author\_By\_ID | Searches author by ID in database and returns a datatable. |
| Search\_Author\_By\_Gender | Searches author by gender in database and returns a datatable. |
| Read\_All\_Authors | Reads all authors from database and returns a datatable. |

**4. Publisher**

|  |  |
| --- | --- |
| **Function Name** | **Description** |
| Edit | Edits the publisher properities by new values. |
| Add | Adds publisher to system and user interface. |
| Add\_Publisher\_To\_Database | Adds a new publisher to database. |
| Update\_Publisher\_In\_Database | Updates publisher and set new values. |
| Delete\_Publisher\_from\_Database | Deletes publisher from database. |
| Add\_Pic\_To\_Image\_List | Adds publisher picture to the main image list. |
| Read\_Books\_From\_Database | Reads books which that Publisher published. |
| Show\_Book\_List | Shows books which that Publisher published. |
| Search\_Publisher\_By\_Name | Searches publisherby name in database and returns a datatable. |
| Search\_Publisher\_By\_ID | Searches publisher by ID in database and returns a datatable. |
| Read\_All\_Publishers | Reads all publisher from database and returns a datatable. |

**5. Category**

|  |  |
| --- | --- |
| **Function Name** | **Description** |
| Edit | Edits the category properities by new values. |
| Add | Adds category to system and user interface. |
| Add\_Category\_To\_Database | Adds a new category to database. |
| Update\_Category\_In\_Database | Updates category and set new values. |
| Delete\_Category\_from\_Database | Deletes category from database. |
| Add\_Pic\_To\_Image\_List | Adds publisher picture to the main image list. |
| Read\_Books\_From\_Database | Reads books which is in that category. |
| Show\_Book\_List | Shows books which is in that category. |
| Search\_Category\_By\_Name | Searches category by name in database and returns a datatable. |
| Search\_Category\_By\_ID | Searches category by ID in database and returns a datatable. |
| Read\_All\_Categories | Reads all categories from database and returns a datatable. |

### 6. Shelf

|  |  |
| --- | --- |
| **Function Name** | **Description** |
| Edit | Edits the shelf properities by new values. |
| Add | Adds shelf to system and user interface. |
| Add\_Shelf\_To\_Database | Adds a new shelf to database. |
| Update\_Shelf\_In\_Database | Updates shelf and set new values. |
| Delete\_Shelf\_from\_Database | Deletes shelf from database. |
| Read\_Books\_From\_Database | Reads books which is in that shelf. |
| Show\_Book\_List | Shows books which is in that shelf. |
| Search\_Shelf\_By\_Name | Searches shelf by name in database and returns a datatable. |
| Search\_Shelf\_By\_ID | Searches shelf by ID in database and returns a datatable. |
| Read\_All\_Shelves | Reads all shelves from database and returns a datatable. |

### 7. Department

|  |  |
| --- | --- |
| **Function Name** | **Description** |
| Edit | Edits the department properities by new values. |
| Update\_Department\_In\_Database | Updates department and set new values. |
| Delete\_Department\_from\_Database | Deletes department from database. |
| Show\_Employee\_List | Shows employees which work in that department. |

### 8. Employee

|  |  |
| --- | --- |
| **Function Name** | **Description** |
| Edit | Edits the employee properities by new values. |
| Add | Adds employee to system and user interface. |
| Login | Checks email and password and finds the system manager. |
| Send Email | Sends email to a user or another employee. |
| Add\_Employee\_To\_Database | Adds a new employee to database. |
| Update\_Employee\_In\_Database | Updates employee and set new values. |
| Delete\_Employee\_From\_Database | Deletes employee from database. |
| Join\_Tables\_For\_Names | Takes Department name from database by joining their tables. |
| Add \_Pic\_To\_Image\_List | Adds employees picture to the main image list |
| Search\_Employee\_By\_Name | Searches employee by name in database and returns a datatable. |
| Search\_Employee\_By\_Surname | Searches employee by surname in database and returns a datatable. |
| Search\_Employee\_By\_ID | Searches book by ID in database and returns a datatable. |
| Search\_Employee\_By\_Email | Searches employee by email in database and returns a datatable. |
| Search\_Employee\_By\_Gender | Searches employee by gender in database and returns a datatable. |
| Search\_Employee\_By\_Department | Searches employee by Department in database and returns a datatable. |
| Read\_All\_Employees | Reads all employees from database and returns a datatable. |

### 9. Penalty Type

|  |  |
| --- | --- |
| **Function Name** | **Description** |
| Edit | Edits the penalty type properities by new values. |
| Update\_Penalty\_In\_Database | Updates penalty type and set new values. |
| Delete\_Penalty\_from\_Database | Deletes penalty type from database. |
| Show\_Penalty\_List | Shows penalty cards which belong to that type. |

### 10. Penalty Cards

|  |  |
| --- | --- |
| **Function Name** | **Description** |
| Add | Adds penalty card to system and user interface. |
| Add\_Penalty\_Card\_To\_Database | Adds a new penalty card to database. |
| Delete\_Penalty\_Card\_From\_Database | Deletes penalty card from database. |
| Join\_Tables\_For\_Names | Takes book name, user name, librarian name, penalty name from database by joining their tables. |
| Create\_Penalty\_Card | Creates penalty card object to send the user as mail. |
| Search\_Penalty\_Card\_By\_Name | Searches penalty card by name in database and returns a datatable. |
| Search\_Penalty\_Card\_By\_User\_Name | Searches penalty card by user name in database and returns a datatable. |
| Search\_Penalty\_Card\_By\_Librarian\_Name | Searches penalty card by librarian name in database and returns a datatable. |
| Search\_Penalty\_Card\_By\_ID | Searches penalty card by ID in database and returns a datatable. |
| Read\_All\_Penalty\_Cards | Reads all penalty cards from database and returns a datatable. |

### 11. Receipt Type

|  |  |
| --- | --- |
| **Function Name** | **Description** |
| Edit | Edits the receipt type properities by new values. |
| Update\_Receipt\_In\_Database | Updates receipt type and set new values. |
| Delete\_Receipt\_from\_Database | Deletes receipt type from database. |
| Show\_Receipt\_List | Shows receipt cards which belong to that type. |

### 12. Receipt Cards

|  |  |
| --- | --- |
| **Function Name** | **Description** |
| Add | Adds receipt card to system and user interface. |
| Add\_Receipt\_Card\_To\_Database | Adds a new receipt card to database. |
| Delete\_Receipt\_Card\_From\_Database | Deletes receipt card from database. |
| Join\_Tables\_For\_Names | Takes book name, user name, librarian name, receipt type from database by joining their tables. |
| Create\_Receipt\_Card | Creates receipt card object to send the user as mail. |
| Search\_Receipt\_Card\_By\_Name | Searches receipt card by name in database and returns a datatable. |
| Search\_Receipt\_Card\_By\_User\_Name | Searches receipt card by user name in database and returns a datatable. |
| Search\_Receipt\_Card\_By\_Librarian\_Name | Searches receipt card by librarian name in database and returns a datatable. |
| Search\_Receipt\_Card\_By\_ID | Searches receipt card by ID in database and returns a datatable. |
| Read\_All\_Receipt\_Cards | Reads all receipt cards from database and returns a datatable. |

### 13. Popularity

|  |  |
| --- | --- |
| **Function Name** | **Description** |
| Add\_Popularity\_In\_Database | Adds popularity type in database. |
| Update\_Popularity\_In\_Database | Updates popularity type and set new values. |
| Delete\_Popularity\_from\_Database | Deletes popularity type from database. |

### 14. State of Existence

|  |  |
| --- | --- |
| **Function Name** | **Description** |
| Add\_State\_In\_Database | Adds state type in database. |
| Update\_State\_In\_Database | Updates state type and set new values. |
| Delete\_State\_from\_Database | Deletes state type from database. |