



**Kampus
Merdeka**
INDONESIA JAYA



SQL CLAUSE: JOIN

Bachelor of Information Systems

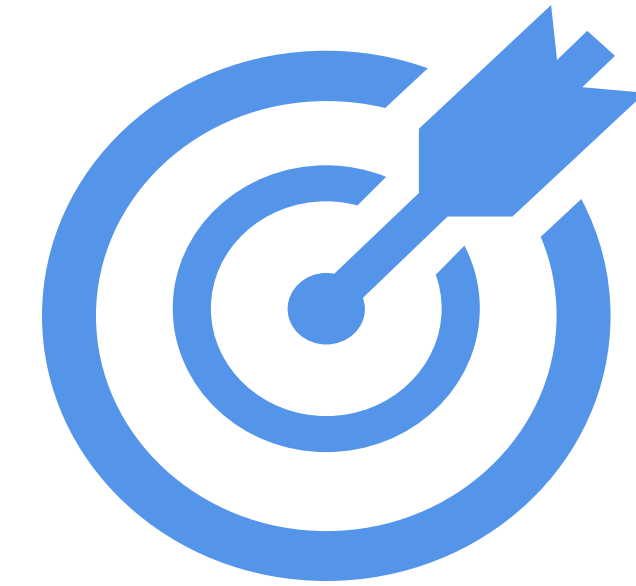


INTRODUCTION TO
DATABASE AND INFORMATION SYSTEM



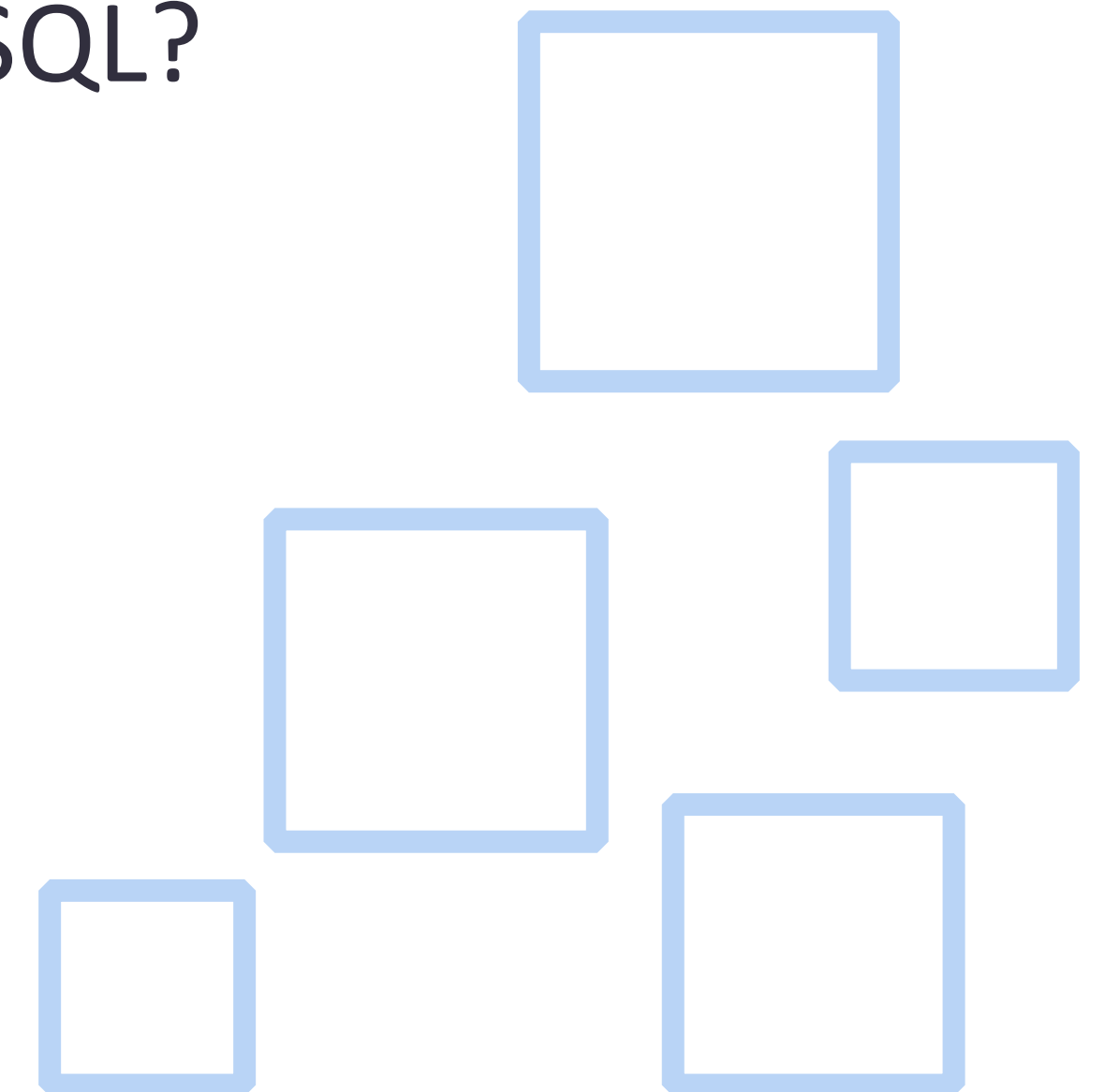
Learning Objective(s)

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This material should address the following question(s).

- ❓ How do we retrieve data from multiple database tables in SQL?



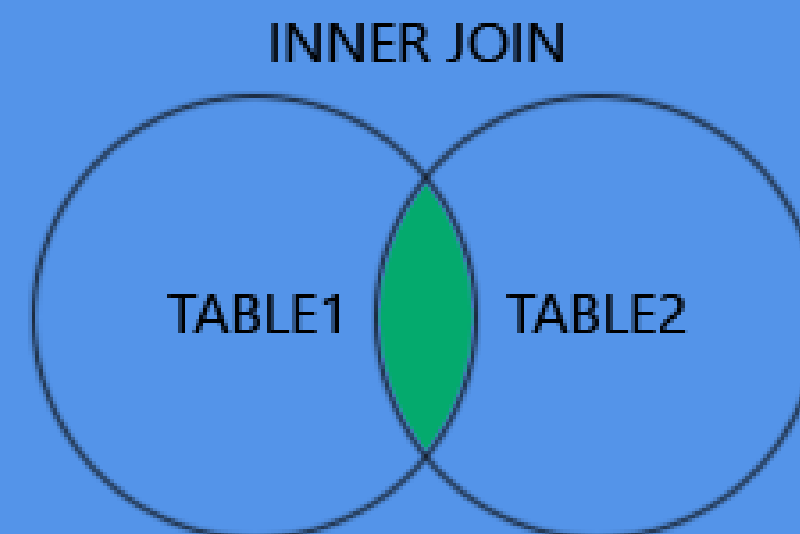
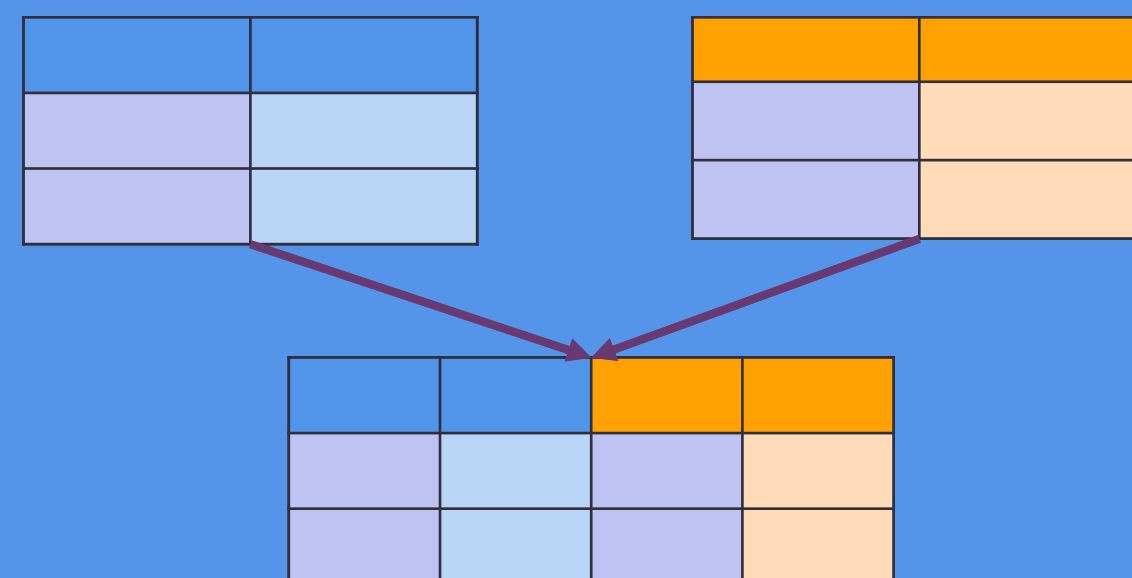
Question



How do we **retrieves data** from
multiple database table in SQL?

JOIN

- In SQL, "joining tables" means combining data from two or more tables.
- A table join creates a temporary table showing the data from the joined tables.



- The SQL statement (that contains a **JOIN**), selects records that have matching values in both tables.
- This type of **JOIN** a.k.a **INNER JOIN**.
- Syntax:

```
SELECT * | column1, columnN  
FROM TableNameA  
JOIN TableNameB  
ON TableNameA.key = TableNameB.key;
```

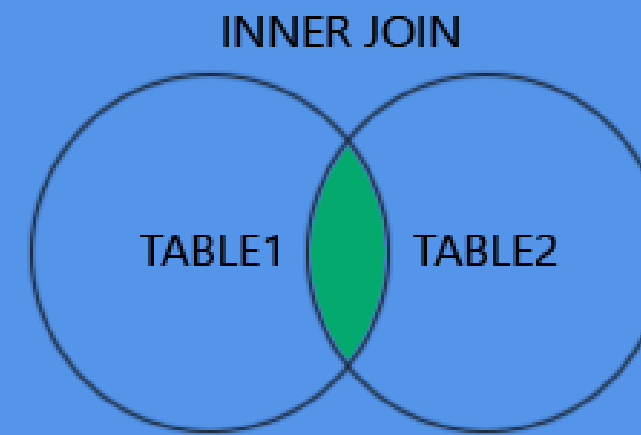
Inner Join Example

Table named **Books** stores information about books.

isbn_13	title	authors	publisher	published_year	edition
978-9380931913	Data Mining: Co...	Jiawei Han, Micheline Kamber	Morgan Kaufmann	2011	3
978-1945051753	SQL QuickStart...	Walter Shields	ClydeBank Media LLC	2019	1
978-0078022128	Software Engine...	Roger S. Pressman, Bruce Maxim	McGraw-Hill	2014	8
978-0078022159	Database System...	A. Silberschatz, H. F. Korth, S. Sudarshan	McGraw-Hill	2019	7

Table named **Borrows** stores information about individual borrowing with their corresponding number of days borrowed.

id	borrower_name	isbn_13	borrow_date	days_borrowed
1	Sinta	978-9380931913	05/06/2023	20
2	Butet	978-0078022128	19/06/2023	15
3	Ucok	978-1945051753	10/07/2023	13
4	Dapot	978-9380931913	14/08/2023	7
5	Tiur	978-0078022159	15/08/2023	9



Q: Join the two tables **Books** and **Borrows**, using the **isbn_13** field in both tables as the relationship between the two tables.

A:

```
SELECT *  
FROM Books  
JOIN Borrows  
ON Books.isbn_13 = Borrows.isbn_13;
```

isbn_13	title	authors	publishe r	publishe d_year	edition	id	borrower_n ame	isbn_13	borrow date	days_borro wed
978-9380931913	Data Mining: Co...	Jiawei Han, Micheline Kamber	Morgan Kaufmann	2011	3	1	Sinta	978-9380931913	2023-06-05	20
978-9380931913	Data Mining: Co...	Jiawei Han, Micheline Kamber	Morgan Kaufmann	2011	3	4	Dapot	978-9380931913	2023-08-14	7
978-1945051753	SQL QuickStart...	Walter Shields	ClydeBank Media LLC	2019	1	3	Ucok	978-1945051753	2023-07-10	13
978-0078022128	Software Engine...	Roger S. Pressman, Bruce Maxim	McGraw-Hill	2014	8	2	Butet	978-0078022128	2023-06-19	15
978-0078022159	Database System...	A. Silberschatz, H. F. Korth, S. Sudarshan	McGraw-Hill	2019	7	5	Tiur	978-0078022159	2023-08-15	9

Question

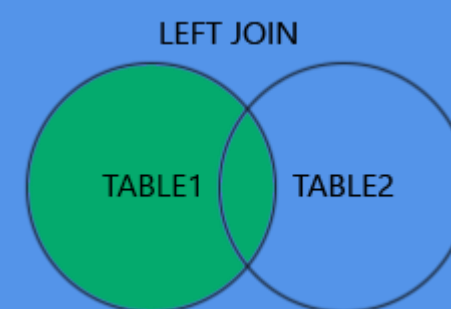
How do we return all records from the left table and the matched records from the right table?

LEFT JOIN

- The **LEFT JOIN** returns all records from the left table and the matching records from the right table.
- The result is 0 records from the right side if there is no match.

- Syntax:

```
SELECT * | column1, columnN  
FROM TableNameA  
LEFT JOIN TableNameB  
ON TableNameA.key = TableNameB.key;
```



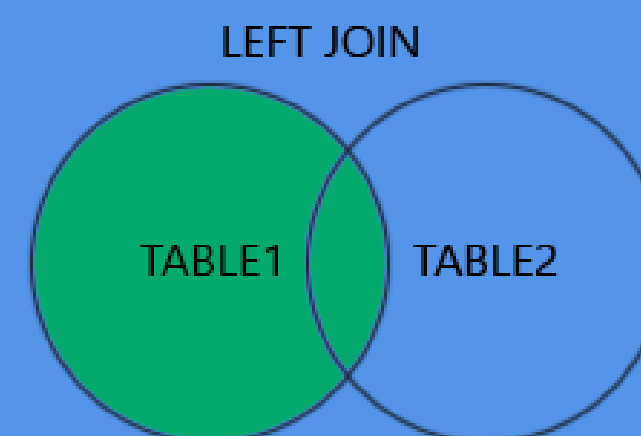
Left Join Example

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1	Sinta	978-9380931913	05/06/2023	20
2	Butet	978-0078022128	19/06/2023	15
3	Ucok	978-1945051753	10/07/2023	13



Q: Returns all records from the left table (**Books**) and the matching records from the right table (**Borrows**)

A:

```
SELECT *  
FROM Books  
LEFT JOIN Borrows  
ON Books.isbn_13 = Borrows.isbn_13;
```

isbn_13	title	authors	publishe r	publishe d_year	edition	id	borrower _name	isbn_13	borrow date	days_borro wed
978-9380931913	Data Mining: Co...	Jiawei Han, Micheline Kamber	Morgan Kaufmann	2011	3	1	Sinta	978-9380931913	2023-06-05	20
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978-0078022159	Database System...	A. Silberschatz, H. F. Korth, S. Sudarshan	McGraw-Hill	2019	7	<i>null</i>	<i>null</i>	<i>null</i>	<i>null</i>	<i>null</i>

there is no matching records of book with isbn_13 978-0078022159 from Borrows table

Question

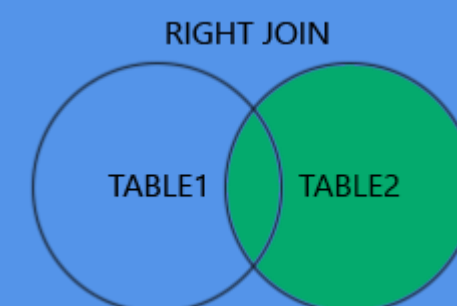
How do we return all records from the right table and the matched records from the left table?

RIGHT JOIN

- The **RIGHT JOIN** returns all records from the right table and the matching records from the left table.
- The result is 0 records from the left side if there is no match.

- Syntax:

```
SELECT * | column1, columnN  
FROM TableNameA  
RIGHT JOIN TableNameB  
ON TableNameA.key = TableNameB.key;
```



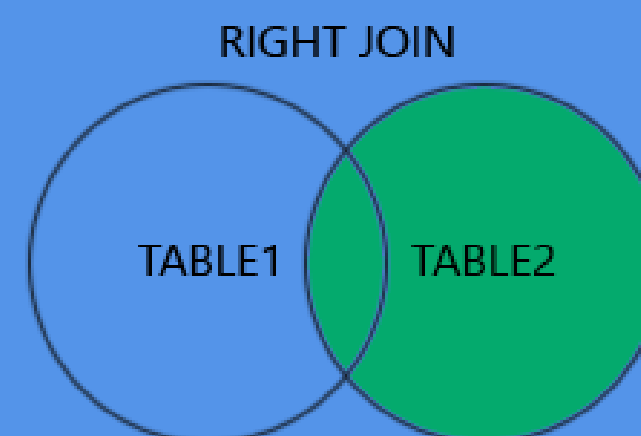
Right Join Example

Table named **Books** stores information about books.

isbn_13	title	authors	publisher	published_year	edition
978-9380931913	Data Mining: Co...	Jiawei Han, Micheline Kamber	Morgan Kaufmann	2011	3
978-1945051753	SQL QuickStart...	Walter Shields	ClydeBank Media LLC	2019	1
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2	Butet	978-0078022128	19/06/2023	15
3	Ucok	978-1945051753	10/07/2023	13



Q: Returns all records from the right table (**Borrows**) and the matching records from the left table (**Books**)

A:

```
SELECT *  
FROM Books  
RIGHT JOIN Borrows  
ON Books.isbn_13 = Borrows.isbn_13;
```

isbn_13	title	authors	publishe r	publishe d_year	edition	id	borrower _name	isbn_13	borrow date	days_borro wed
978-9380931913	Data Mining: Co...	Jiawei Han, Michelin e Kamber	Morgan Kaufmann	2011	3	1	Sinta	978-9380931913	2023-06-05	20
978-0078022128	Software Engine..	Roger S. Pressman, Bruce Maxim	McGraw-Hill	2014	8	2	Butet	978-0078022128	19/06/2023	15
978-1945051753	SQL QuickSta rt...	Walter Shields	ClydeBan k Media LLC	2019	1	3	Ucok	978-1945051753	2023-07-10	13

Question

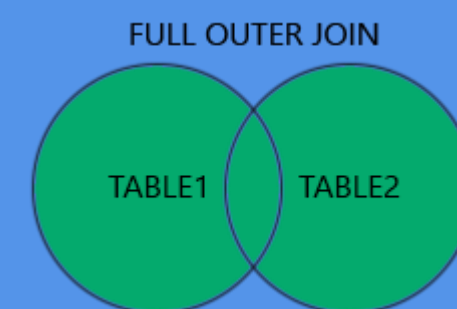
How do we return all records when there is a match in either left or right table?

FULL JOIN

- The **FULL JOIN** returns all records when there is a match in left or right table records.
- **FULL OUTER JOIN** and **FULL JOIN** are the same.

- Syntax:

```
SELECT * | column1, columnN  
FROM TableNameA  
FULL JOIN TableNameB  
ON TableNameA.key = TableNameB.key;
```



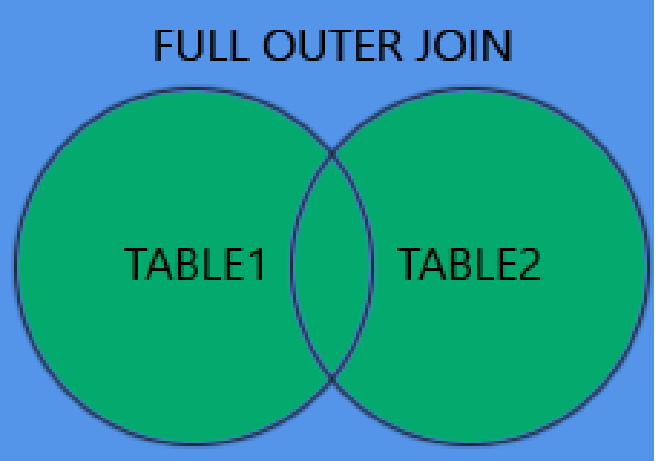
Full Join Example

Table named **Books** stores information about books.

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978-9380931913	Data Mining: Co...	Jiawei Han, Micheline Kamber	Morgan Kaufmann	2011	3
978-1945051753	SQL QuickStart...	Walter Shields	ClydeBank Media LLC	2019	1
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Table named **Borrows** stores information about individual borrowing with their corresponding number of days borrowed.

id	borrower_name	isbn_13	borrow_date	days_borrowed
1	Sinta	978-9380931913	05/06/2023	20
2	Butet	978-0078022128	19/06/2023	15
3	Ucok	978-0131015142	10/07/2023	13



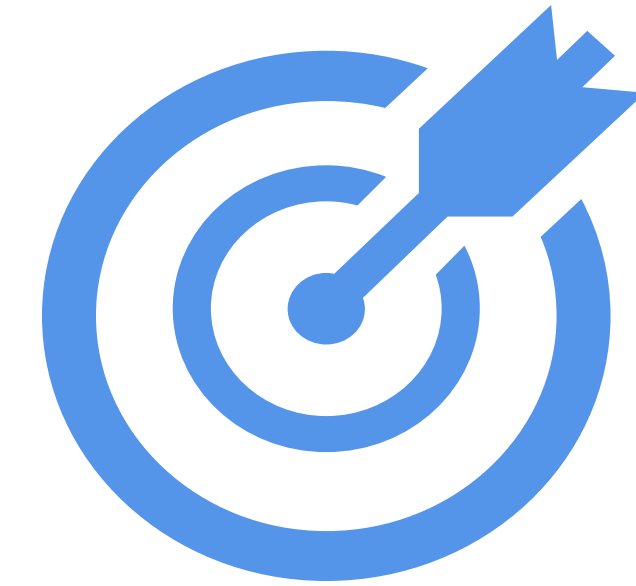
Q: Returns all matching records from **Borrows** and **Books** tables whether the other table matches or not.

A: `SELECT *
FROM Books
FULL JOIN Borrows
ON Books.isbn_13 = Borrows.isbn_13;`

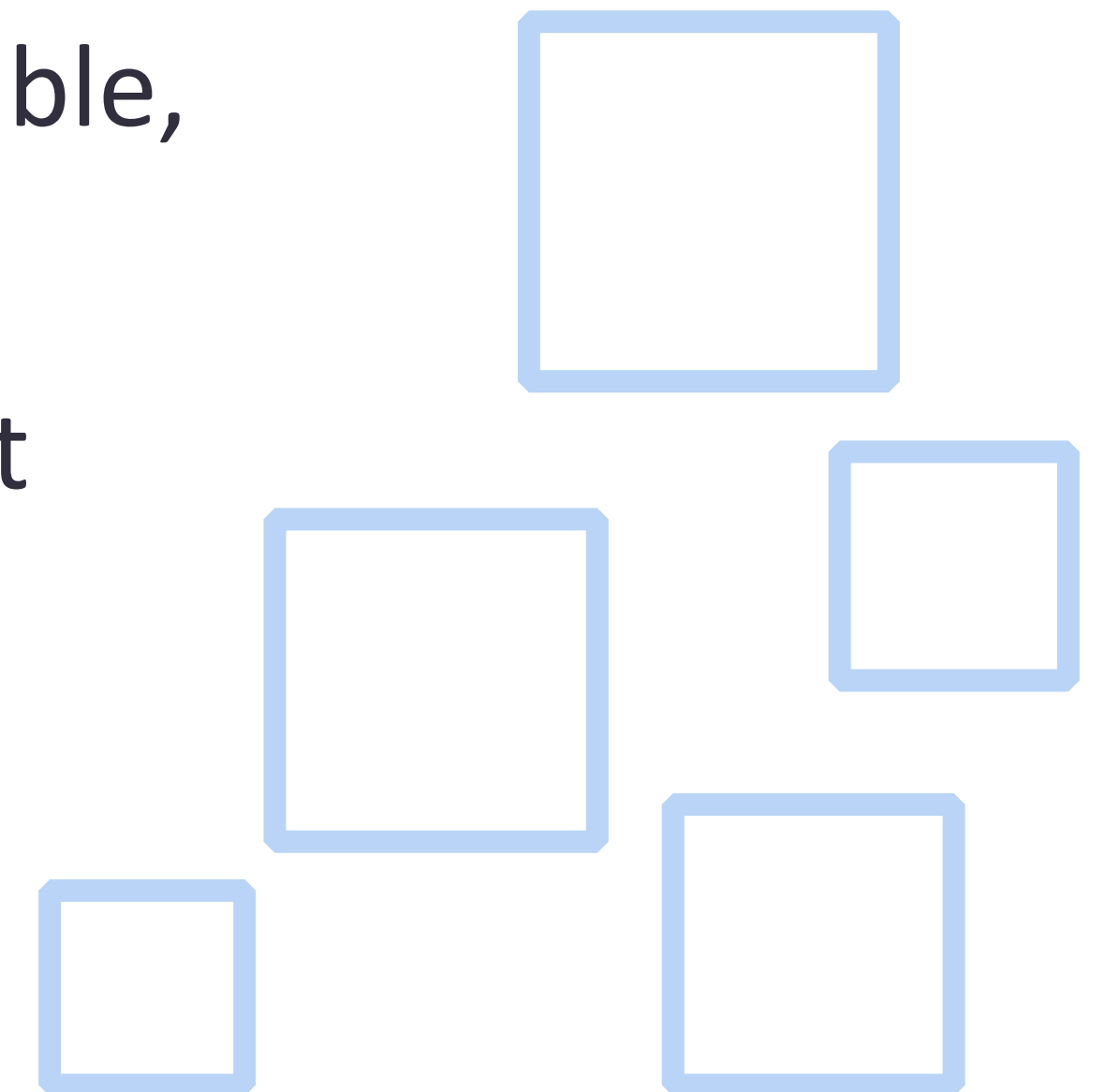
isbn_13	title	authors	publishe r	publishe d_year	edition	id	borrower _name	isbn_13	borrow date	days_borro wed
978-9380931913	Data Mining: Co...	Jiawei Han, Michelin e Kamber	Morgan Kaufmann	2011	3	1	Sinta	978-9380931913	05/06/2023	20
978-1945051753	SQL QuickSta rt...	Walter Shields	ClydeBan k Media LLC	2019	1	<i>null</i>	<i>null</i>	<i>null</i>	<i>null</i>	<i>null</i>
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978-0078022159	Database System.. .	A. Silbersc hatz, H. F. Korth, S. Sudarsha n	McGraw-Hill	2019	7	<i>null</i>	<i>null</i>	<i>null</i>	<i>null</i>	<i>null</i>
<i>null</i>	<i>null</i>	<i>null</i>	<i>null</i>	<i>null</i>	<i>null</i>	3	Ucok	978-0131015142	10/07/2023	13

Conclusion

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- ✓ **INNER JOIN** clause is used to returns records that have matching values in both tables.
- ✓ **LEFT JOIN** clause is used to return all records from the left table, and the matched records from the right table
- ✓ **RIGHT JOIN** clause is used to return all records from the right table, and the matched records from the left table
- ✓ **FULL JOIN** clause is used to return all records when there is a match in either left or right table



References

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- R, Elmasri, et. al., Fundamentals of Database Systems.
- A. Silberschatz, et. al., Database System Concepts.
- R. K. Rainer, et. al., Introduction to Information Systems.
- G. M. Marakas et. al., Introduction to Information Systems: Essentials for The e-Business Enterprise.

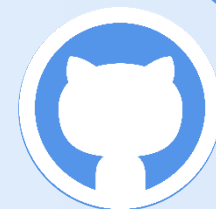


Course



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