

SCHOOL OF COMPUTER SCIENCES

UNIVERSITI SAINS MALAYSIA

CMT221/CMM222: Database Organization and Design

Semester 1, Academic Session: 2021/2022

**System Implementation**

*Group 14*

*Case Study 03:*

***Avade University Library Management Database System***

| Name | Matric No. | USM Email | Module | Role | Core/Minor |
| --- | --- | --- | --- | --- | --- |
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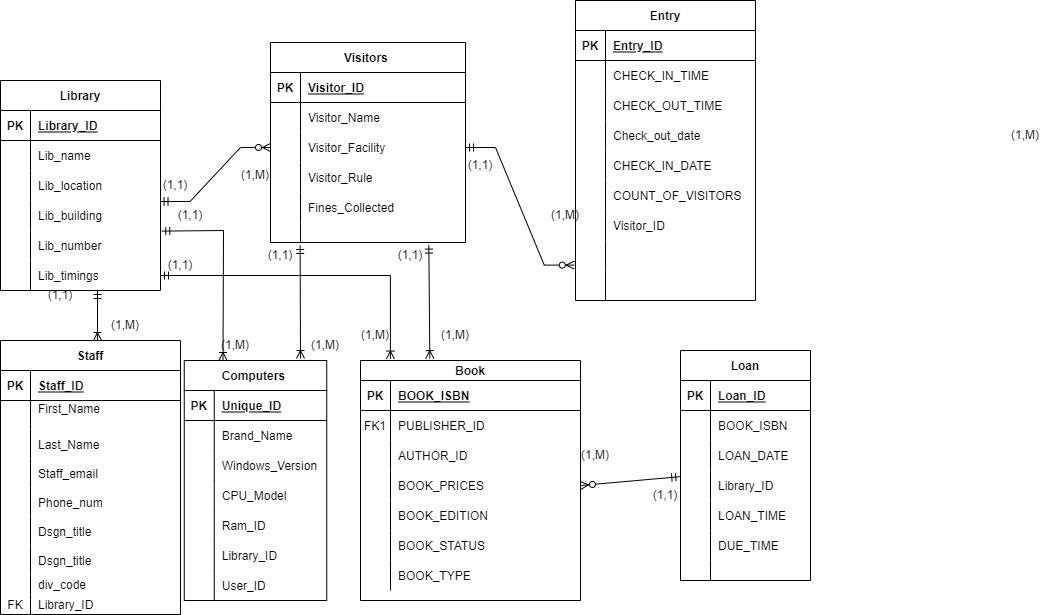
Date of Submission

6 February 2022

**1.0 Business Rules and Partial ERDs**

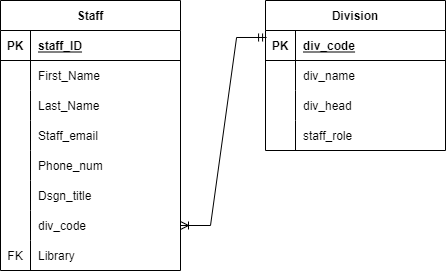
**Module 1: Library**

* Each Library have many books
* Each Library has many computers present
* Each computer is only present at one library.
* Each Library can have many visitors .
* Each visitor can only be present at one library
* Each Library has many staffs.
* Each staff is assigned to one library.
* Each visitor can loan many books
* Each book can be loaned by one visitor.



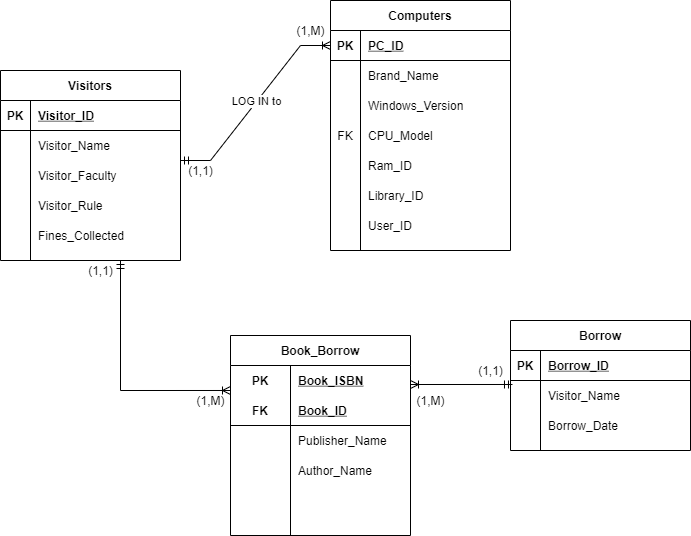
**Module 2: Staff Information**

* A unique ID is assigned to each Staff.
* Each Staff is assigned to Each Division. A division can have many staff.
* Each Staff have a Designated Tile.
* Each staff have unique Details.
* Many Roles can be handled by a Staff
* Each staff belongs to a library



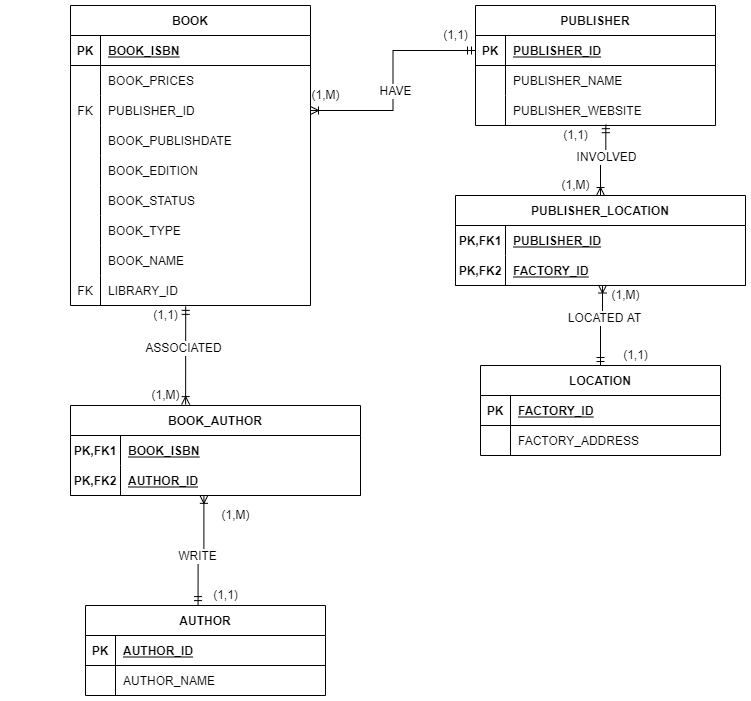
**Module 3: Visitors Information**

* A visitor can borrow many books.
* Each book can be borrowed by many visitors.
* A visitor can use many computers.
* A computer can be used by many visitors.
* A visitor can be fined many time for not returning borrowed book.

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**Module 4: Book Information**

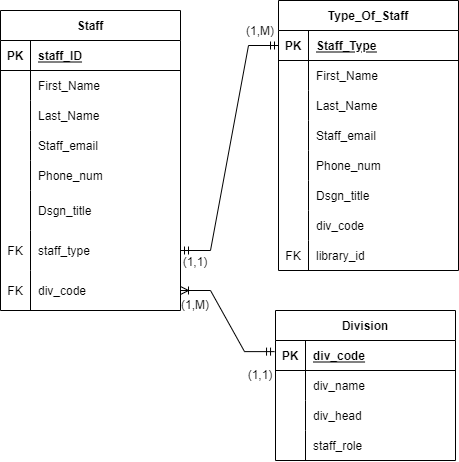
* Each book can only have one publisher.
* Each publisher can publish many books
* Each book can have many authors.
* Each authors can write many books
* Each publisher can have many printing locations
* Each printing location can have more than one publisher
* Each visitor can borrow many books.
* Each book can be borrowed by many visitors



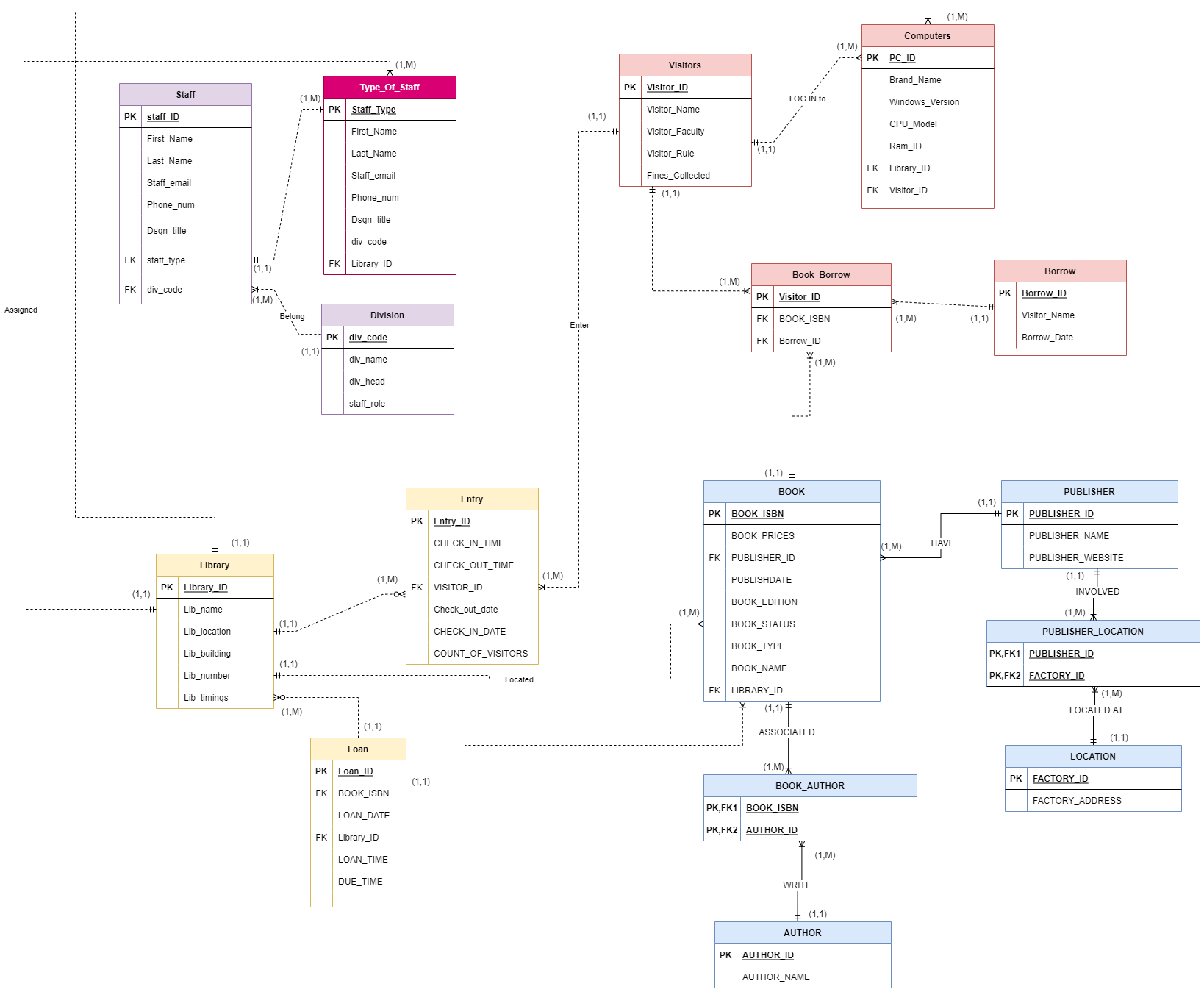
**Section 2.0**

**Module: Staff**

* **Business Rule:**
* A Staff belongs to only one type.
* Each Staff is assigned to Each Division. A division can have many staff.
* **Partial ERD**



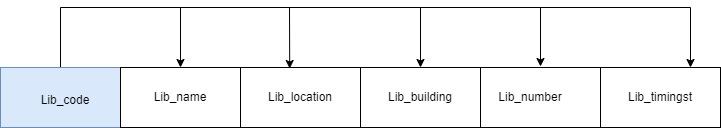
**2.0 Extended ERD (EERD)**

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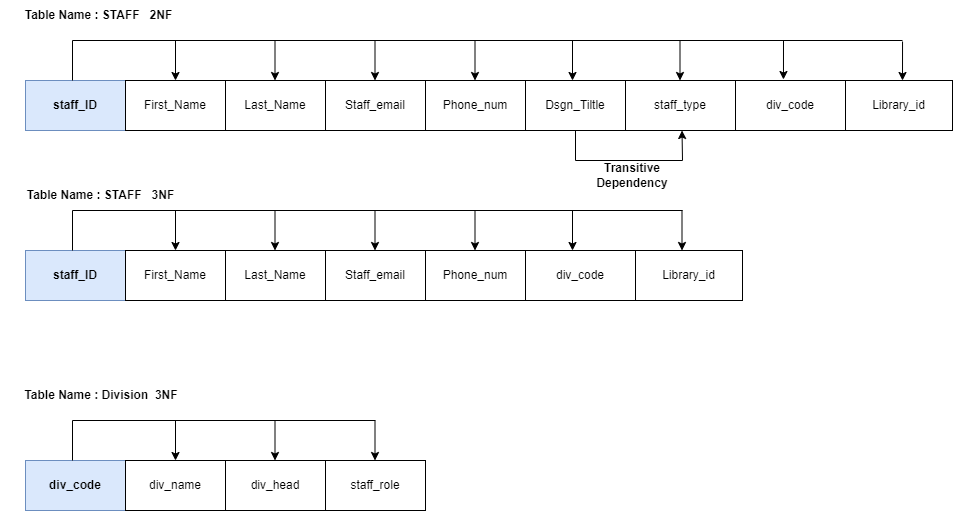
**3.0 Normalization**

**Module 1: Library Information – Abdul Rahman Rana Tariq**

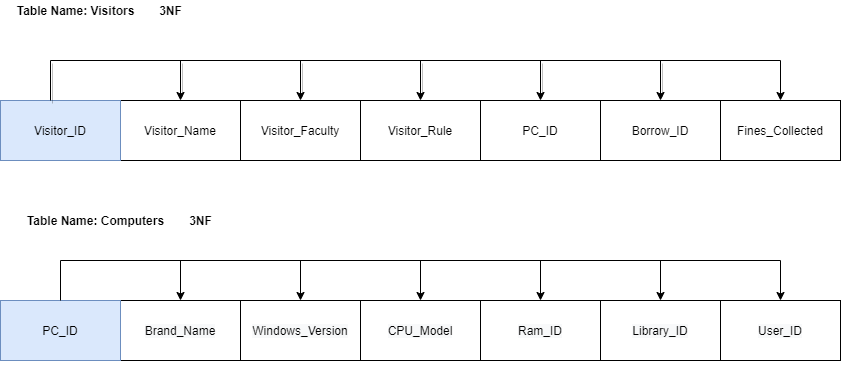
**2NF Table Name: Library**

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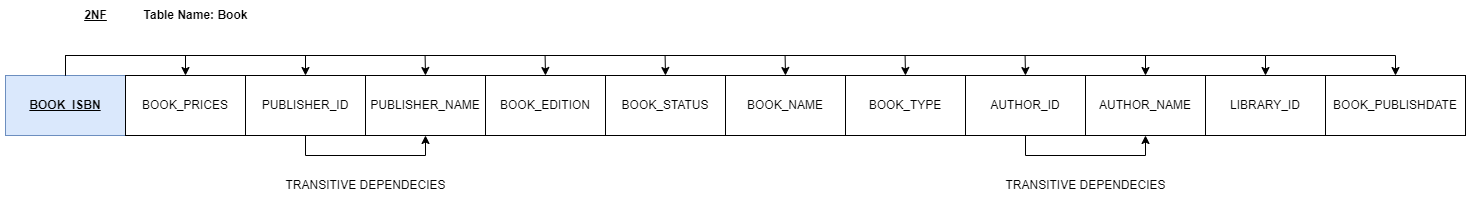
**Module 2: Staff – Faizal Salim**

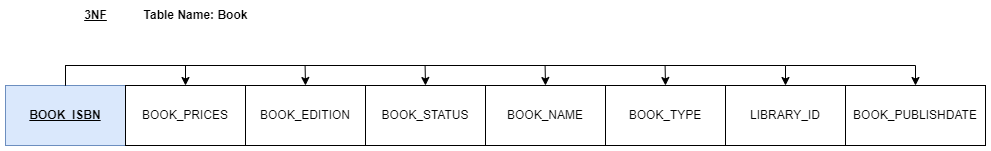
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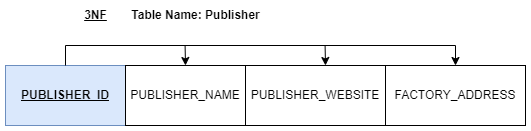
**Module 3: Visitors Information – Anjumanara Athina**

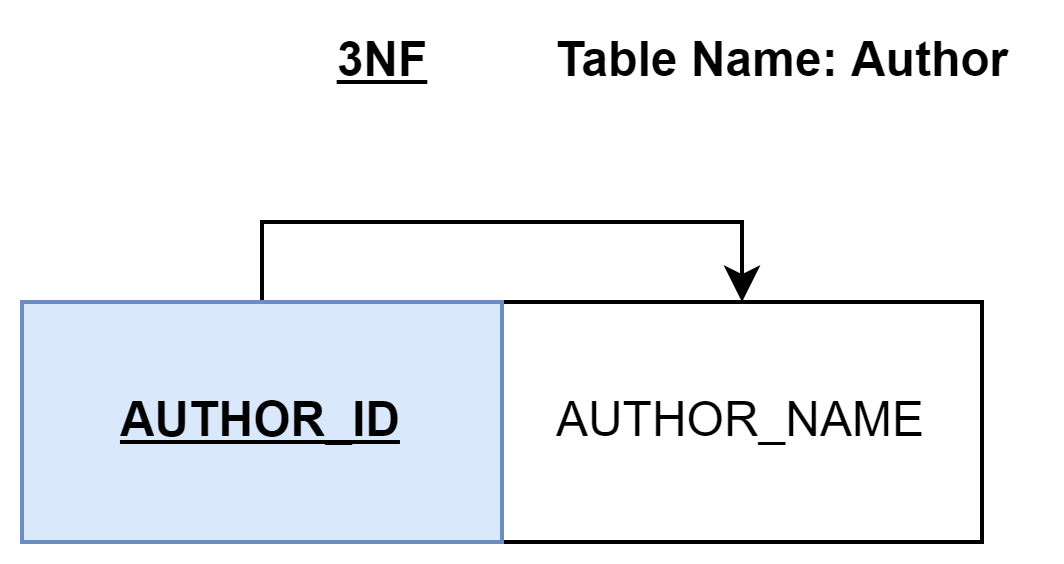
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**Module 4: Books Information - Mohammad Syaqir Bin Zahir**

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**4.0 Data Dictionary**

| Table Name | Attribute Name | Contents | Data Type | Format | Range | Required | PK or FK | FK Referenced Table |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| STAFF | staff\_ID | Staff ID | NUMBER(6) | ###### | NA | Y | PK |  |
|  | First\_Name | First Name | VARCHAR2(20) | XXXXXXXXX  XXXXXXXXX  X | NA | Y |  |  |
|  | Last\_Name | Last Name | VARCHAR2(20) | XXXXXXXXX  XXXXXXXXX  X | NA | Y |  |  |
|  | Staff\_email | Staff Email | VARCHAR2(20) | XXXXXXXXX  XXXXXXXXX  X | NA | Y |  |  |
|  | Phone\_num | Phone Number | NUMBER(11) | ########### | NA | Y |  |  |
|  | Dsgn\_title | Designation Title | VARCHAR2(20) | XXXXXXXXX  XXXXXXXXX  X | NA | Y |  |  |
|  | Staff\_Type | Staff Type | VARCHAR2(20) | XXXXXXXXX  XXXXXXXXX  X | NA | Y | FK | Type\_of\_staff |
|  | div\_code | Division Code | NUMBER(5) | ##### | NA | Y | FK | Division |
|  | Library\_id | Library ID | NUMBER(6) | ###### | NA | Y |  |  |
| Type\_of\_staff | Staff\_Type | Staff Type | VARCHAR2(20) | XXXXXXXXX  XXXXXXXXX  X | NA | Y | PK |  |
|  | First\_Name | First Name | VARCHAR2(20) | XXXXXXXXX  XXXXXXXXX  X | NA | Y |  |  |
|  | Last\_Name | Last Name | VARCHAR2(20) | XXXXXXXXX  XXXXXXXXX  X | NA | Y |  |  |
|  | Staff\_email | Staff Email | VARCHAR2(20) | XXXXXXXXX  XXXXXXXXX  X | NA | Y |  |  |
|  | Phone\_num | Phone Number | NUMBER(11) | ########### | NA | Y |  |  |
|  | Dsgn\_title | Designation Title | VARCHAR2(20) | XXXXXXXXX  XXXXXXXXX  X | NA | Y |  |  |
|  | div\_code | Division Code | NUMBER(5) | ##### | NA | Y | FK | Division |
|  | Library\_id | Library ID | NUMBER(6) | ###### | NA | Y | FK | Library |
| Division | div\_code | Division Code | NUMBER(5) | ##### | NA | Y | PK |  |
|  | div\_name | Division Name | VARCHAR2(20) | XXXXXXXXX  XXXXXXXXX  X | NA | Y |  |  |
|  | div\_head | Division Head | VARCHAR2(20) | XXXXXXXXX  XXXXXXXXX  X | NA | Y |  |  |
|  | staff\_role | Staff Role | VARCHAR2(20) | XXXXXXXXX  XXXXXXXXX  X | NA | Y |  |  |
| Book | Book\_ISBN | Book ISBN | VARCHAR2(17) | XXXXXXXX  XXXXXXXXX | NA | Y | PK |  |
|  | Book\_Name | Book Name | VARCHAR2(40) | XXXXXXXXX  XXXXXXXXX  XXXXXXXXX  XXXXXXXXX  XXXX | NA | Y |  |  |
|  | Book\_Publishdate | Book Publish date | NUMBER(4) | #### | NA | Y |  |  |
|  | Book\_Prices | Book Prices | NUMBER(5,2) | RM  ###.## | NA |  |  |  |
|  | Book\_Edition | Book Edition | NUMBER(2) | ## | NA |  |  |  |
|  | Book\_Status | Book Status | VARCHAR2(10) | XXXXXXXX  XX | NA | Y |  |  |
|  | Book\_Type | Book Type | VARCHAR2(20) | XXXXXXXXX  XXXXXXXXX  XX | NA |  |  |  |
|  | Publisher\_ID | Publisher ID | VARCHAR2(6) | XXXXXX | NA |  | FK | Publisher |
|  | Library ID | Library Code | Number(6) | XXXXXX | NA |  | FK | Library |
| Publisher | Publisher\_ID | Publisher ID | VARCHAR2(6) | XXXXXX | NA | Y | PK |  |
|  | Publisher\_  Name | Publisher Name | VARCHAR2(18) | XXXXXXXXX  XXXXXXXXX | NA | Y |  |  |
|  | Publisher\_  Website | Publisher Website | VARCHAR2(20) | XXXXXXXXX  XXXXXXXXX  XX | NA | Y |  |  |
|  | Factory\_Address | Factory Location | VARCHAR2(18) | XXXXXXXXX  XXXXXXXXX | NA | Y |  |  |
| Author | Author\_ID | Author ID | VARCHAR2(5) | XXXXX | NA | Y | PK |  |
|  | Author\_Name | Author Name | VARCHAR2(20) | XXXXXXXXX  XXXXXXXXX  XX | NA | Y |  |  |
| Library | Library\_ID | Library Code | Number(6) | ###### | NA | Y | PK |  |
|  | Lib\_name | Liibrary Name | VARCHAR2(20) | XXXXXXXXXXXXXXXXXXXX | NA | Y |  |  |
|  | Lib\_location | Library Location | VARCHAR2(10) | XXXXXXXXXX | NA | Y |  |  |
|  | Lib\_number | Library Number | Number(11) | ########### | NA | Y |  |  |
|  | Lib\_timings | Library Timings | VARCHAR2(20) | XXXXXXXXXXXXXXXXXXXXX | NA | Y |  |  |
| Entry | Entry\_ID | Entry\_ID | NUMBER(6) | ###### | NA | Y | PK |  |
|  | CHECK\_IN\_TIME | CHECK IN TIME | VARCHAR2 (10) | XXXXXXXXXX | NA | Y |  |  |
|  | CHECK\_OUT\_TIME | CHECK OUT TIME | VARCHAR2 (10) | XXXXXXXXXX | NA | Y |  |  |
|  | Visitor\_ID | Visitor ID | NUMBER(5) | XXXXXXXXXX | NA | Y | FK |  |
|  | CHECK\_OUT\_DATE | Check out date | Date | YYYY-MM-DD | NA | Y |  |  |
|  | CHECK\_IN\_DATE | Check in date | Date | YYYY-MM-DD | NA | Y |  |  |
|  | COUNT\_OF\_VISITORS | VISITOR COUNT | NUMBER(6) | XXXXXX | NA | Y |  |  |
| Loan | Loan\_ID | Loan ID | NUMBER(6) | XXXXXX | NA | Y | PK |  |
|  | BOOK\_ISBN | Book ISBN | VARCHAR2(17) | XXXXXXXX  XXXXXXXXX | NA | Y | FK |  |
|  | LOAN\_DATE | Date of loan | Date | YYYY-MM-DD | NA | Y |  |  |
|  | Library\_ID | Library ID | NUMBER(6) | ###### | NA | Y | FK |  |
|  | LOAN\_TIME | Time of Loan | VALCHAR(14) | XXXXXXXXXXXXXXX | NA | Y |  |  |
|  | DUE\_TIME | TIME of return | VALCHAR(14) | XXXXXXXXXXXXXX | NA | Y |  |  |
| VISITORS | Visitor\_ID | Visitor ID | NUMBER(5) | ##### | NA | Y | PK |  |
|  | Visitor\_Name | Visitor Name | VARCHAR2(20) | XXXXXXXXXXXXXXXXXXXX | NA | Y |  |  |
|  | Visitor\_Faculty | Visitor Faculty | VARCHAR2(20) | XXXXXXXXXXXXXXXXXXXX | NA | Y |  |  |
|  | Visitor\_Rule | Visitor Rule | NUMBER(6) | XXXXXX | NA | Y |  |  |
|  | PC\_ID | PC ID | VARCHAR2(10) | XXXXXXXXXX | NA | Y | FK |  |
|  | Borrow\_ID | Borrow ID | VARCHAR2(10) | XXXXXXXXXX | NA | Y | FK |  |
|  | Fines\_Collected | Fines Collected | NUMBER(5,2) | RM  ###.## | NA | Y |  |  |
| COMPUTERS | PC\_ID | PC ID | VARCHAR2(10) | XXXXXXXXXX | NA | Y | PK |  |
|  | Brand\_Name | Brand Name | VARCHAR2(20) | XXXXXXXXXXXXXXXXXXXX | NA | Y |  |  |
|  | Windows\_Version | Windows Version | VARCHAR2(10) | XXXXXXXXXX | NA | Y |  |  |
|  | CPU\_Model | CPU Model | VARCHAR2(20) | XXXXXXXXXXXXXXXXXXXX | NA | Y |  |  |
|  | Ram\_ID | Ram ID | VARCHAR2(10) | XXXXXXXXXX | NA | Y | FK |  |
|  | Library\_ID | Library ID | NUMBER(6) | ###### | NA | Y | FK |  |
|  | User\_ID | User ID | VARCHAR2(10) | XXXXXXXXXX | NA | Y | FK |  |

**5.0 Database Implementation**

**5.1 DDL**

**Staff SQL**

| DROP TABLE STAFF;  CREATE TABLE STAFF  (  staff\_ID NUMBER(6) NOT NULL,  First\_Name VARCHAR2(20) NOT NULL,  Last\_Name VARCHAR2(20) NOT NULL,  Staff\_email VARCHAR2(20) NOT NULL,  Phone\_num NUMBER(11) NOT NULL,  Dsgn\_title VARCHAR2(20) NOT NULL,  Staff\_Type VARCHAR2(20) NOT NULL,  div\_code NUMBER(5) NOT NULL,  CONSTRAINT STAFF\_PK PRIMARY KEY (staff\_ID)    );  INSERT INTO STAFF (STAFF\_ID, FIRST\_NAME, LAST\_NAME, STAFF\_EMAIL, PHONE\_NUM, DSGN\_TITLE, STAFF\_TYPE, DIV\_CODE)  VALUES(112233,'AHMED','FURQAN','AHMED@USM.MY',0112345678,'Manager','Librarian',14525,123456);  INSERT INTO STAFF (STAFF\_ID, FIRST\_NAME, LAST\_NAME, STAFF\_EMAIL, PHONE\_NUM, DSGN\_TITLE, STAFF\_TYPE, DIV\_CODE)  VALUES(223344,'NG','Weiloon','ngwl@USM.MY',0112346678,'Manager','Librarian',14526,123456);  INSERT INTO STAFF (STAFF\_ID, FIRST\_NAME, LAST\_NAME, STAFF\_EMAIL, PHONE\_NUM, DSGN\_TITLE, STAFF\_TYPE, DIV\_CODE)  VALUES(124533,'Mohammed','Akmal','akmal@USM.MY',0112348678,'Manager','Librarian',14525,123456);  INSERT INTO STAFF (STAFF\_ID, FIRST\_NAME, LAST\_NAME, STAFF\_EMAIL, PHONE\_NUM, DSGN\_TITLE, STAFF\_TYPE, DIV\_CODE)  VALUES(125283,'Arif','Rasheed','arif@USM.MY',0112045678,'Manager','Librarian',14525,123456);  INSERT INTO STAFF (STAFF\_ID, FIRST\_NAME, LAST\_NAME, STAFF\_EMAIL, PHONE\_NUM, DSGN\_TITLE, STAFF\_TYPE, DIV\_CODE)  VALUES(132653,'Abdul','Raqeeb','raqeeb@USM.MY',0182345678,'Manager','Librarian',14525,123456);  INSERT INTO STAFF (STAFF\_ID, FIRST\_NAME, LAST\_NAME, STAFF\_EMAIL, PHONE\_NUM, DSGN\_TITLE, STAFF\_TYPE, DIV\_CODE)  VALUES(142473,'Rahif','Ashraf','rahif@USM.MY',0122345678,'Manager','Librarian',14525,123456);  INSERT INTO STAFF (STAFF\_ID, FIRST\_NAME, LAST\_NAME, STAFF\_EMAIL, PHONE\_NUM, DSGN\_TITLE, STAFF\_TYPE, DIV\_CODE)  VALUES(175953,'Nur','Hafizul','hafizul@USM.MY',0152345678,'Manager','Librarian',14525,123456);  INSERT INTO STAFF (STAFF\_ID, FIRST\_NAME, LAST\_NAME, STAFF\_EMAIL, PHONE\_NUM, DSGN\_TITLE, STAFF\_TYPE, DIV\_CODE)  VALUES(140583,'Chai','wen','chai@USM.MY',0132345678,'Manager','Librarian',14525,123456);  DROP TABLE TYPE\_OF\_STAFF  CREATE TABLE TYPE\_OF\_STAFF  (  Staff\_Type VARCHAR2(20) NOT NULL,  First\_Name VARCHAR2(20) NOT NULL,  Last\_Name VARCHAR2(20) NOT NULL,  Staff\_email VARCHAR2(20) NOT NULL,  Phone\_num NUMBER(11) NOT NULL,  Dsgn\_title VARCHAR2(20) NOT NULL,  Staff\_Type VARCHAR2(20) NOT NULL,  div\_code NUMBER(5) NOT NULL,  Library\_id NUMBER(6) NOT NULL,  CONSTRAINT STAFF\_TYPE\_PK PRIMARY KEY (STAFF\_TYPE)    );  INSERT INTO TYPE\_STAFF (STAFF\_TYPE, FIRST\_NAME, LAST\_NAME, STAFF\_EMAIL, PHONE\_NUM, DSGN\_TITLE, DIV\_CODE, LIBRARY\_ID)  VALUES('Librarian','AHMED','FURQAN','AHMED@USM.MY',0112346678,'Economist',14528,123456);  INSERT INTO TYPE\_STAFF (STAFF\_TYPE, FIRST\_NAME, LAST\_NAME, STAFF\_EMAIL, PHONE\_NUM, DSGN\_TITLE, DIV\_CODE, LIBRARY\_ID)  VALUES('Non-Librarian','Mohammed','Akmal','akmal@USM.MY',0112345678,'CS Support',14520,123456);  INSERT INTO TYPE\_STAFF(STAFF\_TYPE, FIRST\_NAME, LAST\_NAME, STAFF\_EMAIL, PHONE\_NUM, DSGN\_TITLE, DIV\_CODE, LIBRARY\_ID)  VALUES('Librarian','Ng','Weiloon','ngwl@USM.MY',0112348678,'Economist',14526,123456);  INSERT INTO TYPE\_STAFF (STAFF\_TYPE, FIRST\_NAME, LAST\_NAME, STAFF\_EMAIL, PHONE\_NUM, DSGN\_TITLE, DIV\_CODE, LIBRARY\_ID)  VALUES('Librarian','Arif','Rasheed','arif@USM.MY',0112045678,'Business Analyst',14525,123456);  INSERT INTO TYPE\_STAFF (STAFF\_TYPE, FIRST\_NAME, LAST\_NAME, STAFF\_EMAIL, PHONE\_NUM, DSGN\_TITLE, DIV\_CODE, LIBRARY\_ID)  VALUES('Librarian','Abdul','Raqeeb','raqeeb@USM.MY',0182345678,'Historian',14527,123456);  INSERT INTO TYPE\_STAFF (STAFF\_TYPE, FIRST\_NAME, LAST\_NAME, STAFF\_EMAIL, PHONE\_NUM, DSGN\_TITLE, DIV\_CODE, LIBRARY\_ID)  VALUES('Librarian','Rahif','Ashraf','rahif@USM.MY',0122345678,'Geologist',14529,123456);  INSERT INTO TYPE\_STAFF (STAFF\_TYPE, FIRST\_NAME, LAST\_NAME, STAFF\_EMAIL, PHONE\_NUM, DSGN\_TITLE, DIV\_CODE, LIBRARY\_ID)  VALUES('Librarian','Nur','Hafizul','hafizul@USM.MY',0152345678,'Economist',14523,123456);  INSERT INTO TYPE\_STAFF (STAFF\_TYPE, FIRST\_NAME, LAST\_NAME, STAFF\_EMAIL, PHONE\_NUM, DSGN\_TITLE, DIV\_CODE, LIBRARY\_ID)  VALUES('Non-Librarian','Chai','wen','chai@USM.MY',0132345678,'Geologist',14521,123456);  DROP TABLE DIVISION;  CREATE TABLE DIVISION  (  div\_code NUMBER(5) NOT NULL,  div\_name VARCHAR2(20) NOT NULL,  div\_head VARCHAR2(20) NOT NULL,  staff\_role VARCHAR2(20) NOT NULL,    CONSTRAINT div\_PK PRIMARY KEY (div\_code)  );  INSERT INTO DIVISION (div\_code, div\_name, div\_head, staff\_role)  VALUES(14525, 'Literature', 'Arif', 'Book Keeping')  INSERT INTO DIVISION (div\_code, div\_name, div\_head, staff\_role)  VALUES(14520, 'History', 'Akmal', 'IT Support')  INSERT INTO DIVISION (div\_code, div\_name, div\_head, staff\_role)  VALUES(14526, 'Economy', 'Ng Weiloon', 'Chief Librarian')  INSERT INTO DIVISION (div\_code, div\_name, div\_head, staff\_role)  VALUES(14527, 'Business', 'Raqeeb', 'Manager')  INSERT INTO DIVISION (div\_code, div\_name, div\_head, staff\_role)  VALUES(14528, 'Geography', 'Furqan', 'Manager')  INSERT INTO DIVISION (div\_code, div\_name, div\_head, staff\_role)  VALUES(14529, 'Science', 'Rahif', 'Book Keeping')  INSERT INTO DIVISION (div\_code, div\_name, div\_head, staff\_role)  VALUES(14523, 'Computer', 'Hafizul', 'Book Keeping')  INSERT INTO DIVISION (div\_code, div\_name, div\_head, staff\_role)  VALUES(14521, 'Astronomy', 'Chai', 'Front Desk') |
| --- |

**Visitors SQL**

| DROP TABLE COMPUTERS;  DROP TABLE VISITORS;  CREATE TABLE VISITORS(  VISITOR\_ID NUMBER(5) NOT NULL,  VISITOR\_NAME VARCHAR2(20) NOT NULL,  VISITOR\_FACULTY VARCHAR2(20) NOT NULL,  VISITOR\_RULE NUMBER(6) NOT NULL,  PC\_ID VARCHAR2(10) NOT NULL,  BORROW\_ID VARCHAR2(10) NOT NULL,  FINES\_COLLECTED NUMBER(5,2) NOT NULL,  CONSTRAINT VISITORS\_pk PRIMARY KEY (VISITOR\_ID)  );  INSERT INTO VISITORS (VISITOR\_ID, VISITOR\_NAME, VISITOR\_FACULTY, VISITOR\_RULE, PC\_ID, BORROW\_ID, FINES\_COLLECTED)  VALUES(15510,'EVA', 'EDUCATION',123456,'KTNV-3X6W','AB23',6);  INSERT INTO VISITORS (VISITOR\_ID, VISITOR\_NAME, VISITOR\_FACULTY, VISITOR\_RULE, PC\_ID, BORROW\_ID, FINES\_COLLECTED)  VALUES(15517,'SAMIA', 'SCIENCE',748583,'GDSS-673K','RE43',8);  INSERT INTO VISITORS (VISITOR\_ID, VISITOR\_NAME, VISITOR\_FACULTY, VISITOR\_RULE, PC\_ID, BORROW\_ID, FINES\_COLLECTED)  VALUES(14231,'TULI', 'ARTS',872343,'JKDG-874M','KF14',9);  INSERT INTO VISITORS (VISITOR\_ID, VISITOR\_NAME, VISITOR\_FACULTY, VISITOR\_RULE, PC\_ID, BORROW\_ID, FINES\_COLLECTED)  VALUES(15222,'JIDNY', 'CLASSICS',256343,'FDIH-U443','AG87',11);  INSERT INTO VISITORS (VISITOR\_ID, VISITOR\_NAME, VISITOR\_FACULTY, VISITOR\_RULE, PC\_ID, BORROW\_ID, FINES\_COLLECTED)  VALUES(11231,'SIAM', 'ENGINEERING',374788,'UHTD-47RT','PA32',13);  INSERT INTO VISITORS (VISITOR\_ID, VISITOR\_NAME, VISITOR\_FACULTY, VISITOR\_RULE, PC\_ID, BORROW\_ID, FINES\_COLLECTED)  VALUES(14121,'RUMI', 'COMMERCE',215476,'HDGF-64T4','JS74',15);  INSERT INTO VISITORS (VISITOR\_ID, VISITOR\_NAME, VISITOR\_FACULTY, VISITOR\_RULE, PC\_ID, BORROW\_ID, FINES\_COLLECTED)  VALUES(13445,'HAZERA', 'GRADUATE STUDIES',198376,'OIYF-3784','AH26',20);  CREATE TABLE COMPUTERS(  PC\_ID VARCHAR2(10) NOT NULL,  BRAND\_NAME VARCHAR2(20) NOT NULL,  WINDOWS\_VERSION VARCHAR2(10) NOT NULL,  CPU\_MODEL VARCHAR2(20) NOT NULL,  RAM\_ID VARCHAR2(10) NOT NULL,  USER\_ID VARCHAR2(10) NOT NULL,  lIBRARY\_ID VARCHAR2(6) NOT NULL,  CONSTRAINT PC\_ID PRIMARY KEY (PC\_ID)  );  INSERT INTO COMPUTERS (PC\_ID, BRAND\_NAME, WINDOWS\_VERSION, CPU\_MODEL, RAM\_ID, USER\_ID, lIBRARY\_ID)  VALUES('KTNV-3X6W','DELL', 'WINDOWS-10','Intel',9201,'HK100158',123456);  INSERT INTO COMPUTERS (PC\_ID, BRAND\_NAME, WINDOWS\_VERSION, CPU\_MODEL, RAM\_ID, USER\_ID, lIBRARY\_ID)  VALUES('GDSS-673K','HP', 'WINDOWS-10','Intel',4226,'LG534UA',345732);  INSERT INTO COMPUTERS (PC\_ID, BRAND\_NAME, WINDOWS\_VERSION, CPU\_MODEL, RAM\_ID, USER\_ID, lIBRARY\_ID)  VALUES('JKDG-874M','LENOVO', 'WINDOWS-10','Intel',1355,'X169607',246535);  INSERT INTO COMPUTERS (PC\_ID, BRAND\_NAME, WINDOWS\_VERSION, CPU\_MODEL, RAM\_ID, USER\_ID, lIBRARY\_ID)  VALUES('FDIH-U443','APPLE', 'macOS-11','M1 Chip',3265,'JBU3470',165342);  INSERT INTO COMPUTERS (PC\_ID, BRAND\_NAME, WINDOWS\_VERSION, CPU\_MODEL, RAM\_ID, USER\_ID, lIBRARY\_ID)  VALUES('UHTD-47RT','MICROSOFT', 'WINDOWS-8','Intel',9367,'PC50365',784432);  INSERT INTO COMPUTERS (PC\_ID, BRAND\_NAME, WINDOWS\_VERSION, CPU\_MODEL, RAM\_ID, USER\_ID, lIBRARY\_ID)  VALUES('HDGF-64T4','ASUS', 'WINDOWS-10','Intel',6537,'UC123456',983446);  INSERT INTO COMPUTERS (PC\_ID, BRAND\_NAME, WINDOWS\_VERSION, CPU\_MODEL, RAM\_ID, USER\_ID, lIBRARY\_ID)  VALUES('OIYF-3784','ACER', 'WINDOWS-10','Intel',7843,'FP23568',783332); |
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**Library SQL**

| DROP TABLE LOAN\_CLASS;  DROP TABLE ENTRY\_CLASS;  DROP TABLE LIBRARY\_CLASS;  CREATE TABLE LIBRARY\_CLASS  (  LIBRARY\_ID NUMBER(6)NOT NULL,  Lib\_Name VARCHAR2(20)NOT NULL,  LIB\_Location VARCHAR2(20)NOT NULL,  LIB\_Number NUMBER(11)NOT NULL,  LIB\_timings VARCHAR2(20)NOT NULL,  CONSTRAINT LIBRARY\_CLASS\_pk PRIMARY KEY (LIBRARY\_ID)  );  INSERT INTO LIBRARY\_CLASS VALUES ('000001' ,'AVADE LIBRARY1', 'PHS 1','01164071674', 'FROM 10 AM TO 11PM');  SELECT \* FROM LIBRARY\_CLASS;  INSERT INTO LIBRARY\_CLASS VALUES ('000002' ,'AVADE LIBRARY2', 'PHS 2','01623573160', 'FROM 9 AM TO 6PM');  SELECT \* FROM LIBRARY\_CLASS;  INSERT INTO LIBRARY\_CLASS VALUES ('000003' ,'AVADE LIBRARY3', 'PHS 3','01623573165', 'FROM 8 AM TO 7PM');  CREATE TABLE ENTRY\_CLASS  (  ENTRY\_ID NUMBER(6) NOT NULL,  CHECK\_IN\_TIME VARCHAR2(10) NOT NULL,  CHECK\_OUT\_TIME VARCHAR2(10) NOT NULL,  VISITOR\_ID NUMBER(6) NOT NULL,  CHECK\_IN\_DATE DATE NOT NULL,  CHECK\_OUT\_DATE DATE NOT NULL,  COUNT\_OF\_VISITORS NUMBER(6) NOT NULL,  CONSTRAINT ENTRY\_pk PRIMARY KEY (ENTRY\_ID)  );  INSERT INTO ENTRY\_CLASS VALUES ('234551' ,'10:03 AM', '02:03 PM','140580', '01/01/2022', '01/01/2022','1');  SELECT \* FROM ENTRY\_CLASS;  INSERT INTO ENTRY\_CLASS VALUES ('112266' ,'9:03 AM', '11:03 AM','130561', '02/01/2022', '02/01/2022','12');  SELECT \* FROM ENTRY\_CLASS;  INSERT INTO ENTRY\_CLASS VALUES ('576543' ,'10:02 AM', '12:30 PM','143333', '04/01/2022', '04/01/2022','35');  SELECT \* FROM ENTRY\_CLASS;  INSERT INTO ENTRY\_CLASS VALUES ('576000' ,'8:02 AM', '5:03 PM','150592', '10/01/2022', '10/01/2022','55');  SELECT \* FROM ENTRY\_CLASS;  INSERT INTO ENTRY\_CLASS VALUES ('109764' ,'3:02 PM', '6:23 PM','198576', '11/01/2022', '11/01/2022','515');  SELECT \* FROM ENTRY\_CLASS;  INSERT INTO ENTRY\_CLASS VALUES ('473475' ,'9:02 AM', '5:13 PM','254572', '19/01/2022', '19/01/2022','755');  SELECT \* FROM ENTRY\_CLASS;  INSERT INTO ENTRY\_CLASS VALUES ('101234' ,'11:02 AM', '5:43 PM','340562', '21/01/2022', '21/01/2022','55');  SELECT \* FROM ENTRY\_CLASS;  INSERT INTO ENTRY\_CLASS VALUES ('506070' ,'11:02 AM', '7:13 PM','106572', '16/01/2022', '16/01/2022','755');  SELECT \* FROM ENTRY\_CLASS;  INSERT INTO ENTRY\_CLASS VALUES ('605000' ,'12:02 PM', '4:23 PM','809765', '19/01/2022', '19/01/2022','533');  SELECT \* FROM ENTRY\_CLASS;  INSERT INTO ENTRY\_CLASS VALUES ('700000' ,'3:02 PM', '8:23 PM','150592', '26/01/2022', '26/01/2022','85');  SELECT \* FROM ENTRY\_CLASS;  INSERT INTO ENTRY\_CLASS VALUES ('505000' ,'2:02 PM', '3:53 PM','255592', '27/01/2022', '27/01/2022','815');  SELECT \* FROM ENTRY\_CLASS;  INSERT INTO ENTRY\_CLASS VALUES ('503070' ,'1:00 PM', '5:10 PM','355539', '01/02/2022', '01/02/2022','925');  SELECT \* FROM ENTRY\_CLASS;  INSERT INTO ENTRY\_CLASS VALUES ('705900' ,'2:02 PM', '6:30 PM','255592', '27/01/2022', '27/01/2022','875');  SELECT \* FROM ENTRY\_CLASS;  INSERT INTO ENTRY\_CLASS VALUES ('107020' ,'08:02 PM', '9:50 PM','215592', '29/01/2022', '29/01/2022','5');  SELECT \* FROM ENTRY\_CLASS;  INSERT INTO ENTRY\_CLASS VALUES ('705050' ,'1:00 PM', '4:30 PM','155592', '28/01/2022', '28/01/2022','895');  SELECT \* FROM ENTRY\_CLASS;  INSERT INTO ENTRY\_CLASS VALUES ('108000' ,'9:02 PM', '7:23 PM','255592', '27/01/2022', '27/01/2022','815');  SELECT \* FROM ENTRY\_CLASS;  INSERT INTO ENTRY\_CLASS VALUES ('505750' ,'2:22 PM', '3:13 PM','255666', '12/01/2022', '12/01/2022','615');  SELECT \* FROM ENTRY\_CLASS;  INSERT INTO ENTRY\_CLASS VALUES ('175532' ,'2:33 PM', '3:33 PM','255592', '27/01/2022', '27/01/2022','835');  SELECT \* FROM ENTRY\_CLASS;  INSERT INTO ENTRY\_CLASS VALUES ('505080' ,'2:11 PM', '3:13 PM','476492', '23/01/2022', '23/01/2022','915');  SELECT \* FROM ENTRY\_CLASS;  INSERT INTO ENTRY\_CLASS VALUES ('235000' ,'10:02 AM', '11:03 AM','255592', '29/01/2022', '29/01/2022','875');  SELECT \* FROM ENTRY\_CLASS;  INSERT INTO ENTRY\_CLASS VALUES ('986754' ,'3:42 PM', '3:53 PM','285582', '29/01/2022', '29/01/2022','615');  CREATE TABLE LOAN\_CLASS  (  LOAN\_ID NUMBER(6) NOT NULL,  BOOK\_ISBN VARCHAR2(17) NOT NULL,  LOAN\_DATE DATE NOT NULL,  Library\_ID NUMBER(6) NOT NULL UNIQUE,  LOAN\_TIME VARCHAR2(14) NOT NULL,  DUE\_TIME DATE NOT NULL,  CONSTRAINT LOANID\_pk PRIMARY KEY (LOAN\_ID)  );  INSERT INTO LOAN\_CLASS VALUES ('101010' ,'1923454978907', '12/12/2020','000001', '12:02 PM,', '01/01/2021');  SELECT \* FROM LOAN\_CLASS;  INSERT INTO LOAN\_CLASS VALUES ('121213' ,'2843464908907', '22/12/2021','000002', '02:02 PM,', '11/01/2022');  SELECT \* FROM LOAN\_CLASS;  INSERT INTO LOAN\_CLASS VALUES ('431313' ,'5924554979997', '3/12/2020','000003', '12:02 PM,', '24/12/2020');  SELECT \* FROM LOAN\_CLASS;  INSERT INTO LOAN\_CLASS VALUES ('501012' ,'1723454978989', '10/12/2020','000002', '12:03 PM,', '31/12/2020');  SELECT \* FROM LOAN\_CLASS;  INSERT INTO LOAN\_CLASS VALUES ('609097' ,'2521454878907', '07/12/2020','000001', '11:02 AM,', '28/12/2020');  SELECT \* FROM LOAN\_CLASS;  INSERT INTO LOAN\_CLASS VALUES ('202010' ,'9923454978997', '06/12/2020','000002', '12:12 PM,', '01/01/2022');  SELECT \* FROM LOAN\_CLASS;  INSERT INTO LOAN\_CLASS VALUES ('301310' ,'2973454978987', '14/12/2020','000001', '10:22 AM,', '04/01/2022');  SELECT \* FROM LOAN\_CLASS;  INSERT INTO LOAN\_CLASS VALUES ('121213' ,'2824454978907', '12/12/2020','112334', '12:02 PM,', '01/01/2022');  SELECT \* FROM LOAN\_CLASS;  INSERT INTO LOAN\_CLASS VALUES ('101010' ,'1923454978907', '12/12/2020','112334', '12:02 PM,', '01/01/2022');  SELECT \* FROM LOAN\_CLASS; |
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**Books SQL**

| DROP TABLE Book;  CREATE TABLE Book  (  Book\_ISBN VARCHAR2(17),  Book\_Name VARCHAR2(50) NOT NULL,  Book\_Publishdate NUMBER(4) NOT NULL,  Book\_Prices NUMBER(5,2),  Book\_Edition VARCHAR2(20),  Book\_Status VARCHAR2(10),  Book\_Type VARCHAR2(20) NOT NULL,  Publisher\_ID VARCHAR2(6),  Library\_ID NUMBER(6),  CONSTRAINT BOOK\_PK PRIMARY KEY (Book\_ISBN),  CONSTRAINT BOOK\_PUBLISHER\_FK FOREIGN KEY (Publisher\_ID) REFERENCES Publisher(Publisher\_ID),  CONSTRAINT BOOK\_LIB\_FK FOREIGN KEY (LIBRARY\_ID) REFERENCES LIBRARY\_CLASS(LIBRARY\_ID)  );  ALTER TABLE LOAN\_CLASS  ADD CONSTRAINT BOOK\_LOAN\_CLASS\_FK FOREIGN KEY (BOOK\_ISBN) REFERENCES Book(Book\_ISBN);  INSERT INTO Book (BOOK\_ISBN,BOOK\_NAME,BOOK\_PUBLISHDATE,BOOK\_PRICES,BOOK\_EDITION,BOOK\_STATUS,BOOK\_TYPE)  VALUES (9780840049421,'MathematicsDiscrete Introduction',2000,299.95,'3','AVAILABLE','MATHEMATIC');  INSERT INTO Book (BOOK\_ISBN,BOOK\_NAME,BOOK\_PUBLISHDATE,BOOK\_PRICES,BOOK\_EDITION,BOOK\_STATUS,BOOK\_TYPE)  VALUES (9781337627900,'Database Systems: Design, Implementation',2018,199.95,'13','ON HOLD','COMPUTER SCIENCE');  INSERT INTO Book (BOOK\_ISBN,BOOK\_NAME,BOOK\_PUBLISHDATE,BOOK\_PRICES,BOOK\_EDITION,BOOK\_STATUS,BOOK\_TYPE)  VALUES (9781138578067,'A Practical Guide to Database Design',2018,105.00,'2','AVAILABLE','COMPUTER SCIENCE');  INSERT INTO Book (BOOK\_ISBN,BOOK\_NAME,BOOK\_PUBLISHDATE,BOOK\_PRICES,BOOK\_EDITION,BOOK\_STATUS,BOOK\_TYPE)  VALUES (9780134475585,'Horngrens Cost Accounting: A Managerial Emphasis',2017,392.50,'16','AVAILABLE','ACCOUNTING');  INSERT INTO Book (BOOK\_ISBN,BOOK\_NAME,BOOK\_PUBLISHDATE,BOOK\_PRICES,BOOK\_EDITION,BOOK\_STATUS,BOOK\_TYPE)  VALUES (9780134093413,'Campbell Biology (Campbell Biology Series)',2016,305.00,'11','AVAILABLE','SCIENCE');  INSERT INTO Book (BOOK\_ISBN,BOOK\_NAME,BOOK\_PUBLISHDATE,BOOK\_PRICES,BOOK\_EDITION,BOOK\_STATUS,BOOK\_TYPE)  VALUES (9780124095038,'Essentials of Stem Cell Biology',2013,125.00,'3','ON HOLD','SCIENCE');  INSERT INTO Book (BOOK\_ISBN,BOOK\_NAME,BOOK\_PUBLISHDATE,BOOK\_PRICES,BOOK\_EDITION,BOOK\_STATUS,BOOK\_TYPE)  VALUES (9780815341062,'Molecular Biology of the Cell, 5th Edition',2012,115.20,'5','AVAILABLE','SCIENCE');  INSERT INTO Book (BOOK\_ISBN,BOOK\_NAME,BOOK\_PUBLISHDATE,BOOK\_PRICES,BOOK\_EDITION,BOOK\_STATUS,BOOK\_TYPE)  VALUES (9780323396202,'Kinesiology: The Skeletal System and Muscle Function',2016,82.95,'3','AVAILABLE','SCIENCE');  INSERT INTO Book (BOOK\_ISBN,BOOK\_NAME,BOOK\_PUBLISHDATE,BOOK\_PRICES,BOOK\_EDITION,BOOK\_STATUS,BOOK\_TYPE)  VALUES (9780781792806,'Cardiac Nursing',2009,112.99,'6','ON HOLD','SCIENCE');  INSERT INTO Book (BOOK\_ISBN,BOOK\_NAME,BOOK\_PUBLISHDATE,BOOK\_PRICES,BOOK\_EDITION,BOOK\_STATUS,BOOK\_TYPE)  VALUES (9780321982384,'Linear Algebra and Its Applications',2014,112.99,'5','ON HOLD','MATHEMATIC');  INSERT INTO Book (BOOK\_ISBN,BOOK\_NAME,BOOK\_PUBLISHDATE,BOOK\_PRICES,BOOK\_EDITION,BOOK\_STATUS,BOOK\_TYPE)  VALUES (9781285195728,'Intermediate Algebra',2014,150.00,'10','AVAILABLE','MATHEMATIC');  INSERT INTO Book (BOOK\_ISBN,BOOK\_NAME,BOOK\_PUBLISHDATE,BOOK\_PRICES,BOOK\_EDITION,BOOK\_STATUS,BOOK\_TYPE)  VALUES (9781285740621,'Calculus',2015,112.99,'8','AVAILABLE','MATHEMATIC');  INSERT INTO Book (BOOK\_ISBN,BOOK\_NAME,BOOK\_PUBLISHDATE,BOOK\_PRICES,BOOK\_EDITION,BOOK\_STATUS,BOOK\_TYPE)  VALUES (9780321964038,'Calculus for the Life Sciences',2014,239.99,'2','AVAILABLE','MATHEMATIC');  INSERT INTO Book (BOOK\_ISBN,BOOK\_NAME,BOOK\_PUBLISHDATE,BOOK\_PRICES,BOOK\_EDITION,BOOK\_STATUS,BOOK\_TYPE)  VALUES (9780470587232,'Intermediate Accounting',2011,392.50,'14','AVAILABLE','ACCOUNTING');  INSERT INTO Book (BOOK\_ISBN,BOOK\_NAME,BOOK\_PUBLISHDATE,BOOK\_PRICES,BOOK\_EDITION,BOOK\_STATUS,BOOK\_TYPE)  VALUES (9781618531001,'Financial Accounting for MBAs, 6th Edition',2017,222.50,'6','AVAILABLE','ACCOUNTING');  INSERT INTO Book (BOOK\_ISBN,BOOK\_NAME,BOOK\_PUBLISHDATE,BOOK\_PRICES,BOOK\_EDITION,BOOK\_STATUS,BOOK\_TYPE)  VALUES (9780133251036,'Introduction to Financial Accounting',2013,112.50,'11','AVAILABLE','ACCOUNTING');  INSERT INTO Book (BOOK\_ISBN,BOOK\_NAME,BOOK\_PUBLISHDATE,BOOK\_PRICES,BOOK\_EDITION,BOOK\_STATUS,BOOK\_TYPE)  VALUES (9780132072861,'Financial Accounting Theory (5th Edition)',2009,123.50,'5','AVAILABLE','ACCOUNTING');  INSERT INTO Book (BOOK\_ISBN,BOOK\_NAME,BOOK\_PUBLISHDATE,BOOK\_PRICES,BOOK\_EDITION,BOOK\_STATUS,BOOK\_TYPE)  VALUES (9780133915389,'Engineering Mechanics: Dynamics',2015,333.50,'14','AVAILABLE','ENGINEERING');  INSERT INTO Book (BOOK\_ISBN,BOOK\_NAME,BOOK\_PUBLISHDATE,BOOK\_PRICES,BOOK\_EDITION,BOOK\_STATUS,BOOK\_TYPE)  VALUES (9780470458365,'Advanced Engineering Mathematics',2011,283.20,'10','ON HOLD','ENGINEERING');  INSERT INTO Book (BOOK\_ISBN,BOOK\_NAME,BOOK\_PUBLISHDATE,BOOK\_PRICES,BOOK\_EDITION,BOOK\_STATUS,BOOK\_TYPE)  VALUES (9780132145213,'Engineering Ethics',2011,323.90,'4','AVAILABLE','ENGINEERING');  INSERT INTO Book (BOOK\_ISBN,BOOK\_NAME,BOOK\_PUBLISHDATE,BOOK\_PRICES,BOOK\_EDITION,BOOK\_STATUS,BOOK\_TYPE)  VALUES (9780124104099,'Programming Language Pragmatics',2015,89.95,'4','AVAILABLE','COMPUTER SCIENCE');  DROP TABLE Author;  CREATE TABLE Author  (  Author\_ID VARCHAR2(5) NOT NULL,  Author\_Name VARCHAR2(20) NOT NULL,  CONSTRAINT AUTHOR\_PK PRIMARY KEY (Author\_ID),  CONSTRAINT AUTHOR\_NAME\_BD UNIQUE(AUTHOR\_NAME)  );  INSERT INTO AUTHOR (AUTHOR\_ID,AUTHOR\_NAME)  VALUES ('A1','A.JAMES');  INSERT INTO AUTHOR (AUTHOR\_ID,AUTHOR\_NAME)  VALUES ('A2','MARIAH FREY');  INSERT INTO AUTHOR (AUTHOR\_ID,AUTHOR\_NAME)  VALUES ('A3','MATTHEW COUGHNEY');  INSERT INTO AUTHOR (AUTHOR\_ID,AUTHOR\_NAME)  VALUES ('A4','J. ALBERT');  INSERT INTO AUTHOR (AUTHOR\_ID,AUTHOR\_NAME)  VALUES ('A5','SANDRA HEMLOCK');  INSERT INTO AUTHOR (AUTHOR\_ID,AUTHOR\_NAME)  VALUES ('A6','MD MATH');  INSERT INTO AUTHOR (AUTHOR\_ID,AUTHOR\_NAME)  VALUES ('A7','BORRAT');  INSERT INTO AUTHOR (AUTHOR\_ID,AUTHOR\_NAME)  VALUES ('A8','ZHIN JO HAN');  INSERT INTO AUTHOR (AUTHOR\_ID,AUTHOR\_NAME)  VALUES ('A9','YIN ME HO');  INSERT INTO AUTHOR (AUTHOR\_ID,AUTHOR\_NAME)  VALUES ('A10','PLETHAM');  INSERT INTO AUTHOR (AUTHOR\_ID,AUTHOR\_NAME)  VALUES ('A11','VEERA SINGHAM');  INSERT INTO AUTHOR (AUTHOR\_ID,AUTHOR\_NAME)  VALUES ('A12','JASON TAN');  INSERT INTO AUTHOR (AUTHOR\_ID,AUTHOR\_NAME)  VALUES ('A13','ATIKAH SUHAIMI');  INSERT INTO AUTHOR (AUTHOR\_ID,AUTHOR\_NAME)  VALUES ('A14','RISHA');  INSERT INTO AUTHOR (AUTHOR\_ID,AUTHOR\_NAME)  VALUES ('A15','NATHAN DRAKE');  INSERT INTO AUTHOR (AUTHOR\_ID,AUTHOR\_NAME)  VALUES ('A16','VERGIL STAN');  INSERT INTO AUTHOR (AUTHOR\_ID,AUTHOR\_NAME)  VALUES ('A17','G. MANSON');  INSERT INTO AUTHOR (AUTHOR\_ID,AUTHOR\_NAME)  VALUES ('A18','STANLEY TONG');  INSERT INTO AUTHOR (AUTHOR\_ID,AUTHOR\_NAME)  VALUES ('A19','JOHN CENA');  INSERT INTO AUTHOR (AUTHOR\_ID,AUTHOR\_NAME)  VALUES ('A20','KATY PERRY');  DROP TABLE Book\_Author;  CREATE TABLE Book\_Author  (  Author\_ID VARCHAR2(5),  Book\_ISBN VARCHAR2(17),  CONSTRAINT BA\_BOOK\_AUTHOR\_PK PRIMARY KEY (Book\_ISBN,Author\_ID),  CONSTRAINT BA\_Book\_Author\_Author\_FK FOREIGN KEY (Author\_ID) REFERENCES Author(Author\_ID),  CONSTRAINT BA\_Book\_Author\_Book\_FK FOREIGN KEY (BOOK\_ISBN) REFERENCES Book (Book\_ISBN)  );  INSERT INTO BOOK\_AUTHOR (BOOK\_ISBN,AUTHOR\_ID)  VALUES (9780840049421,'A2');  INSERT INTO BOOK\_AUTHOR (BOOK\_ISBN,AUTHOR\_ID)  VALUES (9781337627900,'A8');  INSERT INTO BOOK\_AUTHOR (BOOK\_ISBN,AUTHOR\_ID)  VALUES (9781138578067,'A7');  INSERT INTO BOOK\_AUTHOR (BOOK\_ISBN,AUTHOR\_ID)  VALUES (9780134475585,'A7');  INSERT INTO BOOK\_AUTHOR (BOOK\_ISBN,AUTHOR\_ID)  VALUES (9780134093413,'A3');  INSERT INTO BOOK\_AUTHOR (BOOK\_ISBN,AUTHOR\_ID)  VALUES (9780124095038,'A1');  INSERT INTO BOOK\_AUTHOR (BOOK\_ISBN,AUTHOR\_ID)  VALUES (9780815341062,'A2');  INSERT INTO BOOK\_AUTHOR (BOOK\_ISBN,AUTHOR\_ID)  VALUES (9780815341062,'A4');  INSERT INTO BOOK\_AUTHOR (BOOK\_ISBN,AUTHOR\_ID)  VALUES (9780781792806,'A5');  INSERT INTO BOOK\_AUTHOR (BOOK\_ISBN,AUTHOR\_ID)  VALUES (9780321982384,'A6');  INSERT INTO BOOK\_AUTHOR (BOOK\_ISBN,AUTHOR\_ID)  VALUES (9781285195728,'A11');  INSERT INTO BOOK\_AUTHOR (BOOK\_ISBN,AUTHOR\_ID)  VALUES (9781285740621,'A17');  INSERT INTO BOOK\_AUTHOR (BOOK\_ISBN,AUTHOR\_ID)  VALUES (9780321964038,'A15');  INSERT INTO BOOK\_AUTHOR (BOOK\_ISBN,AUTHOR\_ID)  VALUES (9780470587232,'A16');  INSERT INTO BOOK\_AUTHOR (BOOK\_ISBN,AUTHOR\_ID)  VALUES (9781618531001,'A19');  INSERT INTO BOOK\_AUTHOR (BOOK\_ISBN,AUTHOR\_ID)  VALUES (9780133251036,'A14');  INSERT INTO BOOK\_AUTHOR (BOOK\_ISBN,AUTHOR\_ID)  VALUES (9780133915389,'A12');  INSERT INTO BOOK\_AUTHOR (BOOK\_ISBN,AUTHOR\_ID)  VALUES (9780470458365,'A11');  INSERT INTO BOOK\_AUTHOR (BOOK\_ISBN,AUTHOR\_ID)  VALUES (9780132145213,'A8');  INSERT INTO BOOK\_AUTHOR (BOOK\_ISBN,AUTHOR\_ID)  VALUES (9780124104099,'A9');  DROP TABLE Publisher;  CREATE TABLE Publisher  (  Publisher\_ID VARCHAR2(6) NOT NULL ,  Publisher\_Name VARCHAR2(18) NOT NULL,  Publisher\_Website VARCHAR2(20) ,  Factory\_Address VARCHAR2(18),  CONSTRAINT PUBLISHER\_PK PRIMARY KEY (Publisher\_ID)  );  INSERT INTO Publisher (PUBLISHER\_ID,PUBLISHER\_NAME,PUBLISHER\_WEBSITE,FACTORY\_ADDRESS)  VALUES ('P01','PEARSON PRINTING','www.pearsonprint.com','PERLIS');  INSERT INTO Publisher (PUBLISHER\_ID,PUBLISHER\_NAME,PUBLISHER\_WEBSITE,FACTORY\_ADDRESS)  VALUES ('P02','PANTAS PUBLISH','www.pantasph.com','SELANGOR');  INSERT INTO Publisher (PUBLISHER\_ID,PUBLISHER\_NAME,PUBLISHER\_WEBSITE,FACTORY\_ADDRESS)  VALUES ('P03','PRINTFUL','www.printful.com','JOHOR');  INSERT INTO Publisher (PUBLISHER\_ID,PUBLISHER\_NAME,PUBLISHER\_WEBSITE,FACTORY\_ADDRESS)  VALUES ('P04','SYABAS INC','www.syabas.com','SABAH'); |
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**5.2 DML**

SELECT VISITORS.VISITOR\_ID AS VISITOR\_ID,

VISITORS.VISITOR\_NAME AS VISITOR\_NAME,

VISITORS.VISITOR\_FACULTY AS VISITOR\_FACULTY,

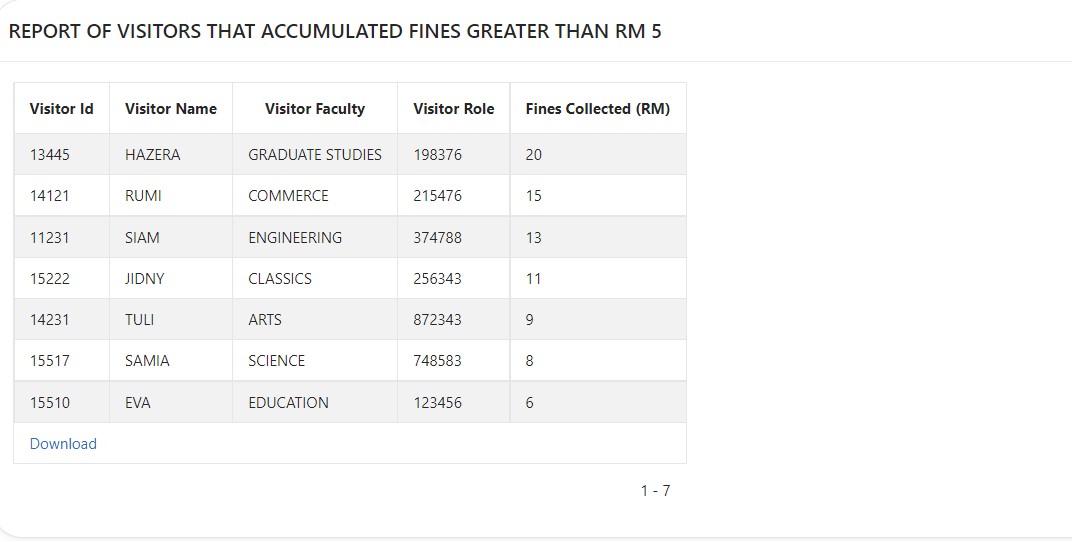
VISITORS.VISITOR\_RULE AS VISITOR\_RULE,

VISITORS.FINES\_COLLECTED AS FINES\_COLLECTED

from VISITORS VISITORS

where VISITORS.FINES\_COLLECTED >=5

order by VISITORS.FINES\_COLLECTED DESC



**6.0 Reflection**

While we were doing this project, we encountered a few problems. One of the major problems while developing the system is the lack of knowledge and skills when implementing SQL commands and Oracle APEX Database. To overcome these challenges, every group member did research by reading instructions, lab manuals and searching online for examples on how to write commands and queries for the application.

Second, problems we faced while finishing up the system is that there was once the USM oracle server was down, and we don’t have access to it for a few hours. We thought that we couldn’t finish up our assignment in time. But we did due to overwhelming support from each other members of the group.

We also have limited time to develop the system as the submission is in between tons of tests, assignments and presentations. But we managed to complete the assignment in time since a few parts of the project were done earlier such as Data Dictionary and Normalization.

During our early process of doing assignments, we also had a few problems in connecting entities with the other entities. But we managed to overcome that hurdle by consulting our supervisors and she provided us constructive criticism.

Apart from that, we had problems normalizing our tables on the earlier stage of doing the assignments. This is because we are still confused on how to link our entities and attributes to avoid data redundancy and anomalies. For this problem, we had to look up on the Internet for tutorials and did a lot of online searching to gain knowledge of the language.

**7.0 System Demo**

## Short Demo URL: https://youtu.be/IQWsKCdHEE8

## [Oracle APEX Cloud Login Details](https://apex.oracle.com/pls/apex/f?p=4550:1:13417155982729:::::)

* **Workspace:syaqirzahir**
* **Username:HIKIGAYASYAQIR@GMAIL.COM**
* **Password:angah619**
* **App name: Library Database Management**