University Institute of Engineering

Department of Computer Science & Engineering

EXPERIMENT: 1

NAME: Himanshu Dubey **UID**: 23BCS12967

SECTION: KRG_2A **SEMESTER**: 5TH

SUBJECT CODE: 23CSP-339 **SUBJECT** : ADBMS

I. Aim Of The Practical:

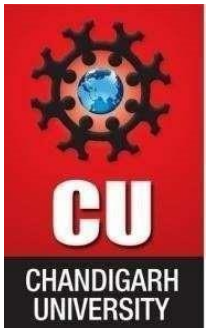
[EASY] Author-Book Relationship Using Joins and Basic SQL Operations

a) Design two tables — one for storing author details and the other for book details.
b) Ensure a foreign key relationship from the book to its respective author.
c) Insert at least three records in each table.
d) Perform an INNER JOIN to link each book with its author using the common author ID.
e) Select the book title, author name, and author's country.

[MEDIUM] Department-Course Subquery and Access Control.

a) Design normalized tables for departments and the courses they offer, maintaining a foreign key relationship.
b) Insert five departments and at least ten courses across those departments.
c) Use a subquery to count the number of courses under each department.
d) Filter and retrieve only those departments that offer more than two courses.
e) Grant SELECT-only access on the courses table to a specific user.

II. Tools Used: SQL Server Management Studio



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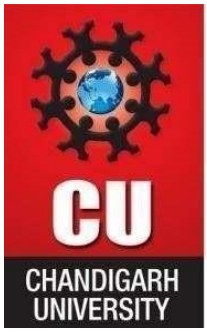
III. Code:

```
-----EASY-------------- -
   creating tables create
   table authors(   auth_id
   int primary key,
   auth_name varchar(50),
   country varchar(100)
   );
   create table books(   book_id
   int primary key,   book_name
   varchar(50),   auth_id int,
   publish_year
   int );

   -- foreign key  alter table books add constraint
   fk_books_authors  foreign key (auth_id) references
   authors(auth_id);
    insert into authors (auth_id, auth_name, country) values
   (1, 'khushi', 'uttarakhand'),
   (2, 'rahul ', 'jharkhand'),
   (3, 'rumani', 'karnataka');
    insert into books (book_id, book_name, auth_id,
   publish_year)
   values
   (1001, 'jalebi sadyantra', 1, 2023),
   (1002, 'chai ki chuski', 2, 1921),
   (1003, 'lassi di jindagi', 1, 2010),
   (1004, 'ricksha wala', 1, 2002),
   (1005, 'chakravyu algorithm', 3, 1991),
   (1006, 'swadist bytes', 3, 1942);
    --displaying both tables select * from authors select *
   from books
   --displaying selected data after join select
   b.book_name,a.auth_name,a.country from authors a
   inner join books b on a.auth_id = b.auth_id; ---------MEDIUM-
   - ----- -- creating tables create table departments (
   department_id int primary key,   department_name varchar(50)
   );
```



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```
create table courses (   course_id int
primary key,   course_name varchar(50),
department_id int,   foreign key
(department_id) references
departments(department_id)
);  insert into departments (department_id,
department_name) values
(1, 'artificial intelligence'),
(2, 'biotechnology'),
(3, 'environmental studies'),
(4, 'finance and economics'),
(5, 'design and media');
 insert into courses (course_id, course_name, department_id)
values
(101, 'neural networks', 1),
(102, 'natural language processing', 1),
(103, 'machine ethics', 1),
(201, 'genomics mapping', 2),
(202, 'protein modeling', 2),
(203, 'bioinformatics intro', 2),
(301, 'climate policy', 3),
(401, 'risk analysis', 4),
(402, 'portfolio management', 4),
(501, 'graphic storytelling', 5),
(502, 'interactive UI design', 5);
 --displaying tables select
* from departments select
* from courses
select department_name  from
departments  where department_id
in (   select department_id
from courses    group by
department_id    having
count(course_id) > 2
);
-- grant select-only access grant select
on courses to user1;
```

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Output :

[EASY]

Results | Messages

	auth_id	auth_name	country
1	1	khushi	uttarakhand
2	2	rahul	jharkhand
3	3	rumani	karnataka

	book_id	book_name	auth_id	publish_year
1	1001	jalebi sadyantra	1	2023
2	1002	chai ki chuski	2	1921
3	1003	lassi di jindagi	1	2010
4	1004	ricksha wala	1	2002
5	1005	chakravyu algorithm	3	1991
6	1006	swadist bytes	3	1942

[MEDIUM]

Results | Messages

	book_name	auth_name	country
1	jalebi sadyantra	khushi	uttarakhand
2	chai ki chuski	rahul	jharkhand
3	lassi di jindagi	khushi	uttarakhand
4	ricksha wala	khushi	uttarakhand
5	chakravyu algorithm	rumani	karnataka
6	swadist bytes	rumani	karnataka

100 % | No issues found

Results | Messages

	department_id	department_name
1	1	artificial intelligence
2	2	biotechnology
3	3	environmental studies
4	4	finance and economics
5	5	design and media

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	course_id	course_name	department_id
1	101	neural networks	1
2	102	natural language processing	1
3	103	machine ethics	1
4	201	genomics mapping	2
5	202	protein modeling	2
6	203	bioinformatics intro	2
7	301	climate policy	3
8	401	risk analysis	4

[FINAL]

	department_name
1	artificial intelligence
2	biotechnology

IV. Learning Outcomes:

- I discovered how to define and build relational tables using the `CREATE TABLE` command, and I now understand when to use data types like `INT` and `VARCHAR`. o I grasped the importance of primary keys and how they help uniquely identify each record in a table.
- I explored how foreign keys work to connect related tables and maintain data integrity—like linking books to their respective authors.
- I practiced using `INNER JOIN` to combine data from multiple tables based on shared keys such as `author_id`.
- I understood how to design normalized tables with foreign key relationships, which is especially useful for modelling real-world entities like departments and courses.
- I got hands-on experience inserting multiple records into related tables using the `INSERT INTO` statement. o I learned how to use subqueries with `GROUP BY` and `HAVING` to summarize data and apply conditions to those summaries.
- I applied filtering logic to pull records from a parent table based on results from a subquery on a related child table.