

# Back-End: Gourmet Restaurant Database Management System

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**Abstract:** This document presents a detailed description of the gourmet restaurant database system. The database management system is programmed using SQLite3 and the Django application framework. SQLite3 is a default Django database adapter used to store data. Django is a web framework which connects SQL database systems and Python. The integrated system database tables are developed in MySQL; this is to illustrate how the data in the database management system is related. The individuals involved in the management of the database include the regular client, restaurant manager, auditor and software administrator. They are able to interact with the user interface of the Gourmet Restaurant Management System (GRMS).

**Key words:** Django, GRMS, MySQL, Python, Sqlite3

## 1. INTRODUCTION

The database management system is developed as part of the modelling component of the Model View Control software architecture. Model refers to the database layer. A Django model represents data in the database implemented in Python code. This layer consists of the gourmet restaurant data and the relationships that exist between the data. This system is implemented using Django, since it is well suited for creating database models. Furthermore, it is simple to use with high-level tools such as Python and SQLite3 for executing database queries.

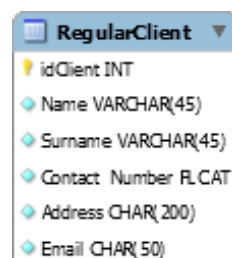
## 2. BACK-END COMPONENT OF GRMS

This section of the project is be implemented by Asithandile Malote and Mfundo Ntini.

The back-end component consists of the database model of the GRMS and Django server. In addition, the database models relationships to illustrate the user interactions with the GRMS, the relationship between the data. Sqlite3 and MySQL are the tools utilised for the implementation of the database system.

## 3. Regular Client

The system considers a registered client as a regular client. The database table entities of the client are illustrated in Figure 1 below. During the registration process the particulars of the clients are added to the database system of the gourmet restaurant. The client then becomes a member of the restaurant database system and they will be able to login to the restaurant website, view menu, book a table and receive regular updates. Furthermore, the client has an option of updating their initial particulars. The clients regular orders or meals/modified dishes are also captured so that they can easily order them again in future. Regular clients are also given the opportunity to view previously ordered meals; this means that the GRMS database system will also have a table for the previously ordered meals. Theres also a login page which captures the clients details and search it amongst the restaurants client database.

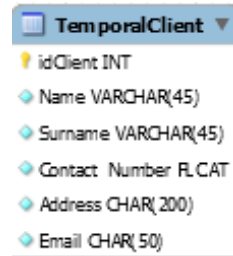


RegularClient	
idClient	INT
Name	VARCHAR(45)
Surname	VARCHAR(45)
Contact Number	FL CAT
Address	CHAR(200)
Email	CHAR(50)

Figure 1 : Table for regular client of the gourmet restaurant.

#### 4. Temporal Client

The temporal client only interacts with the reservations, make orders, view menu, prices and ingredient buttons of the Graphical User Interface (GUI). This means that only the GRMS database table of orders and payment table would be updated as a new order is placed by the temporal client. The table below shows fields of the temporal client visiting the gourmet restaurant website. A temporal client is able to order and pay for the meal without being in the database of the restaurant. They have a choice of being included so that they can receive customer benefits, for instance discounts.



TemporalClient	
idClient	INT
Name	VARCHAR(45)
Surname	VARCHAR(45)
Contact Number	FLCAT
Address	CHAR(200)
Email	CHAR(50)

Figure 2 : Table for temporal client of the gourmet restaurant.

#### 5. Gourmet Restaurant Manager

The manager is involved in the analysis of the client feedback. Furthermore, changes to the meals and specials are also delegated to the manager. Thus the manager can update the database menu and specials tables. Access to the client database (to add or delete clients) and also monitor monthly invoices. The GRMS database system only has one table which consists of the login details of the manager such that these are verified every time the manager logs in. This is to ensure the system security against hackers.

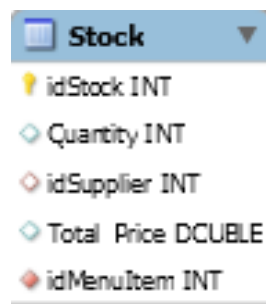


RestaurantManager	
idRestaurantManager	INT
Name	VARCHAR(45)
Surname	VARCHAR(45)
Password	CHAR(30)

Figure 3 : Table for restaurant manager.

#### 6. Stock

The restaurant stock is monitored by the restaurant manager and the auditor. They monitor the amount of stock that has been ordered and delivered from drafted quotations. Suppliers are responsible for keeping the quality and quantity of the delivered stock as each stock is delivered with a supplier ID.

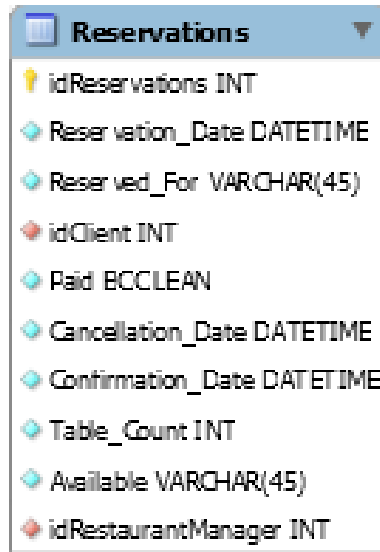


Stock	
idStock	INT
Quantity	INT
idSupplier	INT
Total Price	DCUBLE
idMenuItem	INT

Figure 4 : Database table for the gourmet restaurant suppliers.

## 7. Reservations

Table reservations are made by both clients (temporal and regular). The client is able to view the number of tables that are available prior to making a reservation. There are also an option to choose from different sections of the restaurant. These are confirmed by the restaurant manager as they have access to the settings of the restaurant.

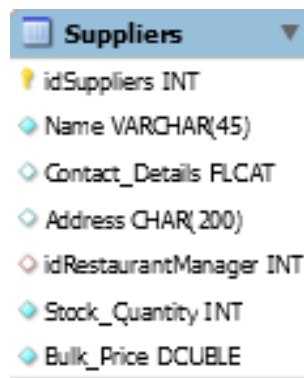


Reservations	
idReservations	INT
Reservation_Date	DATETIME
Reserved_For	VARCHAR(45)
idClient	INT
Paid	BCCLEAN
Cancellation_Date	DATETIME
Confirmation_Date	DATETIME
Table_Count	INT
Available	VARCHAR(45)
idRestaurantManager	INT

Figure 5 : Database table for reservations.

## 8. Suppliers

The particulars of the stock suppliers for the gourmet restaurant are stored in the database. Only the restaurant manager has access to this data to update and remove fields. The suppliers provide stock in bulk and also provide discounts for some of the ingredients. All particulars of the suppliers are stored in a table for the manager to keep track of their performance.



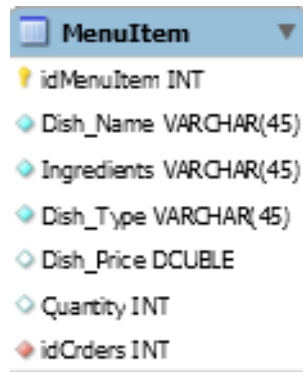
Suppliers	
idSuppliers	INT
Name	VARCHAR(45)
Contact_Details	FLCAT
Address	CHAR(200)
idRestaurantManager	INT
Stock_Quantity	INT
Bulk_Price	DCUBLE

Figure 6 : Database table for the gourmet restaurant suppliers.

## 9. Menu Items

The list of gourmet dishes was adapted from a well known restaurant; with the permission of the restaurant manager.

Clients are able to view all the dishes in the menu. They are also able to view the ingredients and prices. Menu dishes are saved in a database table to keep track of the quantity. This includes the ingredients of the dishes as well as prices. The clients orders are only saved to the database once the chosen dishes have been paid off. The list of the menu items is linked with the ingredients which are specific to each gourmet dish.

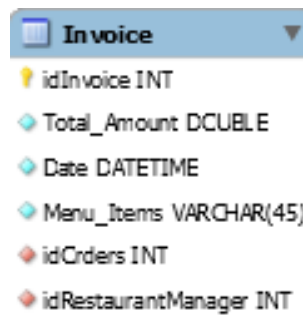


MenuItem	
idMenuItem	INT
Dish_Name	VARCHAR(45)
Ingredients	VARCHAR(45)
Dish_Type	VARCHAR(45)
Dish_Price	DCUBLE
Quantity	INT
idOrders	INT

Figure 7 : Database table for items in the restaurant menu.

## 10. Invoices

The auditor monitors the amount of money received from orders and reservations.

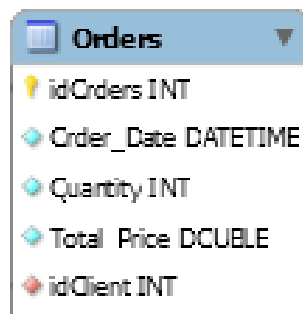


Invoice	
idInvoice	INT
Total_Amount	DCUBLE
Date	DATETIME
Menu_Items	VARCHAR(45)
idOrders	INT
idRestaurantManager	INT

Figure 8 : Database table for invoices.

## 11. Orders

Clients are able to place orders depending on what dishes are available in the menu. The clients is required to pay first before an order is processed.



Orders	
idOrders	INT
Order_Date	DATETIME
Quantity	INT
Total Price	DCUBLE
idClient	INT

Figure 9 : Database table for orders.

## 12. Modified Order

This allows the clients to modify the orders by removing or adding ingredients of their choice at an additional cost. In order for the modification to be successful, the client has to pay the balance first before the order is processed.

## 13. Integrated System

Figure 11 below shows the relationships that exist between the database tables of the gourmet restaurant system.

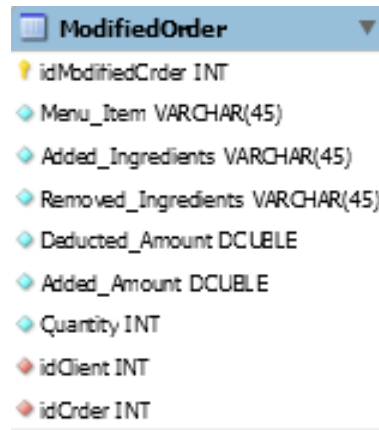


Figure 10 : Database table for modified orders.

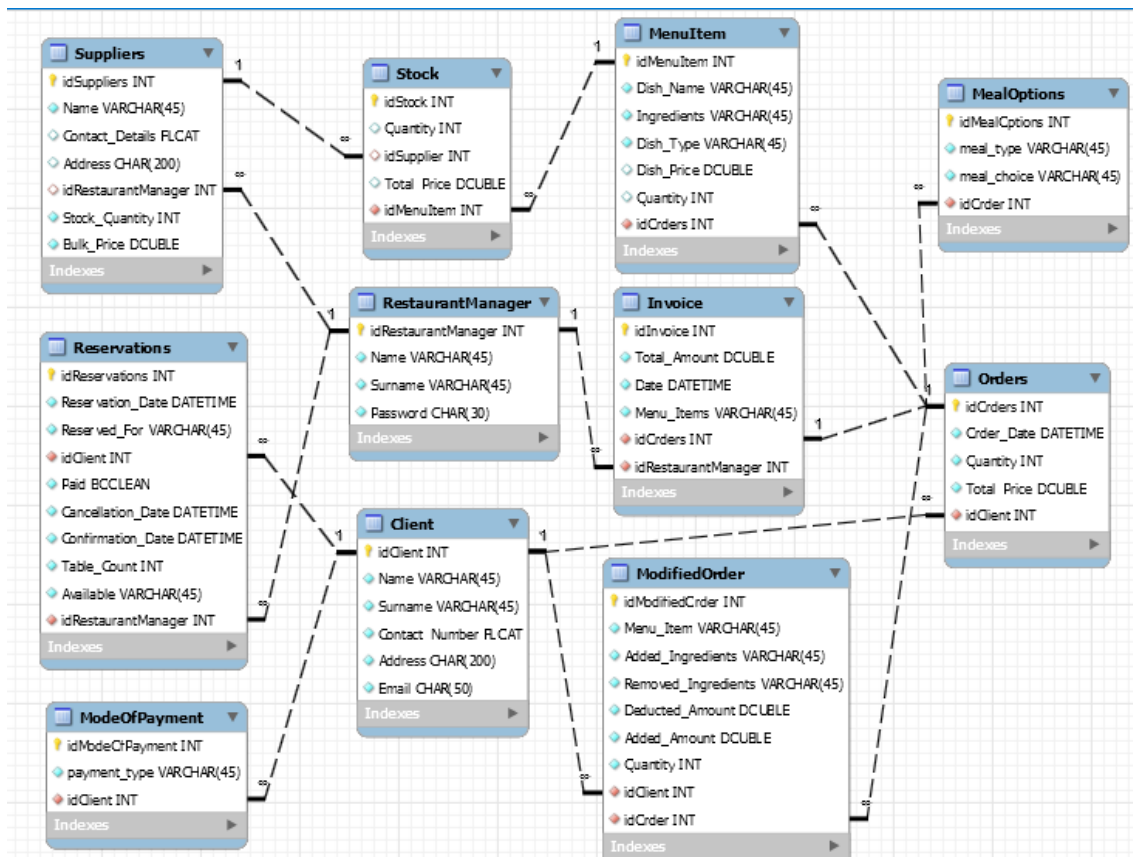


Figure 11 : Database table for the gourmet restaurant suppliers.

The Auditor and Software administrator models are yet to be added to the database management system.

## 14. CONCLUSION

Django, Sqlite3, MySQL and Python are used for the back-end of the project. The input to the GRMS will be the client interaction with the GUI. SQL commands will then allow the to update the tables in the database. Careful attention is to paid in the database design and table relations such the system is efficient without repetitions and an acceptable level of information integrity.