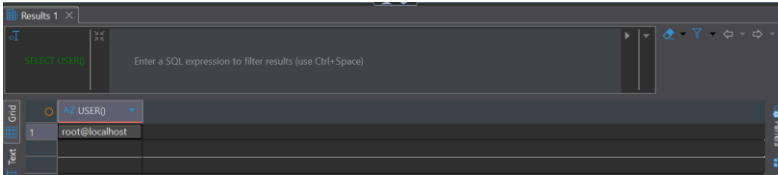


INT 2080 Lab 4 (100 marks)

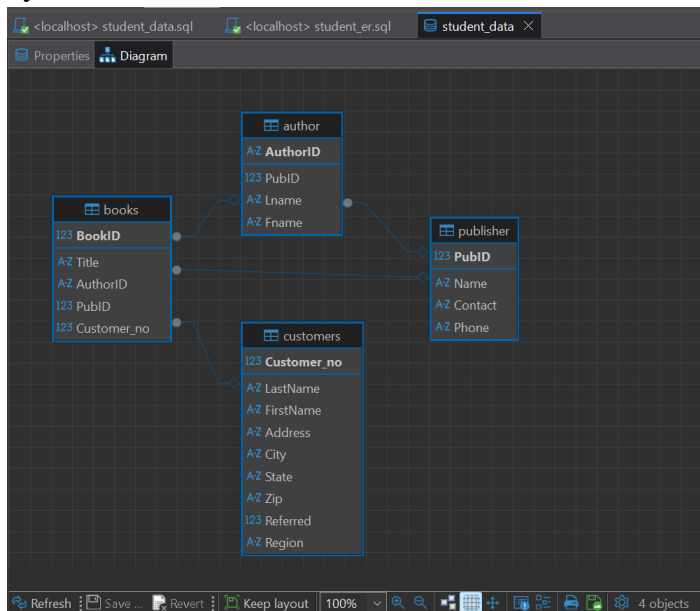
Question 1: Create ER Diagram (70 marks)

Ensure that you run the scripts from Week 3 before completing this assignment. If you have not run the script, refer to instructions from Week 3.

- a. Launch MySQL Workbench and login as root user



- b. Use the MySQL Workbench tool to display Entity Relationship (ER) of the tables owned by 'student'.



- c. What is the benefit of the ER diagram?

An ER diagram provides easy-to-read documentation of the information being stored and how it is related. The benefits of an ER diagram are as follows: promotes communication, maintaining and modifying a database.

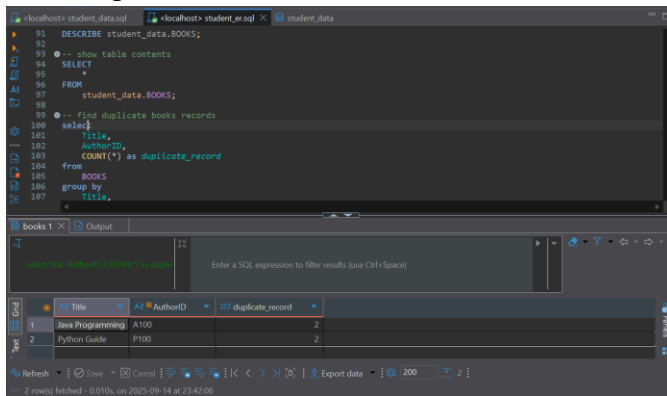
Attach all the screenshots created in 1b to your submission.

Question 2: Normalization (30 marks)

a. What is normalization?

Database normalization organizes data into structured tables to reduce redundancy and improve integrity. It ensures related data is stored together, minimizes null values, and avoids modification issues. Benefits include cleaner design, easier queries, efficient storage, faster searches, and extendibility without disrupting existing data, enhancing accuracy, speed, and overall database efficiency.

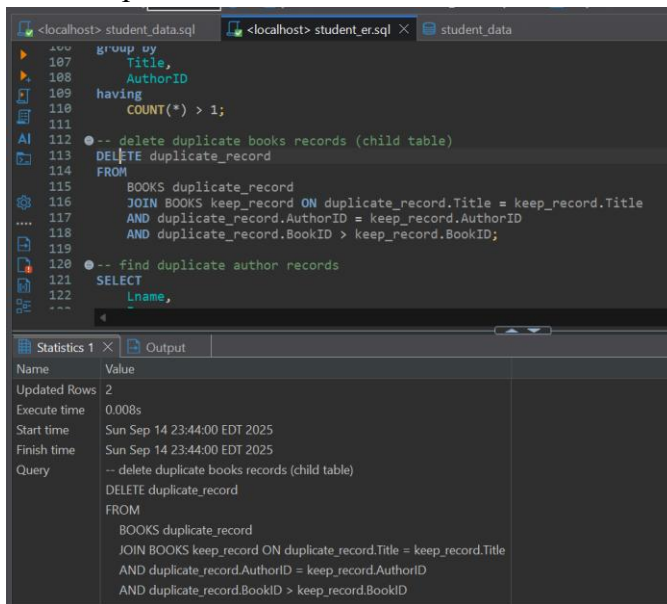
b. Using a table owned by user 'student', run commands to show how you will detect and eliminate duplicates from the database.
show duplicates



```
91 DESCRIBE student_data.BOOKS;
92
93 -- show table contents
94 SELECT
95 *
96 FROM
97 student_data.BOOKS;
98
99 -- find duplicate books records
100 select
101 Title,
102 AuthorID,
103 COUNT(*) as duplicate_record
104 from
105 BOOKS
106 group by
107 Title,
```

Books 1	Output
Books 1	Output

delete duplicate



```
107 group by
108 Title,
109 AuthorID
110 having
111 COUNT(*) > 1;
112
113 -- delete duplicate books records (child table)
114 DELETE duplicate_record
115 FROM
116 BOOKS duplicate_record
117 JOIN BOOKS keep_record ON duplicate_record.Title = keep_record.Title
118 AND duplicate_record.AuthorID = keep_record.AuthorID
119 AND duplicate_record.BookID > keep_record.BookID;
120
121 -- find duplicate author records
122 SELECT
123 Lname,
```

Statistics 1	Output
Name	Value
Updated Rows	2
Execute time	0.008s
Start time	Sun Sep 14 23:44:00 EDT 2025
Finish time	Sun Sep 14 23:44:00 EDT 2025
Query	-- delete duplicate books records (child table) DELETE duplicate_record FROM BOOKS duplicate_record JOIN BOOKS keep_record ON duplicate_record.Title = keep_record.Title AND duplicate_record.AuthorID = keep_record.AuthorID AND duplicate_record.BookID > keep_record.BookID

NOTE:

- Insert all screenshots in a MS Word or similar document and convert them to pdf
- All screenshots must be full screen showing dates on the taskbar
- Answer all questions