

5 Joining Tables

5.1 Summary

More often than not SQL queries need to combine information from two or more tables. To join records two or more tables together, SQL implements the equivalent of the mathematical operation *Cartesian Product*. This is written in SQL by listing the tables to be connected in the `FROM` clause, separated by commas.

A multi-table `FROM` statement is of the form:

```
FROM tablename [,tablename [,tablename ...]]
```

Recall that the general form for the complete `SELECT` statement is:

```
SELECT [DISTINCT | ALL] {*| column [AS new_name]} [, ...]
FROM Tablename [alias] [, tablename]...
[WHERE conditional statement]
[GROUP BY column_list] [HAVING condition]
[ORDER BY column_list]
```

When records are retrieved from more than one table the `WHERE` clause **MUST** contain a conditional statement indicating the keys which the tables are joined on. For example;

```
SELECT *
FROM property, owner
WHERE property.ownerno=owner.ownerno;
```

5.2 Solutions to Exercises – Join, Selection and Projection

In the following exercises, the query must be specified to produce the suggested result. There are spaces for you to write the SQL query. Use the `AS` command to get correct column headings in SQL.

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1. Display the owner first name and country of their properties.
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SQL:

```
SELECT fname, country
FROM owner, property
WHERE property.ownerno=owner.ownerno;
```

fname	country
Joe	Barbados
Tony	Barbados
Carol	Barbados
Tony	Barbados
Tina	St Kitts
Carol	Antigua

2. Display the owner first and last name for Apartments in Antigua.

SQL:

```
SELECT fname, lname
FROM owner, property
WHERE property.ownerno=owner.ownerno AND type="Apartment" AND
country="Antigua";
```

fname	lname
Carol	Farrel

3. Display the property number and owner number for all Villas.

SQL:

```
SELECT propertyno, owner.ownerno, type
FROM owner, property
WHERE property.ownerno=owner.ownerno AND type="Villa";
```

propertyno	ownerno	type
PA14	CO46	Villa
PL94	CO93	Villa
PG4	CO87	Villa

4. Display the properties and their owner details with a rental income between £460 and £530.

SQL:

```
SELECT *
FROM owner, property
WHERE property.ownerno=owner.ownerno AND rent>460 AND rent<530
```

owner.ownerno	fname	lname	address	telno	propertyno	street	country	type	rooms
CO46	Joe	Keogh	2 Fergus Dr, Aberdeen, AB2 7SX	01224-861212	PA14	16 Holhead	Barbados	Villa	
CO87	Carol	Farrel	6 Achray St, Glasgow, G32 9DX	0141-357-7419	PG4	6 Lawrence St	Barbados	Villa	
CO93	Tony	Shaw	12 Park Pl, Glasgow, G4 0QR	0141-225-7025	PG36	2 Manor Rd	Barbados	Studio	

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What if you could build your future and create the future?

One generation's transformation is the next's status quo. In the near future, people may soon think it's strange that devices ever had to be "plugged in." To obtain that status, there needs to be "The Shift".



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5. Display the employee client number, client last name, their booking date, the property number of the booked property, the country that the booked property is in and the clients preference type (Hint – you need to use 3 tables)
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SQL:

```
SELECT client.clientno, client.lname, booking.bookingdate, booking.
propertyno, property.country, client.preftype
FROM booking, property, client
WHERE booking.clientno=client.clientno
AND property.propertyno=booking.propertyno;
```

clientno	lname	bookingdate	propertyno	country	preftype
CR56	Stewart	16/07/2007	PA14	Barbados	Apartment
CR76	Kay	09/07/2007	PG4	Barbados	Villa
CR56	Stewart	17/12/2007	PG4	Barbados	Apartment
CR62	Tregear	03/09/2007	PA14	Barbados	Villa
CR56	Stewart	10/09/2007	PG36	Barbados	Apartment

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6. Display all the owners first, last names, type and property number whose property type are Villa and Apartments (Hint – you need to use brackets in the WHERE clause after the AND)
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SQL:

```
SELECT fname, lname, type, property.propertyno
FROM owner, property
WHERE property.ownerno=owner.ownerno
AND (type="Villa" OR type="Apartment");
```

fname	lname	type	propertyno
Joe	Keogh	Villa	PA14
Tony	Shaw	Villa	PL94
Carol	Farrel	Villa	PG4
Tina	Murphy	Apartment	PG21
Carol	Farrel	Apartment	PG16