Firstly, we create the borrower table initially with element Name, Address, E-mail, Phone.

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Address | E-mail | Phone |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

Then another table for author with three elements, Name, Address and E-mail.

|  |  |  |
| --- | --- | --- |
| Name | Address | E-mail |
|  |  |  |
|  |  |  |

Book table:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ISBN | Authors’ E-mail | Being borrowed or not | Client’s  Email | Date loaned | Days can be loaned | Date return | Late or not | Fine paid |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

In borrower table attribute, “E-mail” and “Phone“ can be candidate key, we choose “E-mail” as primary key. All the data must be filled, not null.

In author table attribute, “E-mail” can be primary key. All the data must be filled, not null.

In book table attribute, I replace the “name” to book “ISBN”, “ISBN” is the unique identifier for a book, so “ISBN” can be primary key. “Authors” and “ISBN” cannot be null, “being borrowed or not” had option only “yes” or “no”, if yes, “client” , “Date loaned”, “days can be loaded” should being filled, “date return can be loaned” can calculated from this two data. “Late or not” had two option “yes” or “not”, if yes, “fine paid” can’t be null. attribute “Authors’ E-mail” must exist in author table and “Client’s Email” must exist in borrower table so that we can track the detail of book author and borrower.

There are pro and con in this DBMS,

Pro:

Easy to do manage operate like searching, appending, removing the information. On some occasions, DBMS can also help us analysis the data relation.

Con:

Operator needs DBMS knowledge to understanding the system, in information security aspect, DBMS is weaker than traditional file system.

**References**

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