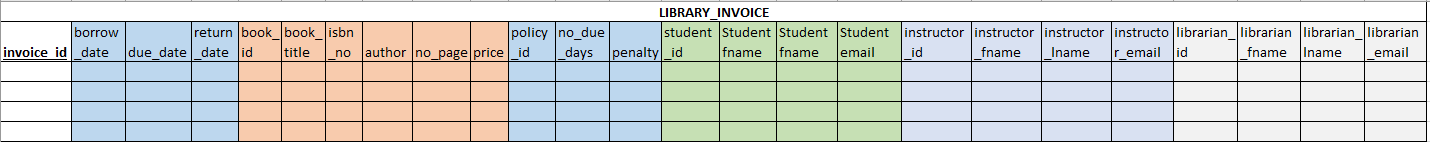
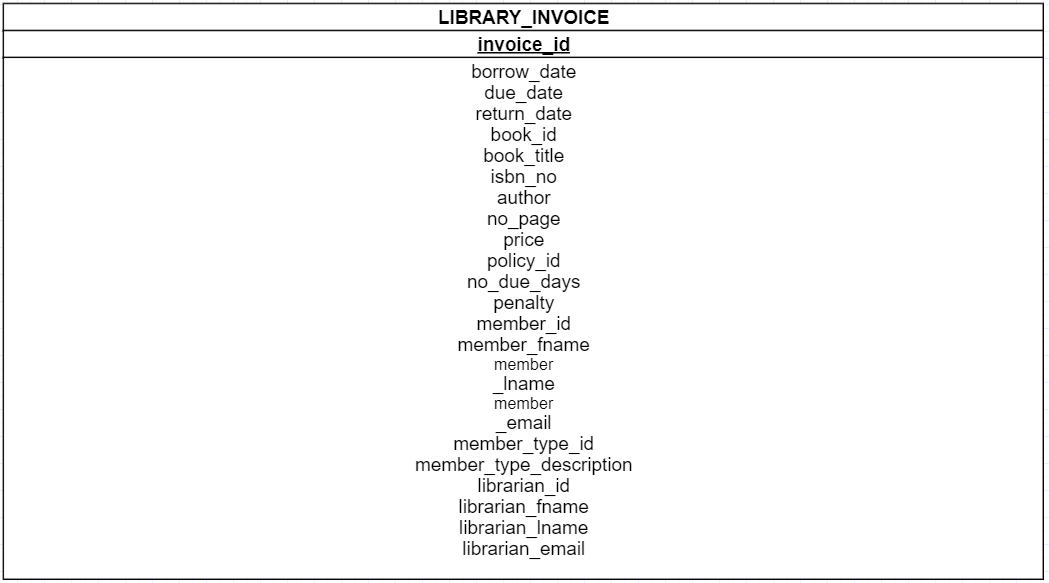
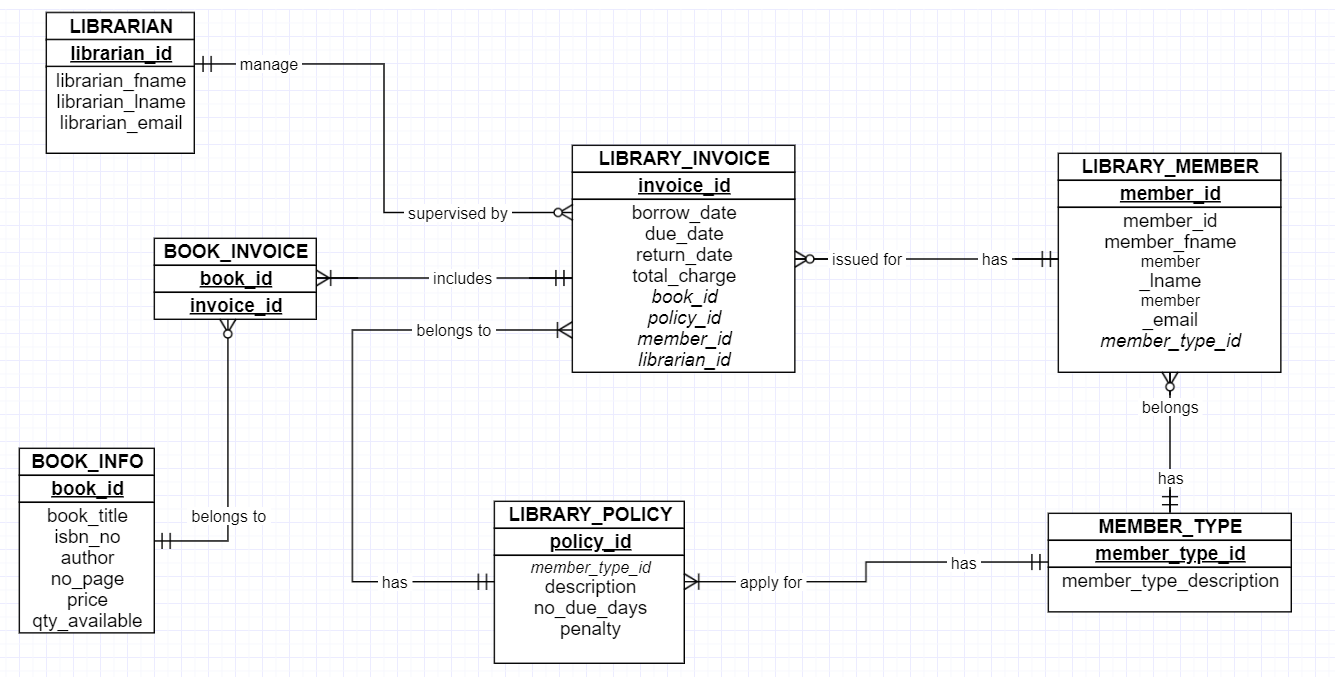
Group 4: ER Diagram for Library system

**ER diagram before normalization**





**ER diagram after normalization**



|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **LIBRARY\_INVOICE** | | | | | |
| **invoice\_id** | borrow\_date | return\_date | ***book\_id*** | *member\_id* | *librarian\_id* |
| inv\_001 | 1/20/2019 | 1/27/2019 | bk\_001 | 1 | 1 |
| inv\_001 | 1/20/2019 | 1/27/2019 | bk\_002 | 2 | 1 |
| inv\_002 | 3/2/2019 | 3/30/2019 | bk\_003 | 2 | 1 |
| inv\_003 | 1/20/2019 | 1/28/2019 | bk\_004 | 3 | 1 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **BOOK\_INFO** | | | | | | |
| **book\_id** | book\_title | isbn\_no | author | no\_page | price | Qty\_available |
| Bk\_001 | Big Data Fundamental | Isbn\_0001 | ABC\_0001 | 123 | $85 | 4 |
| Bk\_002 | Relational Database | Isbn\_0001 | ABC\_0002 | 181 | $125 | 3 |
| Bk\_003 | Cloud Computing Administration Guide | Isbn\_0001 | ABC\_0003 | 256 | $200 | 2 |
| Bk\_004 | Hyper-V Virtualization | Isbn\_0001 | ABC\_0004 | 198 | $155 | 5 |

|  |  |
| --- | --- |
| BOOK\_INVOICE | |
| book\_id | invoice\_id |
|  |  |
|  |  |
|  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **LIBRARY\_CARD** | | | |
| **card\_type\_id** | description | no\_due\_days | penalty/over-due day |
| 1 | Student | 7 | $5 |
| 2 | Instructor | 90 | $2 |
| 3 | Others | 5 | $7 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CARD\_MEMBER\_INFO** | | | | |
| **member\_id** | member\_fname | member\_fname | email | *card\_type\_id* |
| C0770339 | Cuong | Bui | C0770339@mylambton.ca | 1 |
| C0769944 | Chiranjeev | Singh | [C0760944@mylambton.ca](mailto:C0760944@mylambton.ca) | 1 |
| C0765460 | Shanel | Pinto | [C0765460@mylambton.ca](mailto:C0765460@mylambton.ca) | 1 |
| T0434343 | Asem | Omari | Asem.omari@cestarcollege.com | 2 |

|  |  |  |  |
| --- | --- | --- | --- |
| LIBRARRIAN | | | |
| **librarian\_id** | librarian\_fname | librarian\_lname | librarian\_email |
| lib\_001 | Alice | Tuhn | Alice.tuhn@librarycollege.ca |
| lib\_002 | Tom | Cruze | Tom.cruze@librarycollege.ca |
| lib\_003 | John | Walker | John.walker @librarycollege.ca |
| lib\_004 | Rick | David | Rick.david @librarycollege.ca |