

COMM1822

Term 2 2022

Introduction to Databases for Business Analytics

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Week 4: SQL 2

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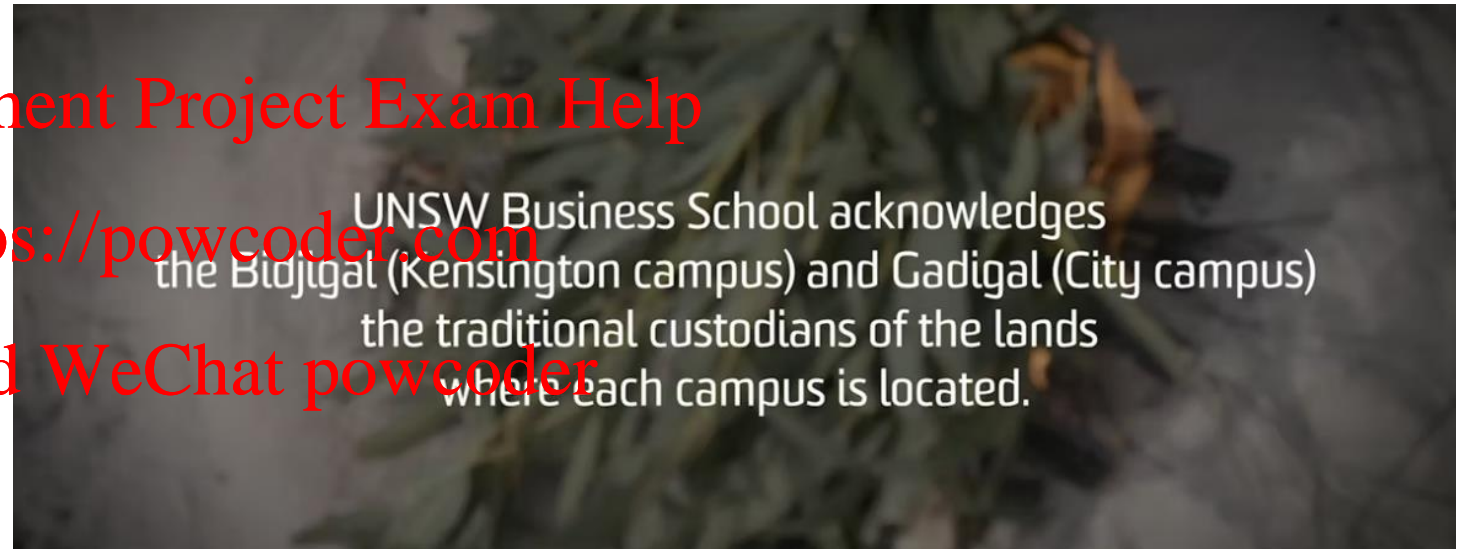
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We acknowledge all Aboriginal and Torres Strait Islander Elders, past and present and their communities who have shared and practiced their teachings over thousands of years including business practices.

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UNSW Business School. (2022, May 7). *Acknowledgement of Country* [online video]. Retrieved from <https://vimeo.com/369229957/d995d8087f>

Single Row Functions

These functions will all manipulate the data in some way.

- ❑ Are applied to the column specified only.
- ❑ Apply to every record individually and in the same way.
- ❑ The following are non exhaustive lists of some functions under each category.

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Case Conversion Functions

❑ **LOWER** → returns a string with all characters converted to lowercase.

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❑ **UPPER** → returns a string with all characters converted to uppercase.

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❑ **INITCAP** → converts the first letter of every word to uppercase, and every other letter to lowercase.

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Case Conversion Functions (Demo)

- ❑ List all information about countries in COUNTRIES table.

```
SELECT * FROM COUNTRIES;
```

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- ❑ Output the country name in its UPPER CASE letters, where its country_id is 'AU'.

```
SELECT UPPER(country_name) FROM COUNTRIES  
WHERE country_id = 'AU';
```

Character Manipulation Functions

Find the length of strings, extract certain parts of the string (e.g., first few characters only) and replace character in a string.

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- ❑ SUBSTR → Extract a portion of the string.
- ❑ INSTR → Return the numeric position of a substring within the string
- ❑ LENGTH → Width of the character string
- ❑ LPAD → Left-pad a string with another string, to a certain length.
- ❑ RPAD → Right-pad a string with another string, to a certain length.
- ❑ LTRIM → Remove all occurrences of a substring from the left-hand side of the string
- ❑ RTRIM → Same as LTRIM, but removes from the right-hand side
- ❑ REPLACE → Substitute a string with another string.

Character Manipulation Functions (Demo)

- ❑ List all information about departments

```
SELECT * FROM DEPARTMENTS;
```

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- ❑ List all department IDs by appending '10' to the front and make it as a 5-character string, where '10' indicates the 10th university in Australia.

```
SELECT LPAD(department_id, 5, '100') from DEPARTMENTS;
```

Which one is correct?

~~SELECT LPAD(department_id, 5, '10') from DEPARTMENTS;~~

- ❑ Rename the column

```
SELECT LPAD(department_id, 5, '100') AS "LeftPadData" from DEPARTMENTS;
```

Number Functions

- ❑ ROUND → Round numeric fields to the stated precision
- ❑ TRUNC → Delete numeric points to the stated precision
- ❑ MOD → Remainder of a division operator
- ❑ ABS → Absolute value of a field
- ❑ POWER → Statistical power

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Number Functions (Demo)

❑ We can use the 'DUAL' table to do miscellaneous calculations

❑ Calculate 2^3

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`SELECT POWER(2, 3) FROM DUAL;`

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❑ Find the remainder of 4 divided by 3

`SELECT MOD(4, 3) FROM DUAL;`

Date Functions

- ❑ Dates are often tricky to deal with due to different formats (e.g., American vs Australian date format)

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- ❑ Some examples are: <https://powcoder.com>
- ❑ MONTHS_BETWEEN → Months difference between two dates
- ❑ ADD_MONTHS → Add a set number of months to a date field
- ❑ NEXT_DAY → The next given weekday after the given date
- ❑ SYSDATE → Today's current date, as per your computer system

Date Functions (Demo)

- ❑ Output the current date

```
SELECT SYSDATE FROM DUAL;
```

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- ❑ Output the date of upcoming Sunday after 20th June 2022

```
SELECT NEXT_DAY( DATE '2022-06-20', 'SUNDAY') FROM DUAL;
```

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- ❑ Calculate how many months between 2nd June 2022 and 1st January 2020

```
SELECT MONTHS_BETWEEN(To_date('02-06-2022', 'DD-MM-YYYY'),  
To_date('01-01-2020', 'DD-MM-YYYY')) "Months" FROM DUAL;
```

Other useful functions

- ❑ NVL → Substitute a value for any NULLS
- ❑ NVL2 → Substitute a value for any NULLS, and a value for any fields that are not null
- ❑ NULLIF → Return true if the value is null
- ❑ TO_CHAR → Use to format values (e.g., convert dates and numbers)
- ❑ TO_NUMBER → Convert a string to a number field (useful for arithmetic calculations)
- ❑ SOUNDEX → Use to find values based on their "sound"
- ❑ CASE → Do different functions depending upon various conditions

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Other useful functions (Demo)

- ❑ List all information about drinks

`SELECT * FROM DRINKS;` -- a table you have created in Week 3 Lab

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- ❑ Compare the price of all drinks using a preset value, say 8 dollars

`SELECT DRINK_NAME, PRICE,
CASE
WHEN PRICE > 8 THEN 'The price is greater than 8'
WHEN PRICE = 8 THEN 'The price is 8'
ELSE 'The price is under 8'
END "PriceCheck"
FROM DRINKS;`

Useful Online Resources for SQL

Practice Exercises and Training Videos

DataCamp

Sign up is free

<https://www.datacamp.com/>

Highly Recommended:
Intro to SQL for Data Science

Training Videos

LinkedIn Learning - Free access as a UNSW student: <https://www.linkedin.com/learning/>

Highly Recommended:
Introduction to Oracle SQL Developer

Online Web Tutorials

Tutorials Point

<https://www.tutorialspoint.com/sql/>

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Questions



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