# Menulog Database

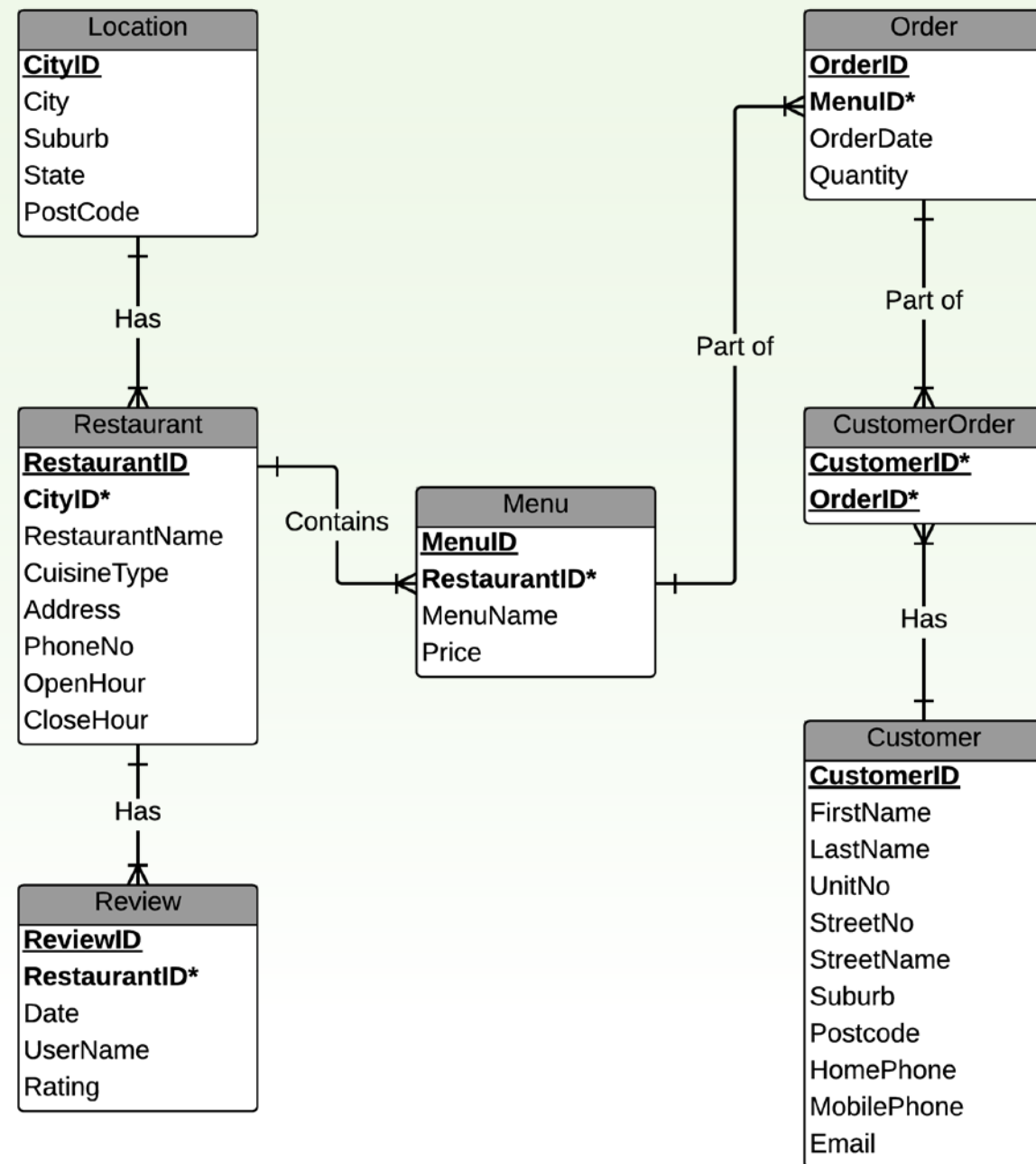## HD Assignment
Spring 2015

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# Menulog Database
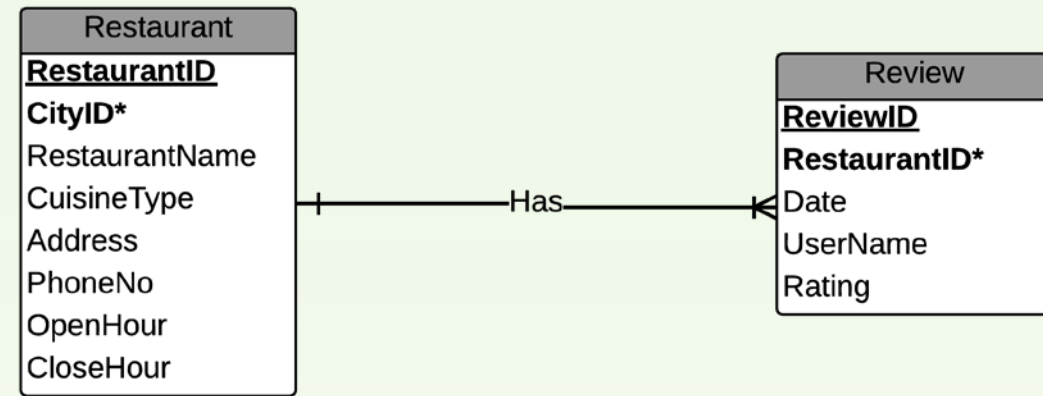
- This database was inspired by Menulog website: www.menulog.com.au

- Menulog is a website that offers online food ordering and takeaway.

- It allows users to browse and order takeaway food online from various restaurants to be delivered to their home address.

- This database contains details about participating restaurants, menus, orders and customer details.

- It also records review information of the restaurants.

# Entity Relationship Diagram (ERD)

# One-to-Many Relationship

- One restaurant has many reviews.

**Restaurant**

| | |
|---|---|
| **RestaurantID** | |
| **CityID*** | |
| RestaurantName | |
| CuisineType | |
| Address | |
| PhoneNo | |
| OpenHour | |
| CloseHour | |

Has

**Review**

| |
|---|
| **ReviewID** |
| **RestaurantID*** |
| Date |
| UserName |
| Rating |

(Primary Key)                        **Restaurant**

```
 restaurantid | cityid*|       restaurantname     | cuisinetype | other columns...
--------------+--------+--------------------------+-------------+----------------
         4300 |    101 | The Darling Pizzeria      | Italian     | ...
         4301 |    102 | Gourmet Curry Hut         | Indian      | ...
         4302 |    103 | Emperor Palace Restaurant | Chinese     | ...
         4303 |    104 | Valentinos                | Italian     | ...
         4304 |    105 | Chili Jam Thai            | Thai        | ...
                             (...truncated...)
```

(Foreign Key)    **Review**

```
 reviewid | restaurantid*|    date     | username  | rating
----------+--------------+-------------+-----------+--------
    56405 |         4300 | 2015-10-01  | Anonymous |    4.5
    56406 |         4300 | 2015-10-02  | Greg      |      3
    56407 |         4300 | 2015-10-03  | Sylvia    |    3.5
    56408 |         4301 | 2015-10-03  | Ahmad     |    4.7
    56409 |         4301 | 2015-10-03  | Abdul     |    3.8
    56410 |         4302 | 2015-10-04  | Lee       |    2.5
    56411 |         4303 | 2015-10-04  | William   |      4
    56412 |         4304 | 2015-10-07  | Anonymous |    1.6
                      (...truncated...)
```

# Many-to-Many Relationship

- One customer can have many different orders.
- One order can be part of many different customers.

**Order**

| Order |
|-------|
| **OrderID** |
| **MenuID*** |
| OrderDate |
| Quantity |

Part of

| CustomerOrder |
|---------------|
| **CustomerID*** |
| **OrderID*** |

Has

| Customer |
|----------|
| **CustomerID** |
| FirstName |
| LastName |
| UnitNo |
| StreetNo |
| StreetName |
| Suburb |
| Postcode |
| HomePhone |
| MobilePhone |
| Email |

(Primary Key)

## Customer

| customerid | firstname | lastname | unitno | streetno | streetname | suburb | postcode | other columns... |
|------------|-----------|----------|--------|----------|------------|--------|----------|------------------|
| 7421700 | Gary | Hickey | 65 | 272 | Harris Street | Pyrmont | 2009 | ... |
| 7421701 | Ravi | Ahmed | 403 | 357 | Collins Street | Melbourne | 3000 | ... |
| 7421702 | Abdul | Singh | 57 | 118 | Queen Street | Melbourne | 3000 | ... |
| 7421703 | Sarah | Prisha | | 88 | Flinders Street | Melbourne | 3000 | ... |
| 7421704 | Raymond | Yew | 36 | 14 | Beach Street | Frankston | 3199 | ... |
| 7421705 | William | Wingston | 10 | 43 | Henry Street | Penrith | 2750 | ... |
| 7421706 | Sam | Wood | 17 | 166 | Station Street | Penrith | 2750 | ... |

(...truncated...)

(Foreign Key) **CustomerOrder** (Foreign Key)

| customerid* | orderid* |
|-------------|----------|
| 7421700 | 681500 |
| 7421700 | 681501 |
| 7421701 | 681502 |
| 7421702 | 681502 |
| 7421703 | 681502 |
| 7421704 | 681503 |
| 7421705 | 681504 |
| 7421706 | 681505 |

(...truncated...)

(Primary Key) **Order**

| orderid | menuid* | orderdate | quantity |
|---------|---------|-----------|----------|
| 681500 | 58200 | 2015-10-01 | 1 |
| 681501 | 58212 | 2015-10-01 | 3 |
| 681502 | 58203 | 2015-10-02 | 1 |
| 681503 | 58268 | 2015-10-02 | 2 |
| 681504 | 58201 | 2015-10-03 | 3 |
| 681505 | 58205 | 2015-10-07 | 2 |

(...truncated...)

# Simple Query

**Description:**
Find all the restaurants including their address and business hours that have Italian cuisine.

**SQL Query:**

```
SELECT restaurantname, address, openhour, closehour
FROM menulog_restaurant
WHERE cuisinetype = 'Italian'
ORDER BY restaurantname;
```

**Result:**

```
    restaurantname     |      address       | openhour | closehour
-----------------------+--------------------+----------+-----------
 Ravens Eye            | 127 King Street    | 12:00:00 | 22:00:00
 The Darling Pizzeria  | 88-90 Union Street | 11:30:00 | 23:59:00
 Toppinz Bar           | 101 Burwood Road   | 17:00:00 | 21:30:00
 Valentinos            | 17/55-61 York Road | 17:30:00 | 21:15:00
(4 rows)
```

# Natural Join Query

**Description:**
List restaurant name and type of cuisine that open after 14:00 with review rating at least 4 stars.

**SQL Query:**

```
SELECT restaurantname, cuisinetype, openhour, rating
FROM menulog_restaurant NATURAL JOIN menulog_review
WHERE openhour > 14 AND rating >= 4
ORDER BY rating;
```

**Result:**

```
     restaurantname     | cuisinetype | openhour | rating
--------------------+------------+----------+-------
 Valentinos         | Italian     | 17:30:00 |      4
 Mascot Asian House | Chinese     | 16:30:00 |    4.5
 Delhi 77           | Indian      | 17:00:00 |    4.6
 Gourmet Curry Hut  | Indian      | 15:00:00 |    4.7
(4 rows)
```

# Cross Product Equivalent

**Description:**
Using cross product notation, list restaurant name and type of cuisine that open after 14:00 with review rating at least 4 stars.

**SQL Query:**

```
SELECT restaurantname, cuisinetype, openhour, rating
FROM menulog_restaurant, menulog_review
WHERE menulog_restaurant.restaurantid = menulog_review.restaurantid
AND openhour > 14 AND rating >= 4 ORDER BY rating;
```

**Result:**

|      restaurantname | cuisinetype | openhour | rating |
|---------------------|-------------|----------|--------|
| Valentinos          | Italian     | 17:30:00 |      4 |
| Mascot Asian House  | Chinese     | 16:30:00 |    4.5 |
| Delhi 77            | Indian      | 17:00:00 |    4.6 |
| Gourmet Curry Hut   | Indian      | 15:00:00 |    4.7 |
| (4 rows)            |             |          |        |

# Group By / Having Query

**Description:**
Display all restaurants that have received reviews more than one. Order by the restaurant name.

**SQL Query:**

```
SELECT restaurantid, restaurantname, count(reviewID) AS reviews
FROM menulog_restaurant NATURAL JOIN menulog_review
GROUP BY restaurantid, restaurantname HAVING count(reviewid) > 1
ORDER BY restaurantname;
```

**Result:**

```
 restaurantid |     restaurantname     | reviews
--------------+------------------------+---------
         4301 | Gourmet Curry Hut      |       2
         4300 | The Darling Pizzeria   |       3
         4309 | Toppinz Bar            |       4
(3 rows)
```

# Sub Query

**Description:**
Show the menus and prices that are more expensive than the average of all menus available.

**SQL Query:**

```
SELECT menuname, price
FROM menulog_menu
WHERE price > (SELECT AVG(price)
               FROM menulog_menu);
```

**Result:**

```
      menuname        | price
----------------------+-------
 Australiana Pizza    |  17.5
 Vegetable Korma      |  14.5
 Honey Chicken        |    12
 Bolognese Pasta      |    18
 Seafood Ramen        |  11.5
 Bombay Beef          |  14.9
 Chicken Omelette     |  11.9
 Napolitana Pizza     |    15
(8 rows)
```

# Self Join

**Description:**

Using cross product notation, find all the customers that live in the same suburb.

**SQL Query:**

```
SELECT DISTINCT a.customerID, a.firstname, a.lastname, a.suburb
FROM menulog_customer a, menulog_customer b
WHERE a.suburb = b.suburb
AND a.firstname != b.firstname
AND a.lastname != b.lastname;
```

**Result:**

```
 customerid | firstname | lastname |  suburb
------------+-----------+----------+----------
    7421701 | Ravi      | Ahmed    | Melbourne
    7421702 | Abdul     | Singh    | Melbourne
    7421703 | Sarah     | Prisha   | Melbourne
    7421705 | William   | Wingston | Penrith
    7421706 | Sam       | Wood     | Penrith
    7421709 | Sher      | Ali      | Penrith
(6 rows)
```

# CHECK Constraints (1)

- Checks the validity of State and Postcode:

```
CREATE TABLE Menulog_Location
(...
          CONSTRAINT Valid_State CHECK (State IN
          ('ACT','NSW','NT','QLD','SA','TAS','VIC','WA')),
          CONSTRAINT Valid_PostCode CHECK (PostCode >= 2000)
);
```

- Limits the Rating range between 0 and 5 stars:

```
CREATE TABLE Menulog_Review
(...
          CONSTRAINT Range_Rating CHECK (Rating BETWEEN 0 AND 5))
);
```

- Limits the length of Menu ID's and Restaurant ID's. Price should not be zero:

```
CREATE TABLE Menulog_Menu
(...
          CONSTRAINT Length_MenuID CHECK (length(MenuID) = 5),
          CONSTRAINT Length_RestaurantID CHECK (length(RestaurantID) = 4),
          CONSTRAINT Valid_Price CHECK (Price > 0)
);
```

# CHECK Constraints (2)

- Limits the length of Order ID's:

```
CREATE TABLE Menulog_Order
(...
          CONSTRAINT Length_OrderID CHECK (length(OrderID) = 6)
);
```

- Limits the length of Customer ID's. Unit Number, Street Number and the length of phone numbers should be valid:

```
CREATE TABLE Menulog_Customer
(...
          CONSTRAINT Length_CustomerID CHECK (length(CustomerID) = 7),
          CONSTRAINT Valid_UnitNo CHECK (UnitNo > 0),
          CONSTRAINT Valid_StreetNo CHECK (StreetNo > 0),
          CONSTRAINT Length_HomePhoneID CHECK (length(HomePhone) = 10),
          CONSTRAINT Length_MobilePhoneID CHECK (length(MobilePhone) = 10)
);
```

# Action Statements (1)

ON DELETE RESTRICT:
We need menu identification to be attached to order identification.

SQL Action:

```
CREATE TABLE Menulog_Order
(
        OrderID          numeric(6)      NOT NULL,
        MenuID           numeric(5)      NOT NULL,
...

        CONSTRAINT PK_Order PRIMARY KEY (OrderID),


        CONSTRAINT FK_OrderMenu FOREIGN KEY (MenuID) REFERENCES Menulog_Menu
                ON DELETE RESTRICT                              -- OrderID needs MenuID
                ON UPDATE CASCADE,
...
);
```

# Action Statements (2)

**ON DELETE CASCADE:**
If we delete a customer, we need to delete all his/her orders too.

**SQL Action:**

```
CREATE TABLE Menulog_CustomerOrder
(

        CustomerID       numeric(7)      NOT NULL,
        OrderID          numeric(6)      NOT NULL,

        CONSTRAINT PK_CustOrder PRIMARY KEY (CustomerID, OrderID),

        CONSTRAINT CustOrder_FK_Customer FOREIGN KEY (CustomerID) REFERENCES
        Menulog_Customer
                ON DELETE CASCADE
                ON UPDATE CASCADE,

        CONSTRAINT CustOrder_FK_Order FOREIGN KEY (OrderID) REFERENCES Menulog_Order
                ON DELETE CASCADE
                ON UPDATE CASCADE,
...
);
```

# Use of View (1)

## Description:
View a list of all restaurants in Sydney.

## SQL Query:

```
CREATE VIEW SydneyRestaurant(restaurantname, cuisinetype, address, suburb, postcode)
AS SELECT restaurantname, cuisinetype, address, suburb, postcode
FROM menulog_location, menulog_restaurant
WHERE menulog_location.cityID = menulog_restaurant.cityID AND city = 'Sydney';

SELECT * FROM SydneyRestaurant ORDER BY restaurantname;
```

## Result:

| restaurantname | cuisinetype | address | suburb | postcode |
|---------------------|-------------|-------------------|---------|----------|
| Chili Jam Thai | Thai | 55A Riley Street | Penrith | 2750 |
| Delhi 77 | Indian | 2/560 High Street | Penrith | 2750 |
| Mascot Asian House | Chinese | 946 Botany Road | Mascot | 2020 |
| Ravens Eye | Italian | 127 King Street | Newtown | 2042 |
| The Darling Pizzeria | Italian | 88-90 Union Street | Pyrmont | 2009 |
| Toppinz Bar | Italian | 101 Burwood Road | Concord | 2137 |
| Valentinos | Italian | 17/55-61 York Road | Penrith | 2750 |

(7 rows)

# Use of View (2)

**Description:**
View a list of all restaurants in Melbourne.

**SQL Query:**

```
CREATE VIEW MelbourneRestaurant(restaurantname, cuisinetype, address, suburb, postcode)
AS SELECT restaurantname, cuisinetype, address, suburb, postcode
FROM menulog_location, menulog_restaurant
WHERE menulog_location.cityID = menulog_restaurant.cityID AND city = 'Melbourne';

SELECT * FROM MelbourneRestaurant ORDER BY restaurantname;
```

**Result:**

| restaurantname | cuisinetype | address | suburb | postcode |
|---|---|---|---|---|
| Emperor Palace Restaurant | Chinese | 245 Beach Street | Frankston | 3199 |
| Gourmet Curry Hut | Indian | 318 Little Collins Street | Melbourne | 3000 |

(2 rows)