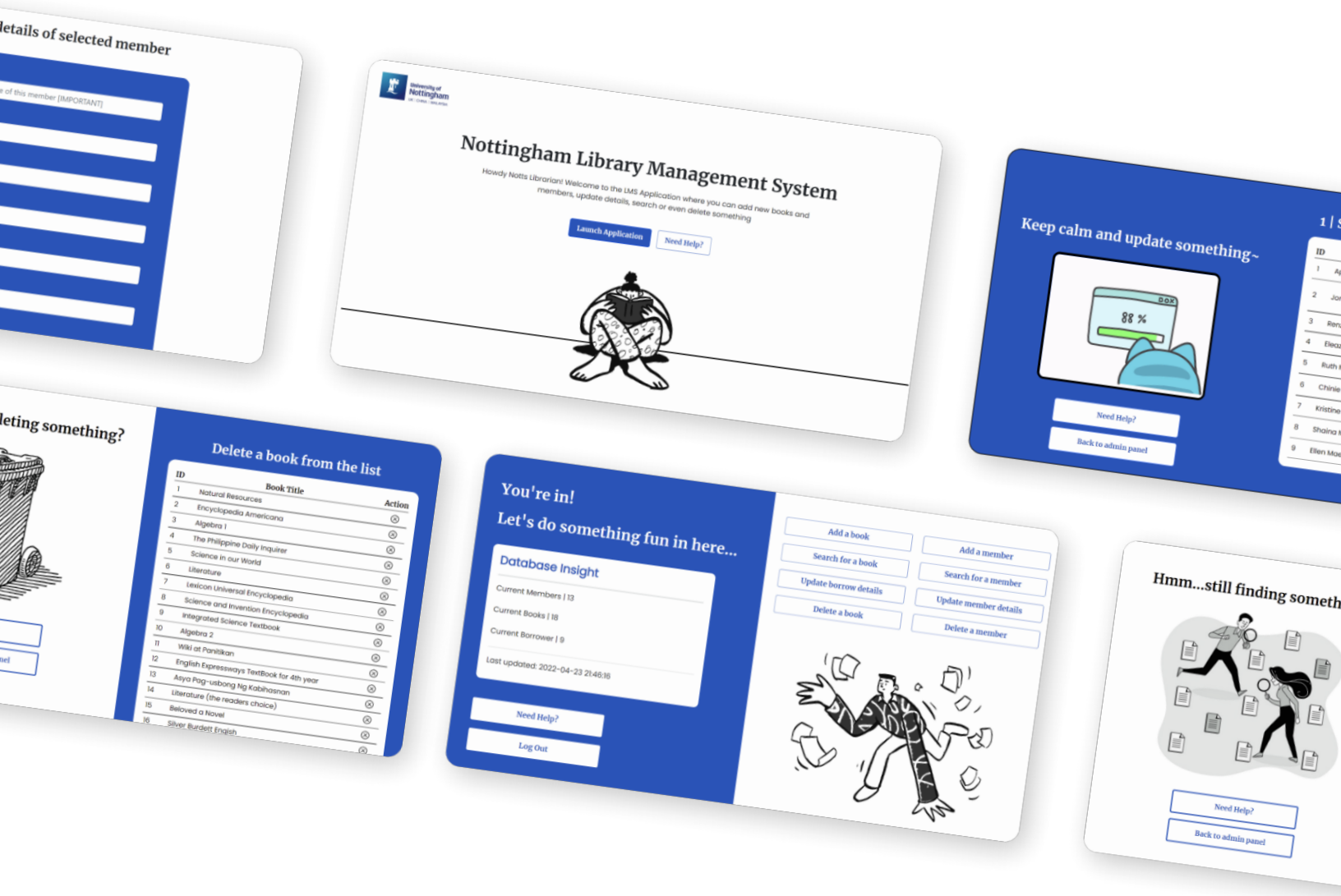
Group-17

Database and Interfaces

Coursework-2



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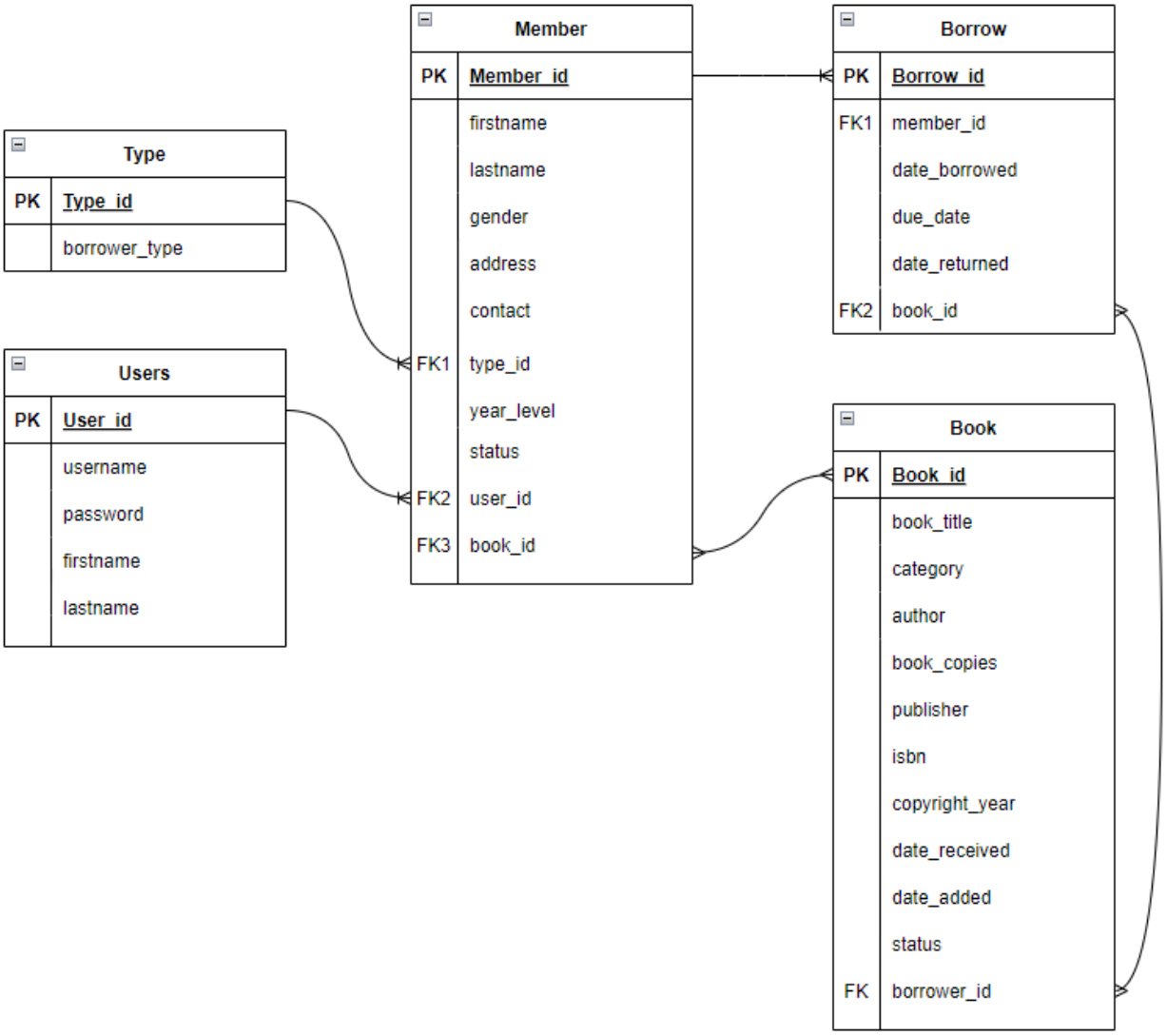
Task A: Entity Relationship Diagram



Task B (Screenshots):

Database Tables

	Table	Action	Rows	Type	Collation	Size	Overhead
☐	book	Browse Structure Search Insert Empty Drop	18	InnoDB	utf8mb4_general_ci	32.0 KiB	-
☐	borrow	Browse Structure Search Insert Empty Drop	9	InnoDB	utf8mb4_general_ci	48.0 KiB	-
☐	member	Browse Structure Search Insert Empty Drop	13	InnoDB	utf8mb4_general_ci	64.0 KiB	-
☐	type	Browse Structure Search Insert Empty Drop	5	InnoDB	utf8mb4_general_ci	16.0 KiB	-
☐	users	Browse Structure Search Insert Empty Drop	3	InnoDB	utf8mb4_general_ci	16.0 KiB	-
	5 tables	Sum	48	InnoDB	utf8mb4_general_ci	176.0 KiB	0 B

Tables Structures and their Data

1) Book's Structure and Its data

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	book_id	int(11)			No	None		AUTO_INCREMENT	Change Drop More
2	book_title	varchar(255)	utf8mb4_general_ci		Yes	NULL			Change Drop More
3	category	varchar(255)	utf8mb4_general_ci		Yes	NULL			Change Drop More
4	author	varchar(255)	utf8mb4_general_ci		Yes	NULL			Change Drop More
5	book_copies	int(11)			Yes	NULL			Change Drop More
6	publisher	varchar(255)	utf8mb4_general_ci		Yes	NULL			Change Drop More
7	publisher_name	varchar(255)	utf8mb4_general_ci		Yes	NULL			Change Drop More
8	isbn	varchar(255)	utf8mb4_general_ci		Yes	NULL			Change Drop More
9	copyright_year	int(11)			Yes	NULL			Change Drop More
10	date_added	datetime			Yes	NULL			Change Drop More
11	status	varchar(255)	utf8mb4_general_ci		Yes	NULL			Change Drop More
12	borrow_id	int(11)			Yes	NULL			Change Drop More

Primary key: 'book_id'
Foreign key: 'borrow_id'

	book_id	book_title	category	author	book_copies	publisher	publisher_name	isbn	copyright_year	date_added	status	borrow_id
Edit Copy Delete	1	Natural Resources	General	Robin Kerrod	15	Heinemann Library	Marshall	978-0431078427	1995	2013-12-11 06:34:27	New	1
Edit Copy Delete	2	Encyclopedia Americana	Encyclopedia	Grolier	20	Grolier Educational	Grolier Incorporation	978-0717201358	2002	2013-12-11 06:36:23	Archive	NULL
Edit Copy Delete	3	Algebra 1	Mathematics	Prentice Hall Mathematics	35	Pearson Education, Inc	Prentice Hall, New Jersey	978-0133659467	2004	2013-12-11 06:39:17	Damage	7
Edit Copy Delete	4	The Philippine Daily Inquirer	Newspaper	Rudyard Arbolado	3	Pasay City	Raul Pangalanan	9789718935002	2013	2013-12-11 06:41:53	New	5
Edit Copy Delete	5	Science in our World	Science	Brian Knapp	25	Grolier Educational Corporation	Prentice Hall, Inc	978-0717271702	1991	2013-12-11 06:44:44	Lost	NULL
Edit Copy Delete	6	Literature	References	Greg Glowka	20	Regency Publishing Group	Prentice Hall, Inc	0-13-050841-1	2001	2013-12-11 06:47:44	Old	9
Edit Copy Delete	7	Lexicon Universal Encyclopedia	Encyclopedia	Lexicon	10	Lexicon Publication	Pulication Inc., Lexicon	978-0717220250	1983	2013-12-11 06:49:53	Old	8
Edit Copy Delete	8	Science and Invention Encyclopedia	Encyclopedia	Dartford Mark	16	H.S. Stuttman inc. Publishing	Publisher , Westport Connecticut	978-0863074912	1987	2013-12-11 06:52:58	New	6
Edit Copy Delete	9	Integrated Science Textbook	Science	Merde C. Tan	15	Vibal Publishing House Inc.	12536. Araneta Avenue Corner Ma. Clara St., Quezon...	971-570-124-8	2009	2013-12-11 06:55:27	New	NULL
Edit Copy Delete	10	Algebra 2	Math	Glencoe McGraw Hill	15	The McGrawHill Companies Inc.	McGrawhill	978-0-07-873830-2	2008	2013-12-11 06:57:35	New	NULL
Edit Copy Delete	11	Wiki at Panitikan	Newspaper	Lorenza P. Avera	28	JGM & S Corporation	JGM & S Corporation	971-07-1574-7	2000	2013-12-11 06:59:24	Damage	4
Edit Copy Delete	12	English Expressways TextBook for 4th year	References	Virginia Bermudez Ed. O. et al	23	SD Publications, Inc.	Gregorio Araneta Avenue, Quezon City	978-971-0315-33-8	2007	2013-12-11 07:01:25	New	NULL
Edit Copy Delete	13	Asya Pag-usbong Ng Kabihasnan	General	Ricardo T. Jose, Ph . D.	21	Vibal Publishing House Inc.	Araneta Avenue . Cor. Maria Clara St., Quezon City...	971-07-2324-3	2008	2013-12-11 07:02:56	New	NULL
Edit Copy Delete	14	Literature (the readers choice)	References	Glencoe McGraw Hill	20	the McGrawHill Companies Inc	Beverly Ann Chin	978-0026354349	2001	2013-12-11 07:05:25	Damage	NULL
Edit Copy Delete	15	Beloved a Novel	References	Toni Morrison	13	Knopf Doubleday Publishing Group	Alfred A. Knoff, Inc	0-394-53597-9	1987	2013-12-11 07:07:02	Old	NULL
Edit Copy Delete	16	Silver Burdett Engish	English	Judy Brim	12	Silver Burdett Company	Silver	0-382-03575-5	1985	2013-12-11 09:22:50	Old	3
Edit Copy Delete	17	The Corporate Warriors (Six Classic Cases in Ameri...	General	Douglas K. Ramsey	8	Houghton Miffin Company	Ramsey, Douglas K	0-395-35487-0	1987	2013-12-11 09:25:32	Old	2
Edit Copy Delete	18	Introduction to Information System	References	R. Kelly Rainer. Brad Prince	10	Wiley, 9th edition	International Adaption	978-1119859932	2022	2022-02-11 19:00:10	New	NULL

2) Borrow's structure and its data

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	borrow_id	int(11)			No	None		AUTO_INCREMENT	Change Drop More
2	member_id	int(11)			Yes	NULL			Change Drop More
3	date_borrowed	datetime			No	None			Change Drop More
4	due_date	datetime			No	None			Change Drop More
5	book_id	int(11)			Yes	NULL			Change Drop More
6	date_returned	datetime			Yes	NULL			Change Drop More

Primary key: 'borrow_id'
Foreign keys: 'member_id' and 'book_id'

	borrow_id	member_id	date_borrowed	due_date	book_id	date_returned
Edit Copy Delete	1	1	2014-03-20 23:38:22	2014-04-03 09:00:00	1	2014-04-03 08:30:25
Edit Copy Delete	2	4	2014-03-20 23:49:34	2014-04-02 09:00:00	17	2014-04-02 06:30:15
Edit Copy Delete	3	5	2014-03-20 23:50:27	2014-03-28 09:00:00	16	2014-03-27 23:00:07
Edit Copy Delete	4	6	2014-03-21 15:37:00	2014-04-03 09:00:00	11	2014-04-03 08:49:00
Edit Copy Delete	5	8	2014-03-20 16:20:07	2014-04-02 09:00:00	4	2014-04-02 09:00:00
Edit Copy Delete	6	12	2014-03-19 19:16:00	2014-04-01 09:00:00	8	2014-04-01 07:30:12
Edit Copy Delete	7	11	2014-03-15 10:11:12	2014-03-29 09:00:00	3	2014-03-29 09:00:00
Edit Copy Delete	8	9	2014-03-10 09:35:17	2014-03-24 09:00:00	7	2014-03-24 08:59:00
Edit Copy Delete	9	7	2014-03-09 11:40:18	2014-03-23 09:00:00	6	2014-03-22 21:03:40

3) Member's structure and its data

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	member_id	int(11)			No	None		AUTO_INCREMENT	Change
2	firstname	varchar(255)	utf8mb4_general_ci		Yes	NULL			Change
3	lastname	varchar(255)	utf8mb4_general_ci		Yes	NULL			Change
4	gender	varchar(255)	utf8mb4_general_ci		Yes	NULL			Change
5	address	varchar(255)	utf8mb4_general_ci		Yes	NULL			Change
6	contact	int(11)			Yes	NULL			Change
7	type_id	int(11)			Yes	NULL			Change
8	year_level	varchar(255)	utf8mb4_general_ci		Yes	NULL			Change
9	status	varchar(255)	utf8mb4_general_ci		Yes	NULL			Change
10	user_id	int(11)			Yes	NULL			Change
11	book_id	int(11)			Yes	NULL			Change

Primary key: 'member_id'
Foreign keys: 'type_id', 'user_id' and 'book_id'

	member_id	firstname	lastname	gender	address	contact	type_id	year_level	status	user_id	book_id
Edit Copy Delete	1	Mark	Sanchez	Male	Talisay	984563421	1	Faculty	Active	1	1
Edit Copy Delete	2	April Joy	Aguilar	Female	E.B Magalona	147336780	4	Second Year	Banned	2	14
Edit Copy Delete	3	Alfonso	Pancho	Male	E.B Magalona	817814514	4	First Year	Active	3	12
Edit Copy Delete	4	Jonathan	Antanilla	Male	E.B Magalona	289634560	4	Fourth Year	Active	1	18
Edit Copy Delete	5	Renzo Bryan	Pedroso	Male	Silay City	432897523	4	Third Year	Active	3	16
Edit Copy Delete	6	Eleazar	Duterte	Male	E.B Magalona	239985560	4	Second Year	Active	2	11
Edit Copy Delete	7	Ellen Mae	Espino	Female	E.B Magalona	224876591	4	First Year	Active	3	6
Edit Copy Delete	8	Ruth	Magbanua	Female	E.B Magalona	433677432	4	Second Year	Active	2	4
Edit Copy Delete	9	Shaina Marie	Gabino	Female	Silay City	765446784	4	Second Year	Active	2	7
Edit Copy Delete	10	Charity Joy	Punzalan	Female	E.B Magalona	157564035	1	Faculty	Active	1	9
Edit Copy Delete	11	Kristine May	Dela Rose	Female	Silay City	394857398	4	Second Year	Active	1	3
Edit Copy Delete	12	Chinie Marie	Laborosa	Female	E.B Magalona	344766821	4	Second Year	Active	1	2
Edit Copy Delete	13	Ruby	Morante	Female	E.B Magalona	769784322	1	Faculty	Active	3	8

4) Type structure and its data

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	type_id	int(11)			No	None		
2	borrower_type	varchar(255)	utf8mb4_general_ci		Yes	NULL		

Primary key: 'type_id'

	type_id	borrower_type
Edit Copy Delete	1	Teacher
Edit Copy Delete	2	Employee
Edit Copy Delete	3	Non-Teaching
Edit Copy Delete	4	Student
Edit Copy Delete	5	Construction

5) Users structure and its data

1	user_id	int(11)		No	None		Change
2	username	varchar(255)	utf8mb4_general_ci	Yes	NULL		Change
3	password	varchar(255)	utf8mb4_general_ci	Yes	NULL		Change
4	firstname	varchar(255)	utf8mb4_general_ci	Yes	NULL		Change
5	lastname	varchar(255)	utf8mb4_general_ci	Yes	NULL		Change

Primary key: ‘user_id’

	user_id	username	password	firstname	lastname
Edit Copy Delete	1	Ella	Lucy420	Ella	Marcus
Edit Copy Delete	2	admin	admin	John	Smith
Edit Copy Delete	3	Jeff2	Poker909	Jeff	Gordan
Edit Copy Delete	4	Josh	Lower23	Josh	Geen
Edit Copy Delete	5	Lyn	Steph30	Lyn	Kold
Edit Copy Delete	6	Kay	Pole1	Kay	Hue
Edit Copy Delete	7	Heller	Gel54	Heller	Green
Edit Copy Delete	8	William	Yay5	William	Forest
Edit Copy Delete	9	Mary	Food6	Mary	Lowe
Edit Copy Delete	10	Gary	Work12	Gary	Hill

Task-A Question Answers

1. Why did you choose the datatypes of each field?

- To make sure the fields had defined clearly what kind of data it can hold.
- We standardized having INT data type for all our id's to create a relation and better understanding.
- Changed all the dates in the default database to ensure accuracy.

2. Reason behind the design of the tables and connections between the tables including PK, FK?

- The Primary Keys and Foreign Keys were made with the purpose that all tables can be accessed through either book or member table.
- The SQL queries between tables can be achieved and displayed in the interface. For example, when searching for a member and the book id is displayed, we then linked the book id to the book title in the book table. This gives the user a clearer view of the data.

3. What kinds of errors did you find in the dataset?

- The ISBN of some books were incomplete.
- Some of the authors, publishers, and publisher names were incorrect.
- The index of all the tables were not correct and started from a random number.
- The 'type' column that was in the member table did not match the Primary key in the type table, which was its 'id'.
- Some of the Primary Key(s) of tables were not linked or related to any other tables.

4. How did you find the completeness of the dataset?

- Overall it was alright, but if you go into detail, some of the data was missing that would be vital, such as to find such books in the library (the ISBN numbers, authors, publishers).
- Some of the tables were made that were not needed and would be more efficient if they were merged with other tables.

5. How did you address those problems?

- Rechecked the book titles and corrected the wrong ones, as well as added the missing authors, publishers and publisher names.
- Corrected missing and or wrong digits ISBN numbers.
- Merged the borrow details table with 'borrow' table.
- Dropped the 'category' table and added a category column in the 'book' table.
- Corrected the starting indexes of all tables that started from a random number.

Additional Info:

Changes made to Database

1. Changed ‘type_id’ in ‘member’ table instead of ‘borrower_type’ to match Primary Keys. hence the data type changed from VARCHAR to INT.
2. Corrected all the indexes of tables so they start from 1 instead of the default data given.
3. To increase efficiency in running SQL statements, merged the table borrow details with borrow. As well as dropped the category table and added a category column in the book instead.
4. Added ‘user_id’ and ‘book_id’ to the ‘member’ table in order to connect all the tables through ‘book’ and ‘member’ tables.
5. Added 2 more personnel in the user table to expand the accessibility to the database.
6. Added appropriate numbers to the contact column in the ‘member’ table.
7. Added dates and time to the ‘date_received’ column in the ‘book’ table.
8. Added dummy data for ‘book_id’ in ‘member’ and ‘borrow’ tables. As well as dummy data for ‘user_id’ in the ‘member’ table.
9. Added ‘borrow_id’ in the ‘book’ table as well as dummy data to match Primary and Foreign keys.
10. Deleted the ‘date_received’ column from the ‘book’ table as it is very similar to ‘date_added’.
11. Made 10 users in user table to ensure no errors occur due to the ‘user_id’ being unique

UI Design Prototype

Additional features for the website UI/UX (or code)

- Login form to authenticate user before accessing the admin panel.
- Error catching in the login form to prevent wrong credentials and blank form submission.
- SQL injection prevention by reformat the input (remove html special char) before passing the login info for query process.
- Database insight which fetch and display books, member, and borrower info, as well as the last updated time of the library database.
- Display borrow table and member table info as a simple list to let user choose which record to update by just clicking (UX Improvement)
- The chosen updated items previous record data will be fetch and display below at each field (let user know what they are updating currently).
- Scroll to anchor section after selecting items to update
- Search result status display after performing a search, green color ‘found’ and red color ‘not found’.
- Fetching more info for ‘id-type’ data (no useful information to user). For example, when member id is fetch and display, we also perform an additional query to fetch the member name and displayed it
- Display a simple list for the items that can be deleted, user just have to click the delete icon to delete record. Fast and simple.
- Deletion confirmation popup
- Log out function

Link to github repo and video

1) Github: https://github.com/Zhixuan0318/COMP1044_CW_G17
2) Video: https://drive.google.com/file/d/1wmmtgNT_-8nMGBdfvpJeIJnrgXM2lqL4/view?usp=sharing