

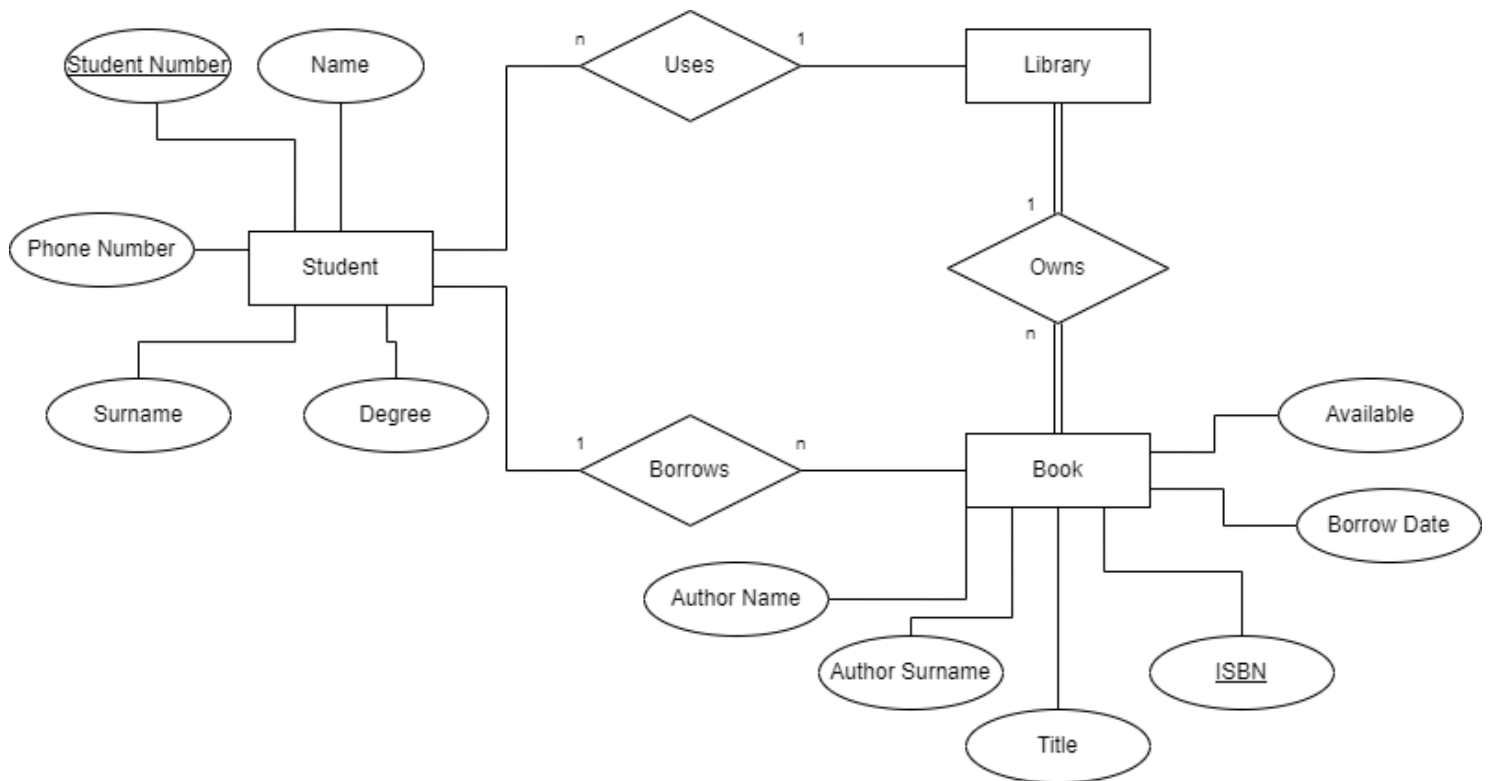


COS 221 PRACTICAL 1

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Task 2



Assumptions:

We are only taking one phone number per student, and we are assuming that the book has only one title, eg. Using “Harry Potter And The Philosopher’s Stone” and not including “Harry Potter And The Sorcerer’s Stone”. We are also assuming that a book has only one author.

Task 3

```

C:\Program Files\MariaDB 10.11\bin>mariadb.exe -u root -p
Enter password: *****
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 5
Server version: 10.11.2-MariaDB mariadb.org binary distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> create database u22744968_bookshopsystem;
Query OK, 1 row affected (0.019 sec)

MariaDB [(none)]> |
  
```

Task 4

u22744968_bookshopsystem\students - HeidiSQL 11.3.0.6295

File Edit Search Query Tools Goto Help

Host: 127.0.0.1 Database: u22744968_bookshopsystem Table: students Data Query

Database filter Table filter

u22744968_bookshopsys... 32.0 KiB
u22744968_bookshopsys... 32.0 KiB
books 16.0 KiB
students 16.0 KiB

Name: students
Comment: List of students

Columns:

#	Name	Datatype	Length/Set	Unsign...	Allow N...	Zerofill	Default	Comment	Collation	Expression
1	StudentID	VARCHAR	8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No default		latin1_swedish_ci	
2	Name	VARCHAR	50	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No default		latin1_swedish_ci	
3	Surname	VARCHAR	50	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No default		latin1_swedish_ci	
4	Degree	VARCHAR	10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No default		latin1_swedish_ci	
5	PhoneNumber	VARCHAR	10	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NULL		latin1_swedish_ci	

Filter: Regular expression

```

156 SHOW INDEXES FROM `students` FROM `u22744968_bookshopsystem`;
157 SELECT * FROM information_schema.REFERENTIAL_CONSTRAINTS WHERE CONSTRAINT_SCHEMA='u22744968_bookshopsystem' AND TABLE_NAME='students' AND REFERENCED_TABLE_NAME IS NOT NULL;
158 SELECT * FROM information_schema.KEY_COLUMN_USAGE WHERE TABLE_SCHEMA='u22744968_bookshopsystem' AND TABLE_NAME='students' AND REFERENCED_TABLE_NAME IS NOT NULL;
159 SHOW CREATE TABLE `u22744968_bookshopsystem`.`students`;
160 SELECT CONSTRAINT_NAME, CHECK_CLAUSE FROM `information_schema`.`CHECK_CONSTRAINTS` WHERE CONSTRAINT_SCHEMA='u22744968_bookshopsystem' AND TABLE_NAME='students';

```

File Edit Search Query Tools Goto Help

Host: 127.0.0.1 Database: u22744968_bookshopsystem Table: books Data Query

Database filter Table filter

u22744968_bookshopsys... 32.0 KiB
u22744968_bookshopsys... 32.0 KiB
books 16.0 KiB
students 16.0 KiB

Name: books
Comment: list of books

Columns:

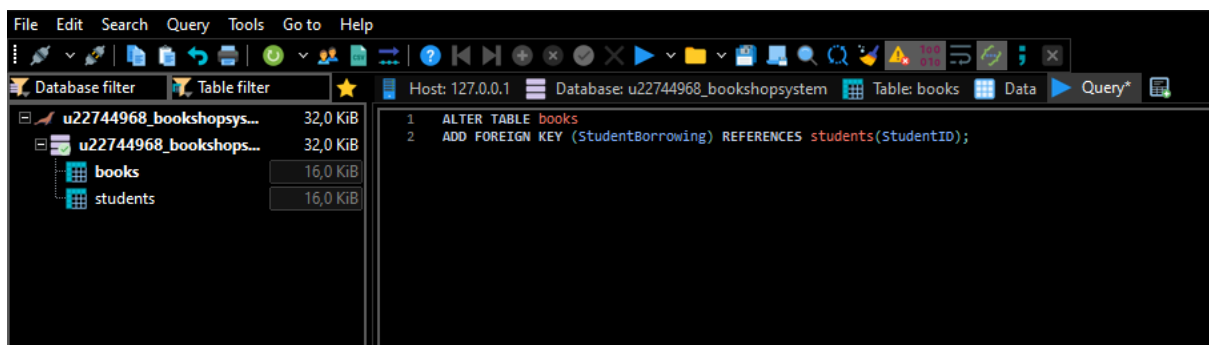
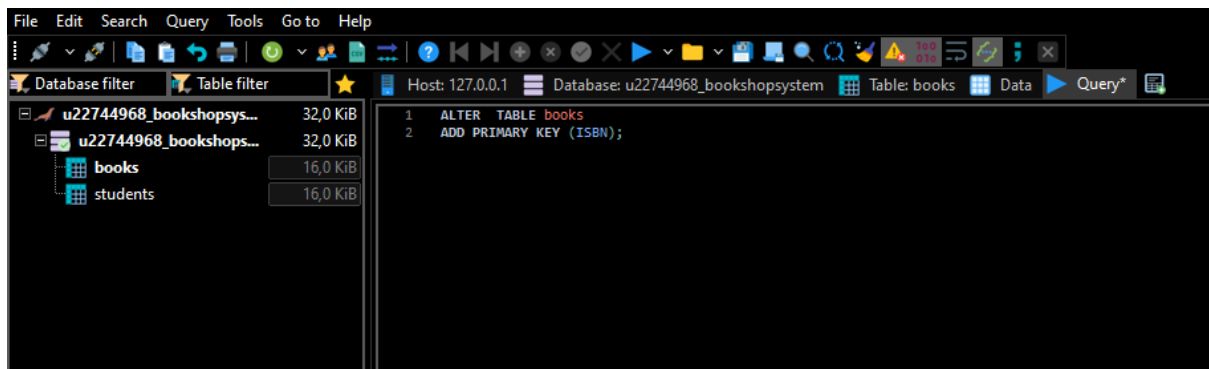
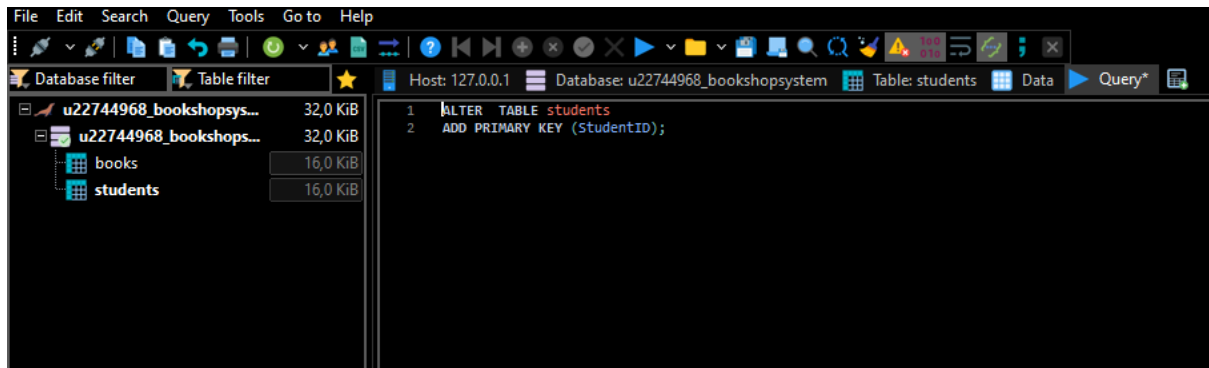
#	Name	Datatype	Length/Set	Unsign...	Allow N...	Zerofill	Default	Comment	Collation	Expression	Virtuality
1	ISBN	VARCHAR	13	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No default		latin1_swedish_ci		
2	Title	VARCHAR	100	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No default		latin1_swedish_ci		
3	NameOfAuthor	VARCHAR	50	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No default		latin1_swedish_ci		
4	SurnameOfAu...	VARCHAR	50	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No default		latin1_swedish_ci		
5	StudentBorro...	VARCHAR	8	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NULL		latin1_swedish_ci		
6	BorrowDate	DATE		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NULL		latin1_swedish_ci		
7	Available	BINARY	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	'1'				

Filter: Regular expression

```

156 SELECT * FROM information_schema.KEY_COLUMN_USAGE WHERE TABLE_SCHEMA='u22744968_bookshopsystem' AND TABLE_NAME='books' AND REFERENCED_TABLE_NAME IS NOT NULL;
157 SELECT * FROM information_schema.REFERENTIAL_CONSTRAINTS WHERE CONSTRAINT_SCHEMA='u22744968_bookshopsystem' AND TABLE_NAME='books' AND REFERENCED_TABLE_NAME IS NOT NULL;
158 SHOW CREATE TABLE `u22744968_bookshopsystem`.`books`;
159 SELECT CONSTRAINT_NAME, CHECK_CLAUSE FROM `information_schema`.`CHECK_CONSTRAINTS` WHERE CONSTRAINT_SCHEMA='u22744968_bookshopsystem' AND TABLE_NAME='books';
160 SELECT * FROM `u22744968_bookshopsystem`.`books` LIMIT 1000;

```



Task 5

The screenshot shows a database management tool interface. On the left, a tree view displays the database structure: 'u22744968_bookshopsys...' (32,0 KiB) containing 'books' (16,0 KiB) and 'students' (16,0 KiB). The main query editor shows an SQL query to insert data into the 'students' table. The query is as follows:

```
1 INSERT INTO students (StudentID, Name, Surname, Degree, PhoneNumber)
2 VALUES
3 ('20001234', 'Siya', 'Mhlongo', 'BSc', '0821234567'),
4 ('20004321', 'Sipho', 'Mthembu', 'BEng', '0832345678'),
5 ('21005678', 'Thando', 'Ngubane', 'BA', '0843456789'),
6 ('21008765', 'Nkosi', 'Dlamini', 'BSc', '0814567890'),
7 ('22009012', 'Lwazi', 'Nkosi', 'BEng', '0835678901'),
8 ('22003210', 'Aphiwe', 'Nxumalo', 'BA', '0826789012'),
9 ('21006543', 'Zinhle', 'Dube', 'BSc', '0817890123'),
10 ('21009876', 'Ntokozo', 'Nkosi', 'BEng', '0848901234'),
11 ('22002143', 'Sibusiso', 'Ndlovu', 'BA', '0839012345'),
12 ('22005432', 'Nomthandazo', 'Mdlalose', 'BSc', '0820123456'),
13 ('22008765', 'Liam', 'Johnson', 'BSc', '0831234567'),
14 ('21002143', 'Emily', 'Smith', 'BEng', '0842345678'),
15 ('22003210', 'William', 'Brown', 'BA', '0823456789'),
16 ('21005432', 'Olivia', 'Jones', 'BSc', '0814567890'),
17 ('22006543', 'James', 'Davis', 'BEng', '0835678901'),
18 ('21009012', 'Sophia', 'Wilson', 'BA', '0826789012'),
19 ('22004321', 'Jacob', 'Taylor', 'BSc', '0817890123'),
20 ('21009876', 'Ava', 'Martin', 'BEng', '0848901234'),
21 ('22005678', 'Michael', 'Anderson', 'BA', '0839012345'),
22 ('21001234', 'Isabella', 'Thompson', 'BSc', '0820123456');
```

The screenshot shows the same database management tool interface. The tree view on the left is identical. The main query editor shows an SQL query to insert data into the 'books' table. The query is as follows:

```
1 INSERT INTO books (ISBN, Title, NameOfAuthor, SurnameOfAuthor, BorrowDate, NumberAvailable)
2 VALUES
3 ('9780545010221', 'Harry Potter and the Philosopher's Stone', 'J.K.', 'Rowling', '2022-01-01', 10),
4 ('9780439785969', 'Harry Potter and the Half-Blood Prince', 'J.K.', 'Rowling', '2022-02-15', 7),
5 ('9780061120084', 'To Kill a Mockingbird', 'Harper', 'Lee', '2022-03-01', 12),
6 ('9780140449334', 'Pride and Prejudice', 'Jane', 'Austen', '2022-02-20', 5),
7 ('9780316769174', 'The Catcher in the Rye', 'J.D.', 'Salinger', '2022-01-20', 8),
8 ('9780141187761', '1984', 'George', 'Orwell', '2022-02-10', 6),
9 ('9780547928227', 'The Hobbit', 'J.R.R.', 'Tolkien', '2022-03-03', 9),
10 ('9780060256654', 'Where the Wild Things Are', 'Maurice', 'Sendak', '2022-02-05', 11),
11 ('9780061122415', 'Go Set a Watchman', 'Harper', 'Lee', '2022-03-02', 4),
12 ('9780064401883', 'Island of the Blue Dolphins', 'Scott', 'O'Dell', '2022-01-10', 13),
13 ('9780132145375', 'Introduction to Algorithms', 'Thomas', 'Cormen', '2022-01-01', 10),
14 ('9780201633610', 'Design Patterns', 'Erich', 'Gamma', '2022-02-15', 7),
15 ('9780131103627', 'Database Systems: The Complete Book', 'Hector', 'Garcia-Molina', '2022-03-01', 12),
16 ('9780134481268', 'Computer Networking: A Top-Down Approach', 'James', 'Kurose', '2022-02-20', 5),
17 ('9780136019282', 'Operating System Concepts', 'Abraham', 'Silberschatz', '2022-01-20', 8),
18 ('9781118842080', 'Computer Organization and Design', 'David', 'Patterson', '2022-02-10', 6),
19 ('9780134023212', 'Computer Networks', 'Andrew', 'Tanenbaum', '2022-03-03', 9),
20 ('9780136085317', 'Artificial Intelligence: A Modern Approach', 'Stuart', 'Russell', '2022-02-05', 11),
21 ('9780134092669', 'Computer Systems: A Programmer's Perspective', 'Randal', 'Bryant', '2022-03-02', 4),
22 ('9780262033848', 'Introduction to Algorithms', 'Charles', 'Leiserson', '2022-01-10', 13);
```

Task 6 + 7

Please refer to the provided text document.