

## PROGRAM 8

Consider the following database of Student Enrollment in courses and books adopted for each course:

**STUDENT** (regno: String, name: String, major: String, bdate: date)

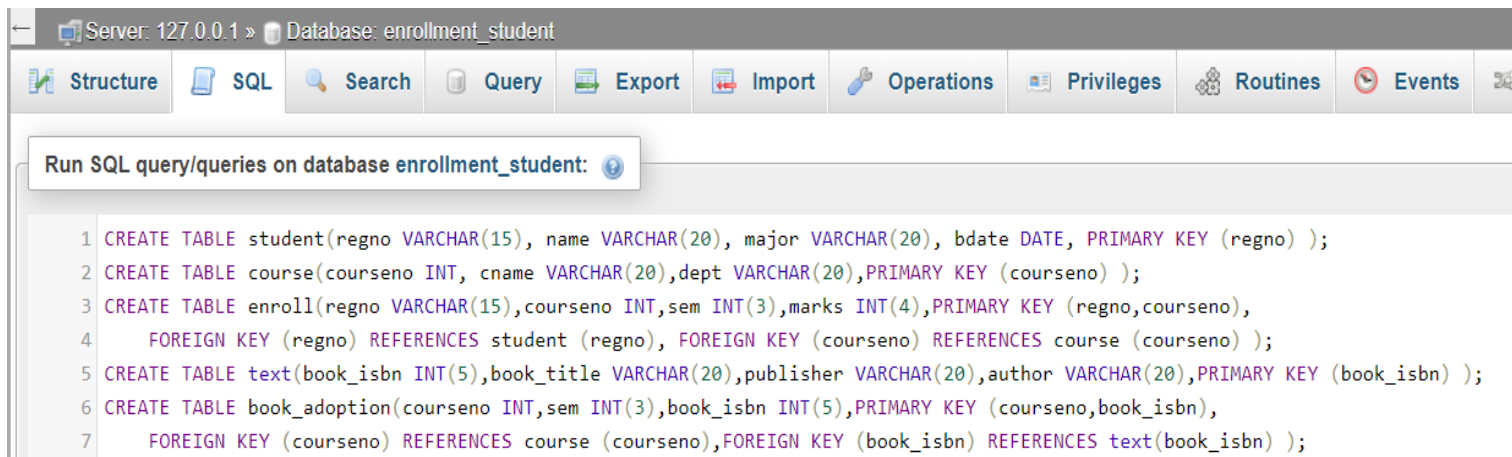
**COURSE** (course #: int, cname: String, dept: String)

**ENROLL** (regno: String, cname: String, sem: int, marks: int)

**BOOK\_ADOPTION** (course #: int, sem: int, book-ISBN: int)

**TEXT**(book-ISBN:int, book-title:String, publisher:String, author:String)

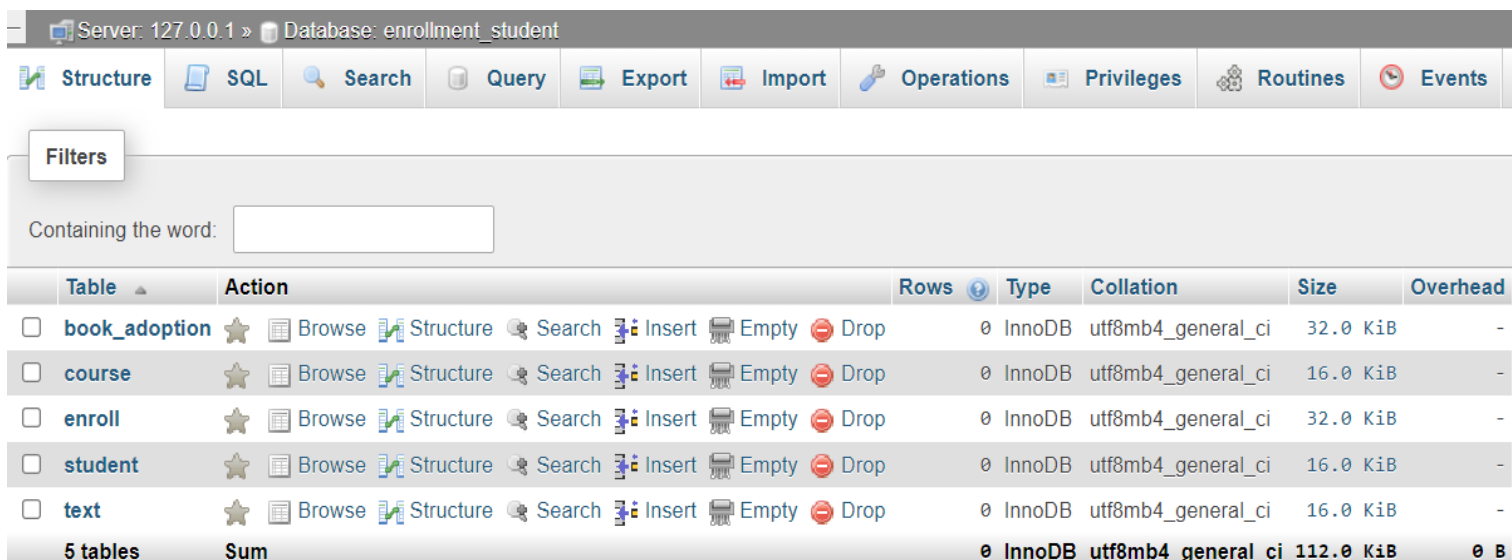
i. Create the above tables by properly specifying the primary keys and the foreign keys.



Server: 127.0.0.1 » Database: enrollment\_student

Run SQL query/queries on database enrollment\_student:

```
1 CREATE TABLE student(regno VARCHAR(15), name VARCHAR(20), major VARCHAR(20), bdate DATE, PRIMARY KEY (regno) );
2 CREATE TABLE course(courseno INT, cname VARCHAR(20),dept VARCHAR(20),PRIMARY KEY (courseno) );
3 CREATE TABLE enroll(regno VARCHAR(15),courseno INT,sem INT(3),marks INT(4),PRIMARY KEY (regno,courseno),
4     FOREIGN KEY (regno) REFERENCES student (regno), FOREIGN KEY (courseno) REFERENCES course (courseno) );
5 CREATE TABLE text(book_isbn INT(5),book_title VARCHAR(20),publisher VARCHAR(20),author VARCHAR(20),PRIMARY KEY (book_isbn) );
6 CREATE TABLE book_adoption(courseno INT,sem INT(3),book_isbn INT(5),PRIMARY KEY (courseno,book_isbn),
7     FOREIGN KEY (courseno) REFERENCES course (courseno),FOREIGN KEY (book_isbn) REFERENCES text(book_isbn) );
```



Server: 127.0.0.1 » Database: enrollment\_student

Filters

Containing the word:

Table	Action	Rows	Type	Collation	Size	Overhead
<input type="checkbox"/> book_adoption	★ Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_general_ci	32.0 KiB	-
<input type="checkbox"/> course	★ Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_general_ci	16.0 KiB	-
<input type="checkbox"/> enroll	★ Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_general_ci	32.0 KiB	-
<input type="checkbox"/> student	★ Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_general_ci	16.0 KiB	-
<input type="checkbox"/> text	★ Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_general_ci	16.0 KiB	-
5 tables	Sum	0	InnoDB	utf8mb4_general_ci	112.0 KiB	0 B

ii. Enter at least five tuples for each relation.

‘STUDENT’ table:

Server: 127.0.0.1 » Database: enrollment\_student » Table: student

[Browse](#) [Structure](#) [SQL](#) [Search](#) [Insert](#) [Export](#) [Import](#)

Run SQL query/queries on table enrollment\_student.student: ?

```
1 INSERT INTO student VALUES ('1PE11CS001','Astra','sr','1993-12-30');
2 INSERT INTO student VALUES ('1PE11CS002','Pheonix','sr','1993-09-24');
3 INSERT INTO student VALUES ('1PE11CS003','Breach','sr','1993-11-27');
4 INSERT INTO student VALUES ('1PE11CS004','Reyna','sr','1993-04-13');
5 INSERT INTO student VALUES ('1PE11CS005','Sova','jr','1994-08-24');
```

Server: 127.0.0.1 » Database: enrollment\_student » Table: student

[Browse](#) [Structure](#) [SQL](#) [Search](#) [Insert](#) [Export](#) [Import](#)

✓ Showing rows 0 - 4 (5 total, Query took 0.0006 seconds.)

SELECT \* FROM `student`

☐ Show all | Number of rows: 25 ▼ Filter rows:  Sort by k

+ Options

				regno	name	major	bdate
<input type="checkbox"/>		Edit		Copy		Delete	1PE11CS001 Astra sr 1993-12-30
<input type="checkbox"/>		Edit		Copy		Delete	1PE11CS002 Pheonix sr 1993-09-24
<input type="checkbox"/>		Edit		Copy		Delete	1PE11CS003 Breach sr 1993-11-27
<input type="checkbox"/>		Edit		Copy		Delete	1PE11CS004 Reyna sr 1993-04-13
<input type="checkbox"/>		Edit		Copy		Delete	1PE11CS005 Sova jr 1994-08-24

## 'COURSE' table:

Server: 127.0.0.1 » Database: enrollment\_student » Table: course

Browse Structure SQL Search Insert

Run SQL query/queries on table enrollment\_student.course: ?

```
1 INSERT INTO course VALUES (111,'OS','CSE');
2 INSERT INTO course VALUES (112,'EC','CSE');
3 INSERT INTO course VALUES (113,'SS','ISE');
4 INSERT INTO course VALUES (114,'DBMS','CSE');
5 INSERT INTO course VALUES (115,'SIGNALS','ECE');
```

Server: 127.0.0.1 » Database: enrollment\_student » Table: course

Browse Structure SQL Search Insert

✓ Showing rows 0 - 4 (5 total, Query took 0.0005 seconds.)

SELECT \* FROM `course`

☐ Show all | Number of rows: 25 Filter rows:

+ Options

				courseno	cname	dept
<input type="checkbox"/>	Edit	Copy	Delete	111	OS	CSE
<input type="checkbox"/>	Edit	Copy	Delete	112	EC	CSE
<input type="checkbox"/>	Edit	Copy	Delete	113	SS	ISE
<input type="checkbox"/>	Edit	Copy	Delete	114	DBMS	CSE
<input type="checkbox"/>	Edit	Copy	Delete	115	SIGNALS	ECE

## 'ENROLL' table:

Server: 127.0.0.1 » Database: enrollment\_student » Table: enroll

[Browse](#) [Structure](#) [SQL](#) [Search](#) [Insert](#) [Export](#)

Run SQL query/queries on table enrollment\_student.enroll: ?

```
1 INSERT INTO enroll VALUES ('1PE11CS001',115,3,100);
2 INSERT INTO enroll VALUES ('1PE11CS002',114,5,100);
3 INSERT INTO enroll VALUES ('1PE11CS003',113,5,100);
4 INSERT INTO enroll VALUES ('1PE11CS004',111,5,100);
5 INSERT INTO enroll VALUES ('1PE11CS005',112,3,100);
```

Server: 127.0.0.1 » Database: enrollment\_student » Table: enroll
















[Browse](#) [Structure](#) [SQL](#) [Search](#) [Insert](#) [Export](#)

✓ Showing rows 0 - 4 (5 total, Query took 0.0005 seconds.)

```
SELECT * FROM `enroll`
```

☐ Show all | Number of rows: 25 ▼ Filter rows:

+ Options

<div><div>← T →</div><div>▼</div></div>				regno	courseno	sem	marks
<input type="checkbox"/>	 Edit	 Copy	 Delete	1PE11CS001	115	3	100
<input type="checkbox"/>	 Edit	 Copy	 Delete	1PE11CS002	114	5	100
<input type="checkbox"/>	 Edit	 Copy	 Delete	1PE11CS003	113	5	100
<input type="checkbox"/>	 Edit	 Copy	 Delete	1PE11CS004	111	5	100
<input type="checkbox"/>	 Edit	 Copy	 Delete	1PE11CS005	112	3	100

## 'TEXT' table:

Server: 127.0.0.1 » Database: enrollment\_student » Table: text

[Browse](#) [Structure](#) [SQL](#) [Search](#) [Insert](#) [Export](#) [Import](#)

Run SQL query/queries on table enrollment\_student.text: ?

```
1 INSERT INTO text VALUES (10, 'DATABASE SYSTEMS', 'PEARSON', 'SCHIELD');
2 INSERT INTO text VALUES (900, 'OPERATING SYSTEMS', 'PEARSON', 'LELAND');
3 INSERT INTO text VALUES (901, 'CIRCUITS', 'HALL INDIA', 'BOB');
4 INSERT INTO text VALUES (902, 'SYSTEM SOFTWARE', 'PETERSON', 'JACOB');
5 INSERT INTO text VALUES (903, 'SCHEDULING', 'PEARSON', 'PATIL');
6 INSERT INTO text VALUES (904, 'DATABASE SYSTEMS', 'PEARSON', 'JACOB');
7 INSERT INTO text VALUES (905, 'DATABASE MANAGER', 'PEARSON', 'BOB');
8 INSERT INTO text VALUES (906, 'SIGNALS', 'HALL INDIA', 'SUMIT');
```

Server: 127.0.0.1 » Database: enrollment\_student » Table: text

[Browse](#) [Structure](#) [SQL](#) [Search](#) [Insert](#) [Export](#) [Import](#)

✓ Showing rows 0 - 7 (8 total, Query took 0.0007 seconds.)

SELECT \* FROM `text`

☐ Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key:

+ Options

	book_isbn	book_title	publisher	author
<input type="checkbox"/> Edit Copy Delete	10	DATABASE SYSTEMS	PEARSON	SCHIELD
<input type="checkbox"/> Edit Copy Delete	900	OPERATING SYSTEMS	PEARSON	LELAND
<input type="checkbox"/> Edit Copy Delete	901	CIRCUITS	HALL INDIA	BOB
<input type="checkbox"/> Edit Copy Delete	902	SYSTEM SOFTWARE	PETERSON	JACOB
<input type="checkbox"/> Edit Copy Delete	903	SCHEDULING	PEARSON	PATIL
<input type="checkbox"/> Edit Copy Delete	904	DATABASE SYSTEMS	PEARSON	JACOB
<input type="checkbox"/> Edit Copy Delete	905	DATABASE MANAGER	PEARSON	BOB
<input type="checkbox"/> Edit Copy Delete	906	SIGNALS	HALL INDIA	SUMIT

## 'BOOK ADOPTION' table:

Server: 127.0.0.1 » Database: enrollment\_student » Table: book\_adoption

[Browse](#) [Structure](#) [SQL](#) [Search](#) [Insert](#) [Export](#)

Run SQL query/queries on table enrollment\_student.book\_adoption: ?

```
1 INSERT INTO book_adoption VALUES (111,5,10);
2 INSERT INTO book_adoption VALUES (111,5,900);
3 INSERT INTO book_adoption VALUES (111,5,903);
4 INSERT INTO book_adoption VALUES (112,3,904);
5 INSERT INTO book_adoption VALUES (113,3,902);
6 INSERT INTO book_adoption VALUES (113,5,901);
7 INSERT INTO book_adoption VALUES (114,5,905);
8 INSERT INTO book_adoption VALUES (115,3,906);
```

Server: 127.0.0.1 » Database: enrollment\_student » Table: book\_adoption

[Browse](#) [Structure](#) [SQL](#) [Search](#) [Insert](#) [Export](#)

✓ Showing rows 0 - 7 (8 total, Query took 0.0006 seconds.)

SELECT \* FROM `book\_adoption`

☐ Show all | Number of rows: 25 ▼ Filter rows:

+ Options

				courseno	sem	book_isbn
<input type="checkbox"/>	Edit	Copy	Delete	111	5	10
<input type="checkbox"/>	Edit	Copy	Delete	111	5	900
<input type="checkbox"/>	Edit	Copy	Delete	111	5	903
<input type="checkbox"/>	Edit	Copy	Delete	112	3	904
<input type="checkbox"/>	Edit	Copy	Delete	113	5	901
<input type="checkbox"/>	Edit	Copy	Delete	113	3	902
<input type="checkbox"/>	Edit	Copy	Delete	114	5	905
<input type="checkbox"/>	Edit	Copy	Delete	115	3	906



iii. Demonstrate how you add a new text book to the database and make this book be adopted by some department.

Query:

```
INSERT INTO text VALUES (907,'SCHEMA DIAGRAMS','HALL INDIA','RICHARD');
```

```
INSERT INTO book_adoption VALUES (113,4,907);
```

Server: 127.0.0.1 » Database: enrollment\_student » Table: text

Browse Structure SQL Search Insert Export

Run SQL query/queries on table enrollment\_student.text:

```
1 INSERT INTO text VALUES (907,'SCHEMA DIAGRAMS','HALL INDIA','RICHARD');
2 INSERT INTO book_adoption VALUES (113,4,907);
```

Server: 127.0.0.1 » Database: enrollment\_student » Table: text

Browse Structure SQL Search Insert Export Import

✓ Showing rows 0 - 8 (9 total, Query took 0.0005 seconds.)

SELECT \* FROM `text`

☐ Show all | Number of rows: 25 | Filter rows: Search this table | Sort by key

+ Options

	book_isbn	book_title	publisher	author
<input type="checkbox"/> Edit Copy Delete	10	DATABASE SYSTEMS	PEARSON	SCHIELD
<input type="checkbox"/> Edit Copy Delete	900	OPERATING SYSTEMS	PEARSON	LELAND
<input type="checkbox"/> Edit Copy Delete	901	CIRCUITS	HALL INDIA	BOB
<input type="checkbox"/> Edit Copy Delete	902	SYSTEM SOFTWARE	PETERSON	JACOB
<input type="checkbox"/> Edit Copy Delete	903	SCHEDULING	PEARSON	PATIL
<input type="checkbox"/> Edit Copy Delete	904	DATABASE SYSTEMS	PEARSON	JACOB
<input type="checkbox"/> Edit Copy Delete	905	DATABASE MANAGER	PEARSON	BOB
<input type="checkbox"/> Edit Copy Delete	906	SIGNALS	HALL INDIA	SUMIT
<input type="checkbox"/> Edit Copy Delete	907	SCHEMA DIAGRAMS	HALL INDIA	RICHARD

Server: 127.0.0.1 » Database: enrollment\_student » Table: book\_adoption

**Browse** **Structure** **SQL** **Search** **Insert** **Export**

✓ Showing rows 0 - 8 (9 total, Query took 0.0006 seconds.)

```
SELECT * FROM `book_adoption`
```

☐ Show all | Number of rows: 25 Filter rows: Search this table

+ Options

				courseno	sem	book_isbn
<input type="checkbox"/>	Edit	Copy	Delete	111	5	10
<input type="checkbox"/>	Edit	Copy	Delete	111	5	900
<input type="checkbox"/>	Edit	Copy	Delete	111	5	903
<input type="checkbox"/>	Edit	Copy	Delete	112	3	904
<input type="checkbox"/>	Edit	Copy	Delete	113	5	901
<input type="checkbox"/>	Edit	Copy	Delete	113	3	902
<input type="checkbox"/>	Edit	Copy	Delete	113	4	907
<input type="checkbox"/>	Edit	Copy	Delete	114	5	905
<input type="checkbox"/>	Edit	Copy	Delete	115	3	906

**iv. Produce a list of text books (include Course #, Book-ISBN, Book-title) in the alphabetical order for courses offered by the 'CS' department that use more than two books.**

Query:

```
SELECT c.courseno, t.book_isbn, t.book_title FROM course c, book_adoption ba, text t
WHERE c.courseno=ba.courseno AND ba.book_isbn=t.book_isbn AND c.dept='CSE' AND 2 <
(SELECT COUNT(book_isbn) FROM book_adoption b WHERE c.courseno=b.courseno) ORDER
BY t.book_title;
```



Server: 127.0.0.1 » Database: enrollment\_student

Structure SQL Search Query Export Import

Run SQL query/queries on database enrollment\_student: ?

```

1 SELECT c.courseno, t.book_isbn, t.book_title
2 FROM course c, book_adoption ba, text t
3 WHERE c.courseno=ba.courseno
4 AND ba.book_isbn=t.book_isbn
5 AND c.dept='CSE'
6 AND 2 < (SELECT COUNT(book_isbn)
7         FROM book_adoption b
8         WHERE c.courseno=b.courseno)
9 ORDER BY t.book_title;

```

Server: 127.0.0.1 » Database: enrollment\_student

Structure SQL Search Query Export Import Operations Pri

Show query box

✓ Showing rows 0 - 2 (3 total, Query took 0.0025 seconds.) [book\_title: DATABASE SYSTEMS... - SCHEDULING...]

```

SELECT c.courseno, t.book_isbn, t.book_title FROM course c, book_adoption ba, text t WHERE c.courseno=ba.courseno AND ba.book_isbn=t.book_isbn AND c.dept='CSE' AND 2 < (SELECT COUNT(book_isbn) FROM book_adoption b WHERE c.courseno=b.courseno) ORDER BY t.book_title

```

☐ Show all | Number of rows: 25 ▼ Filter rows: Search this table

+ Options

courseno	book_isbn	book_title ▲ 1
111	10	DATABASE SYSTEMS
111	900	OPERATING SYSTEMS
111	903	SCHEDULING

v. List any department that has all its adopted books published by a specific publisher.

Query:

```
SELECT DISTINCT c.dept FROM course c WHERE c.dept IN (SELECT c.dept FROM course c,book_adoption b,text t WHERE c.courseno=b.courseno AND t.book_isbn=b.book_isbn AND t.publisher='PEARSON') AND c.dept NOT IN (SELECT c.dept FROM course c,book_adoption b,text t WHERE c.courseno=b.courseno AND t.book_isbn=b.book_isbn AND t.publisher != 'PEARSON');
```

Server: 127.0.0.1 » Database: enrollment\_student

Structure SQL Search Query Export Import Operations

Run SQL query/queries on database enrollment\_student:

```
1 SELECT DISTINCT c.dept
2 FROM course c
3 WHERE c.dept IN (SELECT c.dept
4                 FROM course c,book_adoption b,text t
5                 WHERE c.courseno=b.courseno
6                 AND t.book_isbn=b.book_isbn
7                 AND t.publisher='PEARSON')
8                 AND c.dept NOT IN (SELECT c.dept
9                                   FROM course c,book_adoption b,text t
10                                  WHERE c.courseno=b.courseno
11                                  AND t.book_isbn=b.book_isbn
12                                  AND t.publisher != 'PEARSON');
```

Server: 127.0.0.1 » Database: enrollment\_student » Table: course

Browse Structure SQL Search Insert Export Import

Show query box

Showing rows 0 - 0 (1 total, Query took 0.0032 seconds.)

```
SELECT DISTINCT c.dept FROM course c WHERE c.dept IN (SELECT c.dept FROM course c,bo
t.publisher='PEARSON') AND c.dept NOT IN (SELECT c.dept FROM course c,book_adoption
'PEARSON')
```

☐ Show all | Number of rows: 25 Filter rows: Search this table

+ Options

	dept
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	CSE