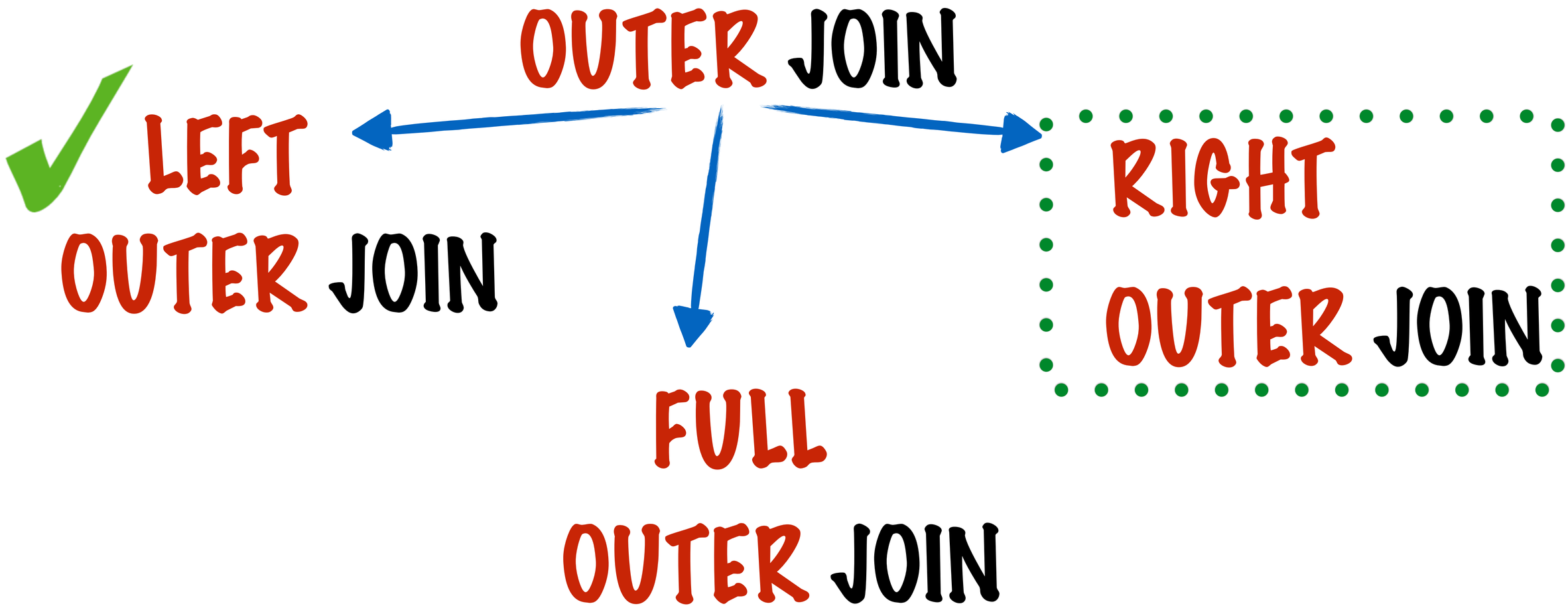
OUTER JOIN
LEFT OUTER JOIN
RIGHT OUTER JOIN
FULL OUTER JOIN

RIGHT OUTER JOIN

EXACTLY LIKE A LEFT OUTER JOIN, EXCEPT -

EACH ROW FROM THE TABLE ON THE RIGHT OF THE JOIN IS DEFINITELY IN THE OUTPUT (EVEN IF WITH NULLS)

RIGHT OUTER JOIN

EXACTLY LIKE A LEFT OUTER JOIN, EXCEPT -

EACH ROW FROM THE TABLE ON THE RIGHT OF THE JOIN IS DEFINITELY IN THE OUTPUT (EVEN IF WITH NULLS)

RIGHT OUTER JOIN

EXACTLY LIKE A LEFT OUTER JOIN,
EXCEPT -

EACH ROW FROM THE TABLE ON THE RIGHT OF THE JOIN IS DEFINITELY IN THE OUTPUT (EVEN IF WITH NULLS)

SIMPLY THE MIRROR IMAGE OF THE LEFT OUTER JOIN

RIGHT OUTER JOIN

```
SELECT      M.MOVIEID,
            R.REVIEW

 FROM       MOVIES M
       RIGHT OUTER JOIN
            REVIEWS R
       ON
            M.MOVIEID = R.MOVIEID;
```

WORK OUT THE OUTPUT?

RIGHT OUTER JOIN

```
SELECT      M.MOVIEID,
            R.REVIEW

FROM        MOVIES M
      RIGHT OUTER JOIN
            REVIEWS R
      ON
            M.MOVIEID = R.MOVIEID;
```

MOVIES

MovieID	MovieName	Year	Country
1	The Godfather	1972	USA
2	The Departed	2006	USA
3	Infernal Affairs	2002	Hong Kong
4	Parinda	1989	India
5	Gunda	1998	India
6	Little Caesar	1931	USA

REVIEWS

MovieID	Review	RatingStars
1	Amazing	5
1	Genre-Defining	5
1	Classic	5
1	Overrated	1
1	OK, Not Great	3
1	Two Thumbs Up	5
3	Crossover Hit	5
3	Love It	4
3	Nailbiting!	5
1	Cinematic Masterpiece	5
5	So Bad Its Good	0
2	Not As Good As Original	3
2	Overrated	2
2	Too Morbid	3
4	Sad, Thought-Provoking	4
4	Cinema At Its Best	5

WORK OUT THE OUTPUT?

MOVIES

MovieID	MovieName	Year	Country
1	The Godfather	1972	USA
2	The Departed	2006	USA
3	Infernal Affairs	2002	Hong Kong
4	Parinda	1989	India
5	Gunda	1998	India
6	Little Caesar	1931	USA

```
MOVIES M
RIGHT OUTER
JOIN
REVIEWS R
ON
M.MOVIEID =
R.MOVIEID;
```

REVIEWS

MovieID	Review	RatingStars
1	Amazing	5
1	Genre-Defining	5
1	Classic	5
1	Overrated	1
1	OK, Not Great	3
1	Two Thumbs Up	5
3	Crossover Hit	5
3	Love It	4
3	Nailbiting!	5
1	Cinematic Masterpiece	5
5	So Bad Its Good	0
2	Not As Good As Original	3
2	Overrated	2
2	Too Morbid	3
4	Sad, Thought-Provoking	4
4	Cinema At Its Best	5

OUTPUT

MovieID	MovieName	Year	Country	MovieID	Review	RatingStars
1	The Godfather	1972	USA	1	Amazing	5
1	The Godfather	1972	USA	1	Genre-	5
1	The Godfather	1972	USA	1	Classic	5
1	The Godfather	1972	USA	1	Overrated	1
1	The Godfather	1972	USA	1	OK, Not Great	3
1	The Godfather	1972	USA	1	Two Thumbs	5
3	Infernal Affairs	2002	Hong Kong	3	Crossover Hit	5
3	Infernal Affairs	2002	Hong Kong	3	Love It	4
3	Infernal Affairs	2002	Hong Kong	3	Nailbiting!	5
1	The Godfather	1972	USA	1	Cinematic	5
5	Gunda	1998	India	5	So Bad Its	0
2	The Departed	2006	USA	2	Not As Good	3
2	The Departed	2006	USA	2	Overrated	2
2	The Departed	2006	USA	2	Too Morbid	3
4	Parinda	1989	India	4	Sad, Thought-	4
4	Parinda	1989	India	4	Cinema At Its	5

MOVIES

MovieID	MovieName	Year	Country
1	The Godfather	1972	USA
2	The Departed	2006	USA
3	Infernal Affairs	2002	Hong Kong
4	Parinda	1989	India
5	Gunda	1998	India
6	Little Caesar	1931	USA

```
MOVIES M
RIGHT OUTER
JOIN
REVIEWS R
ON
M.MOVIEID =
R.MOVIEID;
```

REVIEWS

MovieID	Review	RatingStars
1	Amazing	5
1	Genre-Defining	5
1	Classic	5
1	Overrated	1
1	OK, Not Great	3
1	Two Thumbs Up	5
3	Crossover Hit	5
3	Love It	4
3	Nailbiting!	5
1	Cinematic Masterpiece	5
5	So Bad It's Good	0
2	Not As Good	3
2	Overrated	2
2	Too Morbid	3
4	Sad, Thought-Provoking	4
4	Cinema At Its Finest	5

NOTICE THERE IS NO ROW IN THE OUTPUT FOR LITTLE CAESAR NOW!

Mov						ngStars
1	The Godfather	1972	USA	1	Genre-	5
1	The Godfather	1972	USA	1	Classic	5
1	The Godfather	1972	USA	1	Overrated	1
1	The Godfather	1972	USA	1	OK, Not Great	3
1	The Godfather	1972	USA	1	Two Thumbs	5
3	Infernal Affairs	2002	Hong Kong	3	Crossover Hit	5
3	Infernal Affairs	2002	Hong Kong	3	Love It	4
3	Infernal Affairs	2002	Hong Kong	3	Nailbiting!	5
1	The Godfather	1972	USA	1	Cinematic	5
5	Gunda	1998	India	5	So Bad Its	0
2	The Departed	2006	USA	2	Not As Good	3
2	The Departed	2006	USA	2	Overrated	2
2	The Departed	2006	USA	2	Too Morbid	3
4	Parinda	1989	India	4	Sad, Thought-	4
4	Parinda	1989	India	4	Cinema At Its	5

MOVIES

MovieID	MovieName	Year	Country
1	The Godfather	1972	USA
2	The Departed	2006	USA
3	Infernal Affairs	2002	Hong Kong
4	Parinda	1989	India
5	Gunda	1998	India
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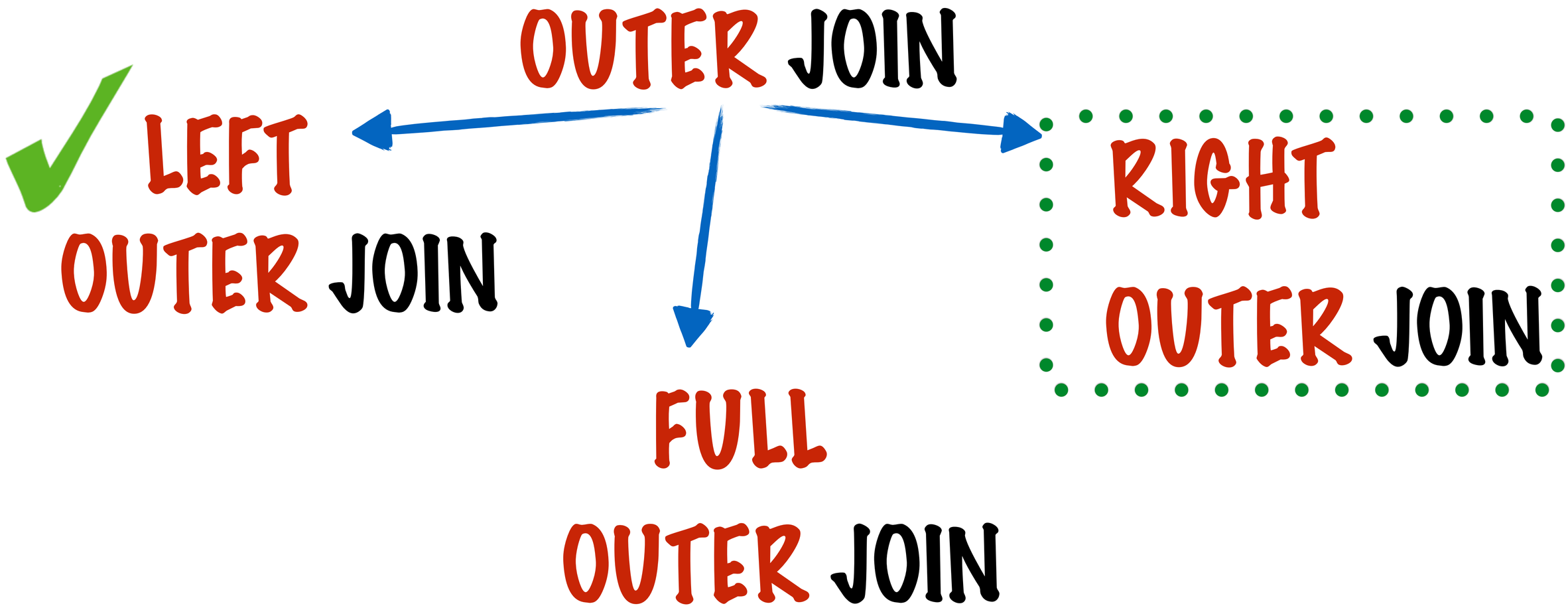
```
MOVIES M
RIGHT OUTER
JOIN
REVIEWS R
ON
M.MOVIEID =
R.MOVIEID;
```

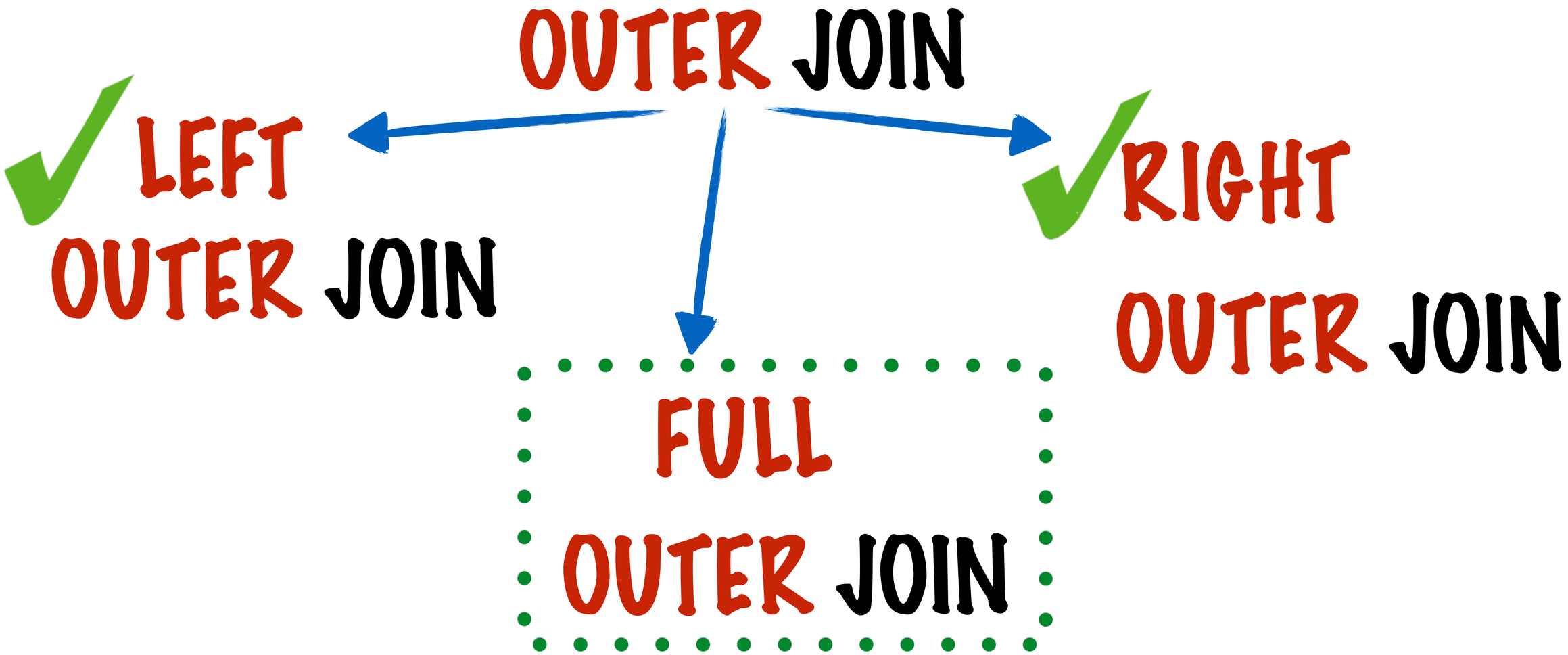
REVIEWS

MovieID	Review	RatingStars
1	Amazing	5
1	Genre-Defining	5
1	Classic	5
1	Overrated	1
1	OK, Not Great	3
1	Two Thumbs Up	5
3	Crossover Hit	5
3	Love It	4
3	Nailbiting!	5
1	Cinematic Masterpiece	5
		0
		3
		2
		3
		4
		5

NOTICE THAT THE REVIEW CORRESPONDING TO 'GUNDA' IS **PADDED WITH NULLS** IN THE COLUMNS WHICH COME FROM THE MOVIE TABLE

Mov						ngStars
1						5
1	The Godfather	1972	USA	1	Genre-	5
1	The Godfather	1972	USA	1	Classic	5
1	The Godfather	1972	USA	1	Overrated	1
1	The Godfather	1972	USA	1	OK, Not Great	3
1	The Godfather	1972	USA	1	Two Thumbs	5
3	Infernal Affairs	2002	Hong Kong	3	Crossover Hit	5
3	Infernal Affairs	2002	Hong Kong	3	Love It	4
3	Infernal Affairs	2002	Hong Kong	3	Nailbiting!	5
1	The Godfather	1972	USA	1	Cinematic	5
NULL	**NULL**	**NULL**	**NULL**	**5**	**So Bad Its**	**0**
2	The Departed	2006	USA	2	Not As Good	3
2	The Departed	2006	USA	2	Overrated	2
2	The Departed	2006	USA	2	Too Morbid	3
4	Parinda	1989	India	4	Sad, Thought-	4
4	Parinda	1989	India	4	Cinema At Its	5


OUTER JOIN
LEFT OUTER JOIN
RIGHT OUTER JOIN
FULL OUTER JOIN



ROWS FROM BOTH RIGHT AND LEFT WILL APPEAR IN THE OUTPUT - WITH NULLS IF NEEDED

FULL OUTER JOIN

```
SELECT      M.MOVIEID,
            R.REVIEW

FROM        MOVIES M
      FULL OUTER JOIN
            REVIEWS R
      ON
            M.MOVIEID = R.MOVIEID;
```

WORK OUT THE OUTPUT?

FULL OUTER JOIN

```
SELECT      M.MOVIEID,
            R.REVIEW

FROM        MOVIES M
    FULL OUTER JOIN
            REVIEWS R
    ON
            M.MOVIEID = R.MOVIEID;
```

MOVIES

MovieID	MovieName	Year	Country
1	The Godfather	1972	USA
2	The Departed	2006	USA
3	Infernal Affairs	2002	Hong Kong
4	Parinda	1989	India
5	Gunda	1998	India
6	Little Caesar	1931	USA

REVIEWS

MovieID	Review	RatingStars
1	Amazing	5
1	Genre-Defining	5
1	Classic	5
1	Overrated	1
1	OK, Not Great	3
1	Two Thumbs Up	5
3	Crossover Hit	5
3	Love It	4
3	Nailbiting!	5
1	Cinematic Masterpiece	5
5	So Bad Its Good	0
2	Not As Good As Original	3
2	Overrated	2
2	Too Morbid	3
4	Sad, Thought-Provoking	4
4	Cinema At Its Best	5

WORK OUT THE OUTPUT?

MOVIES

MovieID	MovieName	Year	Country
1	The Godfather	1972	USA
2	The Departed	2006	USA
3	Infernal Affairs	2002	Hong Kong
4	Parinda	1989	India
5	Gunda	1998	India
6	Little Caesar	1931	USA

```
MOVIES M
FULL OUTER JOIN
REVIEWS R
ON
M.MOVIEID =
R.MOVIEID;
```

REVIEWS

MovieID	Review	RatingStars
1	Amazing	5
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1	Two Thumbs Up	5
3	Crossover Hit	5
3	Love It	4
3	Nailbiting!	5
1	Cinematic Masterpiece	5
5	So Bad Its Good	0
2	Not As Good As Original	3
2	Overrated	2
2	Too Morbid	3
4	Sad, Thought-Provoking	4
4	Cinema At Its Best	5

OUTPUT

MovieID	MovieName	Year	Country	MovieID	Review	RatingStars
1	The Godfather	1972	USA	1	Amazing	5
1	The Godfather	1972	USA	1	Genre-Defining	5
1	The Godfather	1972	USA	1	Classic	5
1	The Godfather	1972	USA	1	Overrated	1
1	The Godfather	1972	USA	1	OK, Not Great	3
1	The Godfather	1972	USA	1	Two Thumbs Up	5
3	Infernal Affairs	2002	Hong Kong	3	Crossover Hit	5
3	Infernal Affairs	2002	Hong Kong	3	Love It	4
3	Infernal Affairs	2002	Hong Kong	3	Nailbiting!	5
1	The Godfather	1972	USA	1	Cinematic	5
5	Gunda	1998	India	5	So Bad Its Good	0
2	The Departed	2006	USA	2	Not As Good As	3
2	The Departed	2006	USA	2	Overrated	2
2	The Departed	2006	USA	2	Too Morbid	3
4	Parinda	1989	India	4	Sad, Thought-	4
4	Parinda	1989	India	4	Cinema At Its	5
6	Little Caesar	1931	USA	NULL	NULL	NULL

MOVIES

MovieID	MovieName	Year	Country
1	The Godfather	1972	USA
2	The Departed	2006	USA
3	Infernal Affairs	2002	Hong Kong
4	Parinda	1989	India
5	Gunda	1998	India
6	Little Caesar	1931	USA

```
MOVIES M
FULL OUTER JOIN
REVIEWS R
ON
M.MOVIEID =
R.MOVIEID;
```

REVIEWS

MovieID	Review	RatingStars
1	Amazing	5
1	Genre-Defining	5
1	Classic	5
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1	OK, Not Great	3
1	Two Thumbs Up	5
3	Crossover Hit	5
3	Love It	4
3	Nailbiting!	5
1	Cinematic Masterpiece	5
5	So Bad Its Good	0
		3
		2
		3
		4
		5

NOTICE THERE IS INDEED A ROW IN THE OUTPUT FOR LITTLE CAESAR NOW!

Mo						tingStars
						5
						5
						5
1	The Godfather	1972	USA	1	Overrated	1
1	The Godfather	1972	USA	1	OK, Not Great	3
1	The Godfather	1972	USA	1	Two Thumbs Up	5
3	Infernal Affairs	2002	Hong Kong	3	Crossover Hit	5
3	Infernal Affairs	2002	Hong Kong	3	Love It	4
3	Infernal Affairs	2002	Hong Kong	3	Nailbiting!	5
1	The Godfather	1972	USA	1	Cinematic	5
5	Gunda	1998	India	5	So Bad Its Good	0
2	The Departed	2006	USA	2	Not As Good As	3
2	The Departed	2006	USA	2	Overrated	2
2	The Departed	2006	USA	2	Too Morbid	3
4	Parinda	1989	India	4	Sad, Thought-	4
4	Parinda	1989	India	4	Cinema At Its	5
6	**Little Caesar**	**1931**	**USA**	**NULL**	**NULL**	**NULL**

MOVIES

MovieID	MovieName	Year	Country
1	The Godfather	1972	USA
2	The Departed	2006	USA
3	Infernal Affairs	2002	Hong Kong
4	Parinda	1989	India
~~5~~	~~Gunda~~	~~1998~~	~~India~~
6	Little Caesar	1931	USA

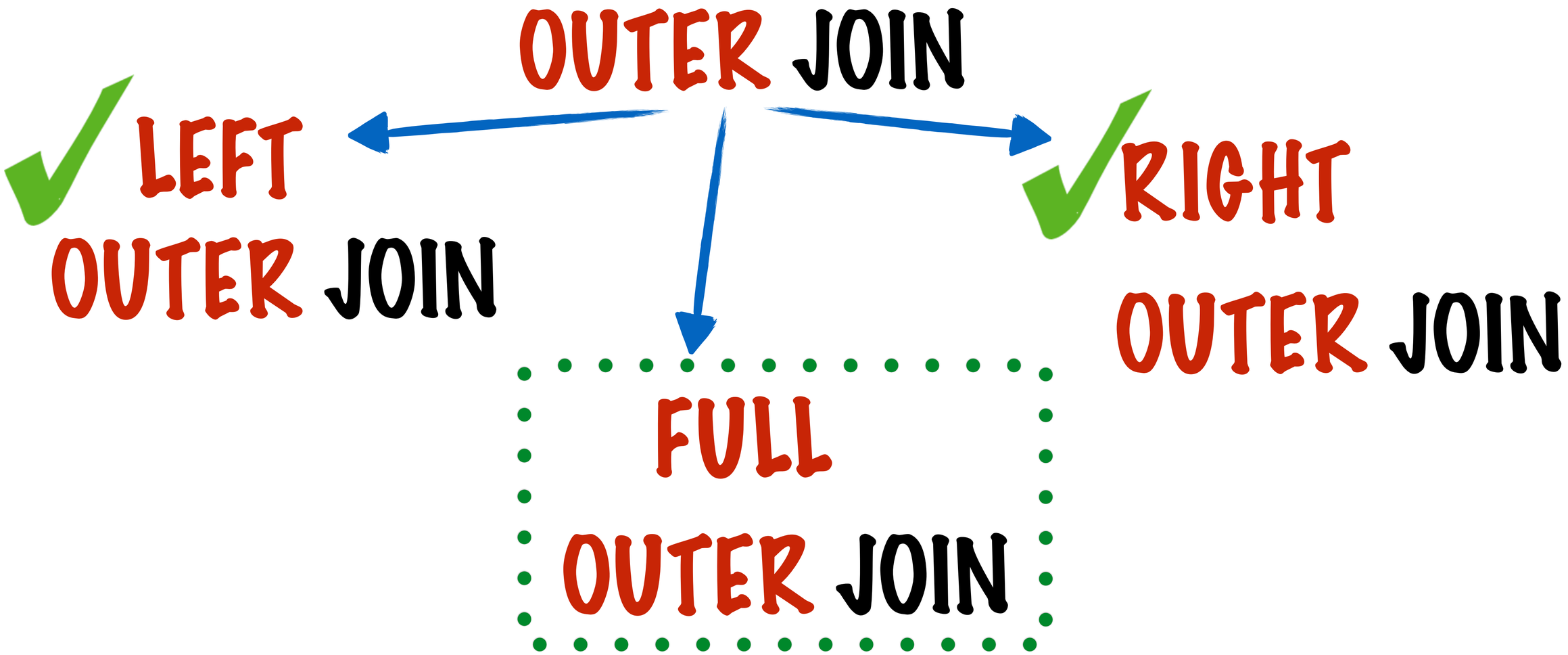
```
MOVIES M
FULL OUTER JOIN
REVIEWS R
ON
M.MOVIEID =
R.MOVIEID;
```

REVIEWS

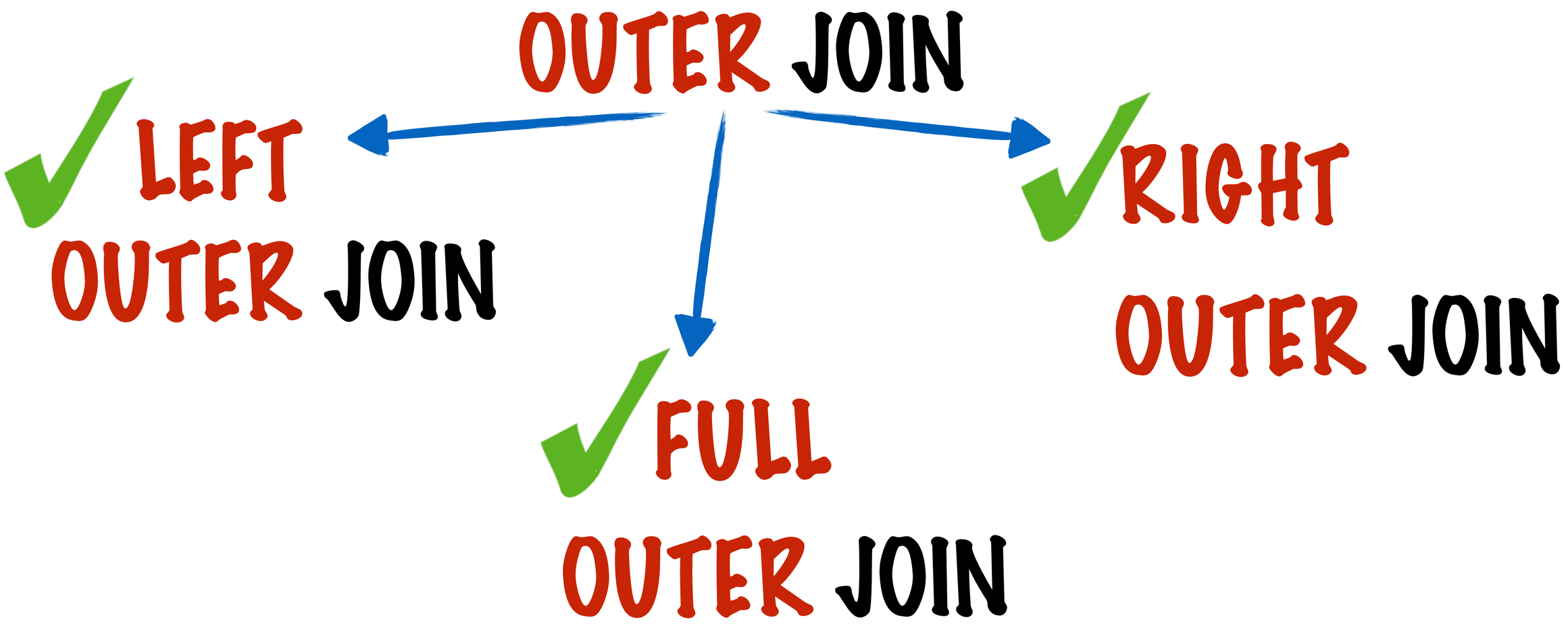
MovieID	Review	RatingStars
1	Amazing	5
1	Genre-Defining	5
1	Classic	5
1	Overrated	1
1	OK, Not Great	3
1	Two Thumbs Up	5
3	Crossover Hit	5
3	Love It	4
3	Nailbiting!	5
1	Cinematic Masterpiece	5
5	So Bad Its Good	0
		3
		2
		3
		4
		5

NOW THERE IS AN ENTRY FOR THE 'GUNDA' REVIEW AS WELL AS 'LITTLE CAESER'

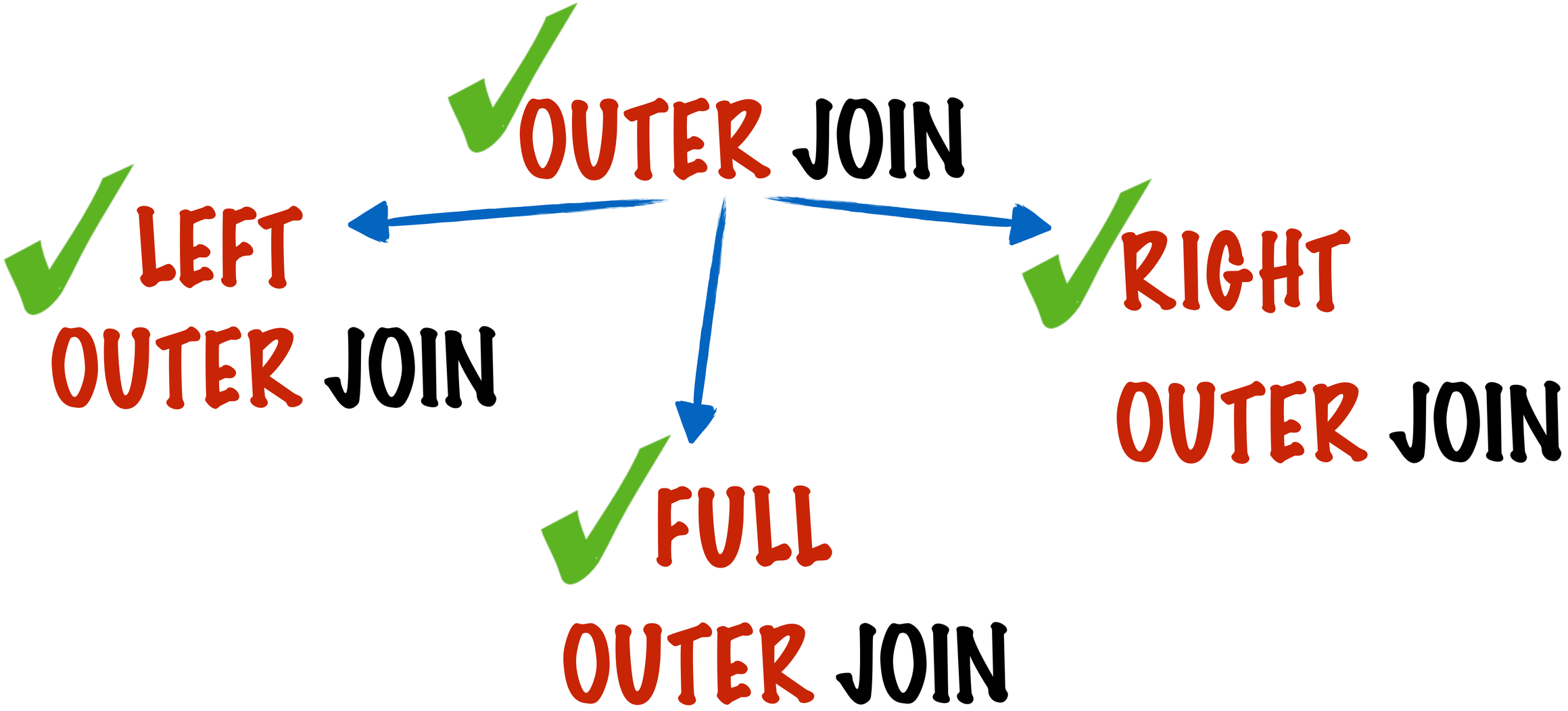
Mo						tingStars
						5
						5
						5
1	The Godfather	1972	USA	1	Overrated	1
1	The Godfather	1972	USA	1	OK, Not Great	3
1	The Godfather	1972	USA	1	Two Thumbs	5
3	Infernal Affairs	2002	Hong Kong	3	Crossover Hit	5
3	Infernal Affairs	2002	Hong Kong	3	Love It	4
3	Infernal Affairs	2002	Hong Kong	3	Nailbiting!	5
1	The Godfather	1972	USA	1	Cinematic	5
NULL	**NULL**	**NULL**	**NULL**	**5**	**So Bad Its**	**0**
2	The Departed	2006	USA	2	Not As Good	3
2	The Departed	2006	USA	2	Overrated	2
2	The Departed	2006	USA	2	Too Morbid	3
4	Parinda	1989	India	4	Sad, Thought-	4
4	Parinda	1989	India	4	Cinema At Its	5
6	**Little Caesar**	**1931**	**USA**	**NULL**	**NULL**	**NULL**



ROWS FROM BOTH RIGHT AND LEFT WILL APPEAR IN THE OUTPUT - WITH NULLS IF NEEDED



ROWS FROM BOTH RIGHT AND LEFT WILL APPEAR IN THE OUTPUT - WITH NULLS IF NEEDED


OUTER JOIN
LEFT OUTER JOIN
RIGHT OUTER JOIN
FULL OUTER JOIN

JOINS

CROSS JOIN "CARTESIAN JOIN"

INNER JOIN

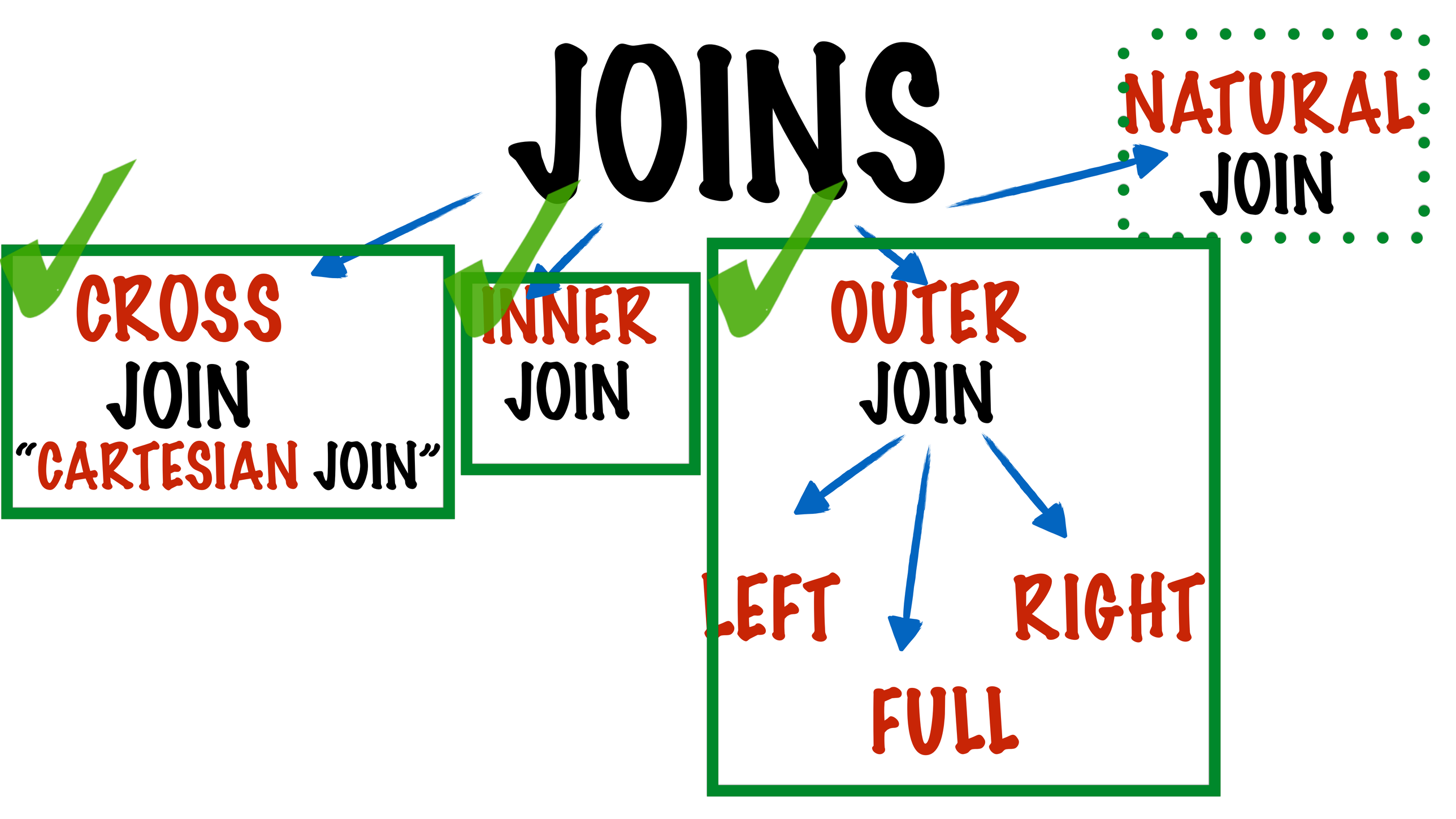
OUTER JOIN

LEFT

RIGHT

FULL

NATURAL JOIN


JOINS
NATURAL
JOIN
CROSS
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NATURAL JOIN

IS SIMPLY AN INNER OR OUTER JOIN WHERE 2 ADDITIONAL CONDITIONS ARE SATISFIED

NATURAL JOIN

IS SIMPLY AN INNER OR OUTER JOIN WHERE 2 ADDITIONAL CONDITIONS ARE SATISFIED

- THE TWO JOINED TABLES HAVE A COLUMN WITH THE SAME NAME

NATURAL JOIN

IS SIMPLY AN INNER OR OUTER JOIN WHERE 2 ADDITIONAL CONDITIONS ARE SATISFIED

- THE TWO JOINED TABLES HAVE A COLUMN WITH THE SAME NAME

- THE JOIN CONDITION IS AN EQUALITY CHECK ON THOSE 2 COLUMNS

NATURAL JOIN

IS SIMPLY AN INNER OR OUTER JOIN WHERE 2 ADDITIONAL CONDITIONS ARE SATISFIED

- THE TWO JOINED TABLES HAVE A COLUMN WITH THE SAME NAME
- THE JOIN CONDITION IS AN EQUALITY CHECK ON THOSE 2 COLUMNS

A NATURAL JOIN IS SYNTACTIC SUGAR - I.E. A SHORTHAND

LEFT OUTER JOIN

```
SELECT      M.MOVIEID,
            R.REVIEW

FROM        MOVIES M
      LEFT OUTER JOIN
            REVIEWS R
      ON
            M.MOVIEID = R.MOVIEID;
```

RE-EXPRESS AS A NATURAL JOIN

LEFT OUTER JOIN

```
SELECT    M.MOVIEID,
          R.REVIEW

FROM      MOVIES M
     NATURAL LEFT OUTER JOIN
          REVIEWS R;
```

RIGHT OUTER JOIN

```
SELECT    M.MOVIEID,
          R.REVIEW

FROM      MOVIES M
   RIGHT OUTER JOIN
          REVIEWS R
   ON
          M.MOVIEID = R.MOVIEID;
```

RE-EXPRESS AS A NATURAL JOIN

RIGHT OUTER JOIN

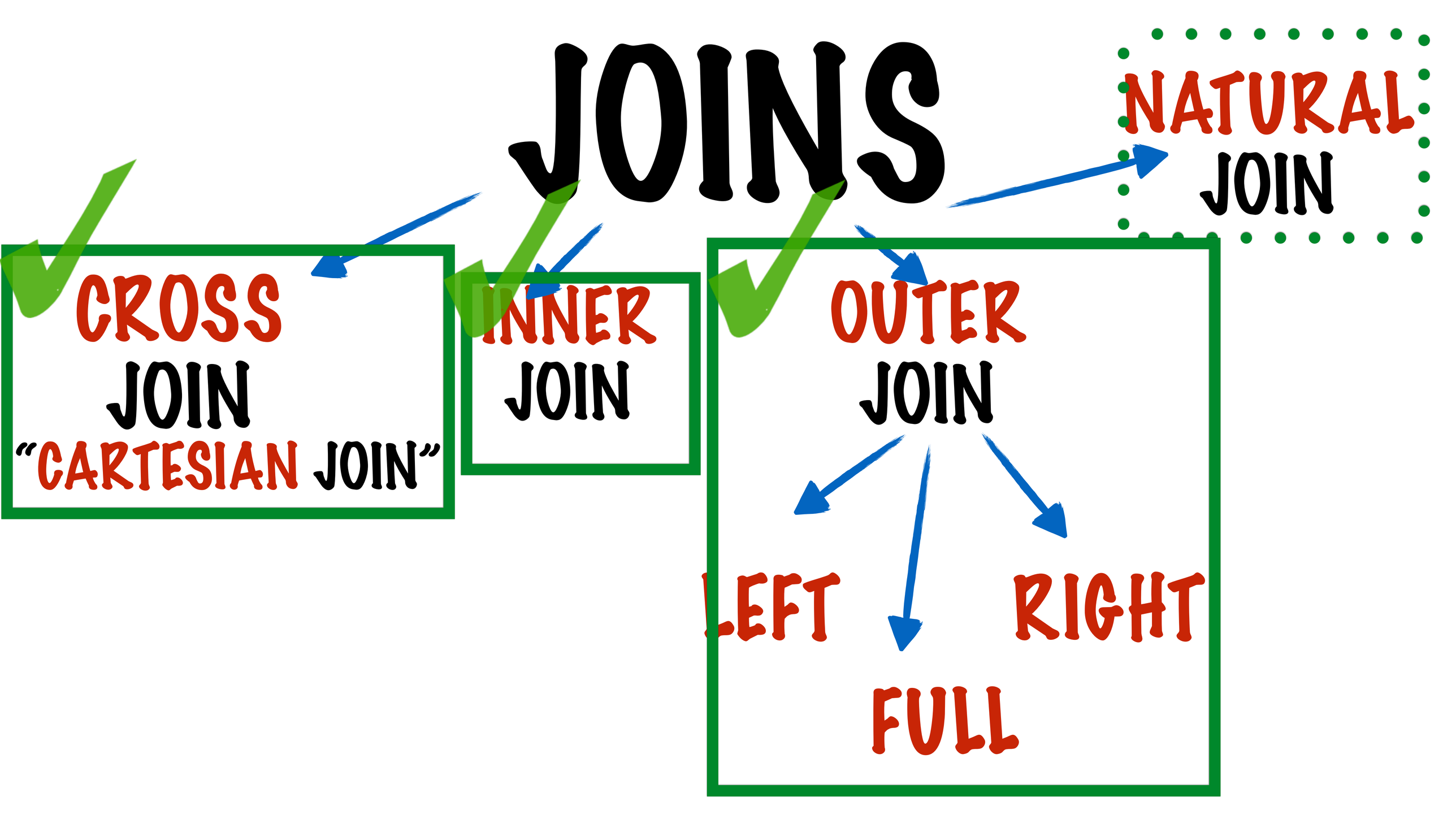
```
SELECT    M.MOVIEID,
          R.REVIEW

FROM      MOVIES M
NATURAL RIGHT OUTER JOIN
          REVIEWS R;
```

NATURAL
JOIN

A NATURAL JOIN IS SYNTACTIC SUGAR - I.E. A SHORTHAND

IT SAVES US THE EFFORT OF SPECIFYING THE MATCH CONDITION


JOINS
NATURAL
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CROSS
JOIN
"CARTESIAN JOIN"
INNER
JOIN
OUTER
JOIN
LEFT
RIGHT
FULL

JOINS

- CROSS JOIN "CARTESIAN JOIN"
- INNER JOIN
- OUTER JOIN
  - LEFT
  - RIGHT
  - FULL
- NATURAL JOIN

JOINS

CROSS JOIN
"CARTESIAN JOIN"

INNER JOIN

OUTER JOIN

LEFT

RIGHT

FULL

NATURAL JOIN

SELF-JOIN?

SELF-JOIN?

ANY JOIN WHERE THE SAME TABLE IS ON THE LEFT AND THE RIGHT OF THE JOIN OPERATOR IS A SELF-JOIN.

JOINS

CROSS JOIN
"CARTESIAN JOIN"

INNER JOIN

OUTER JOIN

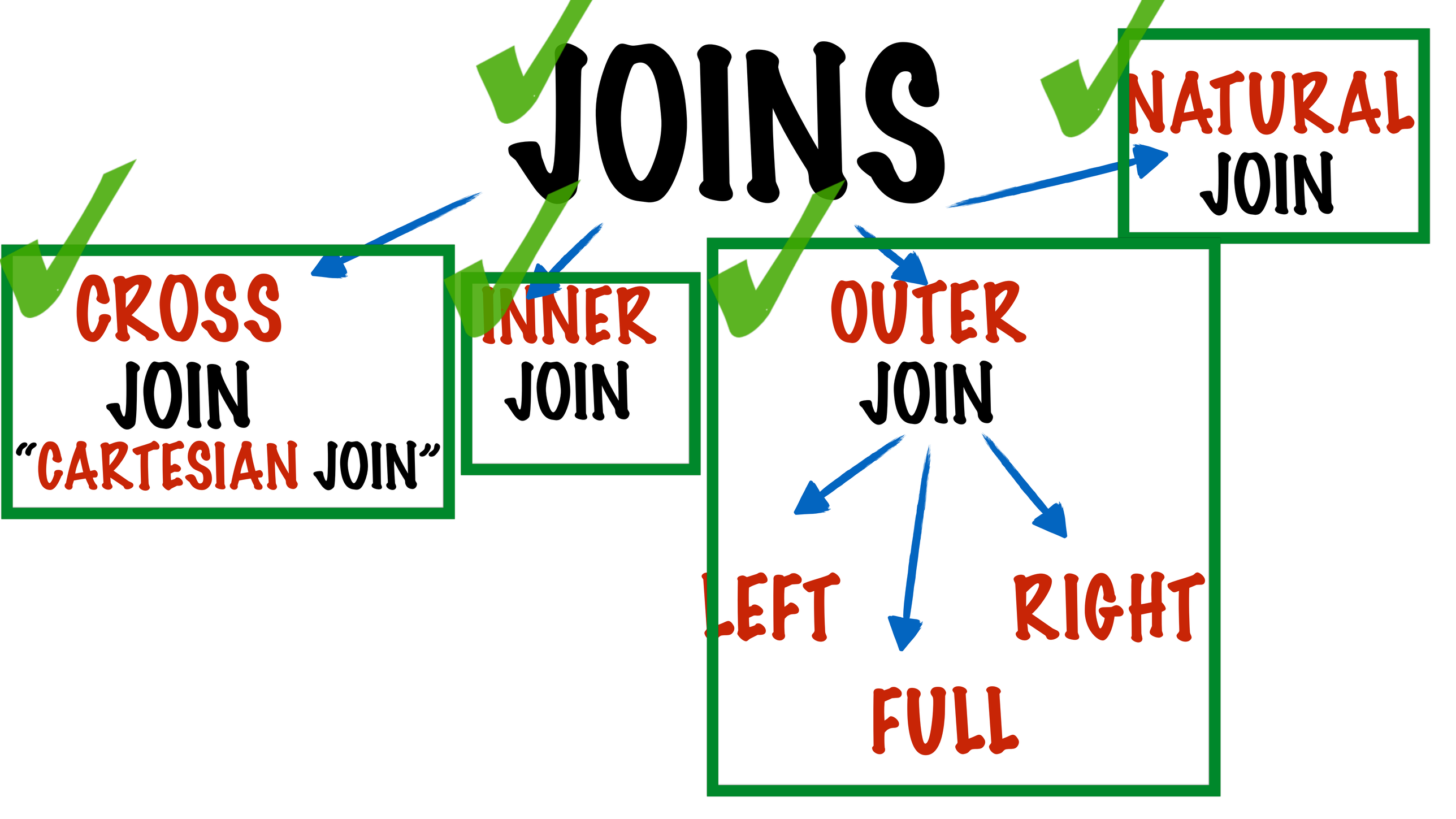
LEFT

RIGHT

FULL

NATURAL JOIN

SELF-JOIN?


JOINS
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JOINS