RESTAURANT MANAGEMENT SYSTEM

PROJECT REPORT

18CSC202J/ 18AIC203J - OBJECT ORIENTED DESIGN AND PROGRAMMING LABORATORY

(2018 Regulation)

II Year/ III Semester

Academic Year: 2022 -2023

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NOVEMBER 2022

BONAFIDE

This is to certify that **18CSC202J - OBJECT ORIENTED DESIGN AND PROGRAMMING LABORATORY project report** titled "**Restaurant Management System"** is the bonafide work of

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ABSTRACT

In the present Scenario, the competitive environment in banking sector, paradigm is changing rapidly. Various new things can be seen in banking sector, because it is adopting new concepts and technology to improve their business & to win the satisfaction of their customers. Te role of Unified Modeling Language (UML) in the Object Oriented Database Management System (OODBMS) in banking sector. The Object Oriented Database technology is considered as the fifth generation database technology. OODBMS can be considered as a combination of two technologies, Database Management System and Object Oriented System. A case study of Online Banking System has been taken to explain how various accounts and transactions can be classified. Object oriented Data Modeling technique has been used to store the data and it is represented with the help of UML. Class diagram, State chart diagram, use-case diagram, communication diagram, sequence, activity diagram, package diagram, and component and deployment diagrams. UML design tools and notations are used to graphically depict object-oriented analysis and design models. UML is a language for specifying, visualizing and constructing the artifacts of software systems and business modeling. In recent years, the Unified Modeling Language (UML) has emerged as the defector standard for the representation of software engineering diagrams. The UML class diagram contains classes, interfaces, collaborations, and dependencies, associations and interface relationships. We are creating a unified modeling language (UML) structure by specifying the use case, classes, and activities in the application. In UML modeling technique, we have three related but different viewpoints: Class Model, State Model and Interaction Model. The class model represents the static structural “data” aspects of a system. The state model represents the temporal, behavioral, “control” aspect of system and the Interaction model represents the collaboration of individual objects, interaction aspect of the system. Class diagram, State chart diagram, use-case diagram, communication diagram, sequence, activity diagram, package diagram, component and deployment diagrams are used in these three modeling techniques.

MODULE DESCRIPTION

Now let us discuss the different modules we have designed to manage the restaurant management system.

The modules are as follow:

- Staff Management
- Login Admin
- Stock Control
- Transactions
- Reservations
- Cable management
- Menu Management

Staff Management of Restaurant Management Services:

In this module, the admin will manage the staff. If we want to track every employee of the restaurant, we need to maintain his/her record.

This module will contain the following points which are as follow:

Staff Attendance of Restaurant Management Services:

Admin will keep the record of each employee so that, deduction from their salary can be done easily. By looking at the attendance, we can know which employee is more consistent. We can also provide a bonus to the employees by referring their attendance.

Staff Salary of Restaurant Management Services:

Here admin will keep the track of the salaries of the employees. Salary is one of the important parts of the employee so it should be according to their timings and position. In our system, we manage the salary of every individual with respect to their position and working hours.

Staff Holidays of Restaurant Management Services:

If some employee wants a holiday or wants to apply for leave, they can do by this module. Firstly, we will check whether we have sufficient employees in our restaurant or not if yes, then we will grant the leave application of employees otherwise not.

Admin Login of Restaurant Management Services:

In this module, the admin will maintain and handle the full Restaurant management system.

Admin will perform the following activities which are as follow:

- Admin is authorized to add and remove an employee from the record. Whenever any employee wants to enroll himself, the admin will approve that.
- If any employee's performance is poor and there is negative feedback for him. Admin will notify him once and if he wants, he can remove the employee from the panel.
- Admin will maintain the record of inventory and their menu lists.
- He can also track the need of any goods or inventory in the restaurant and manage it or if there is no use easily move it.
- Admin will manage all the financial records like the salary of employees, transactions of inventory, receiving orders, and online payment.
- He is the only authorized person to add and remove any new customer on board. Admin will also decide the price for each dish in the menu list.

Stock Control of Restaurant Management Services:

- This is one of the responsibilities of the admin to maintain the stock in the restaurant.
- With the help of this system, the admin will manage to get the information of goods present in stock.
- If the goods or inventory is less than the amount required for the restaurant then the system will notify this.
- This notification will inform the admin about the inventory current situation so that, admin can act according to that.
- We can also feed into our system that if some goods are running out of stock, then the system will automatically make an order for that.

Transactions of Restaurant Management Services:

In this module, the admin will manage the financial records of the customers as well as employees. If some customers make transactions through online mode, then the admin will manage that flow of currency. Transactions not only include the payment acceptance from the customers it will also track the financial records of the employees.

- Manage salary of the employees.
- Manage inventory payments to the dealers.
- Manage Loans from the banks.
- Finding low-interest loans from the banks.

Reservations of Restaurant Management Services:

In this module of the system, customers can reserve the table easily from their places. This module will also provide the facilities for advance booking of the tables. Here customers not only reserve the tables but also reserve the timing slot and decide their menu.

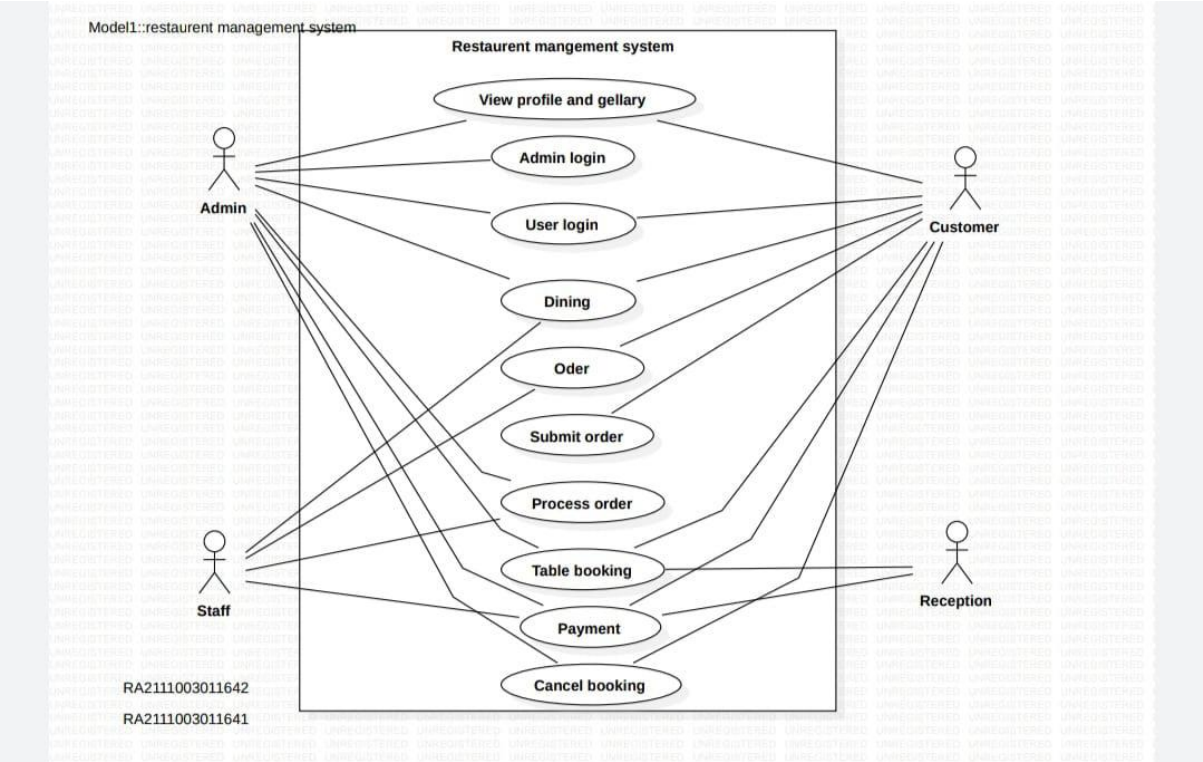
This module will help the customers to manage their bookings in the following ways:

- Customers can register themselves by using this module of the restaurant management system.
- This module will help the customers to reserve the tables according to their needs and place.
- Customers do not need to move from his place for booking of the tables.
- Customers can manage their food menu by themselves.

Table Management of Restaurant Management Services:

- In this module of the system, the admin will assign the table while reserving the tables. This module helps the system in the following manner.
- This module counts the total number of tables available and space in the restaurant so that while reserving the tables it can show the whole scenario.
- This module will help in assigning the different tables and different timing slots while reserving the tables.
- It will not allow the users to book the same table at the same time and the tables which are already booked. This process will ease the management of reserving the tables.

Use case diagram explanation

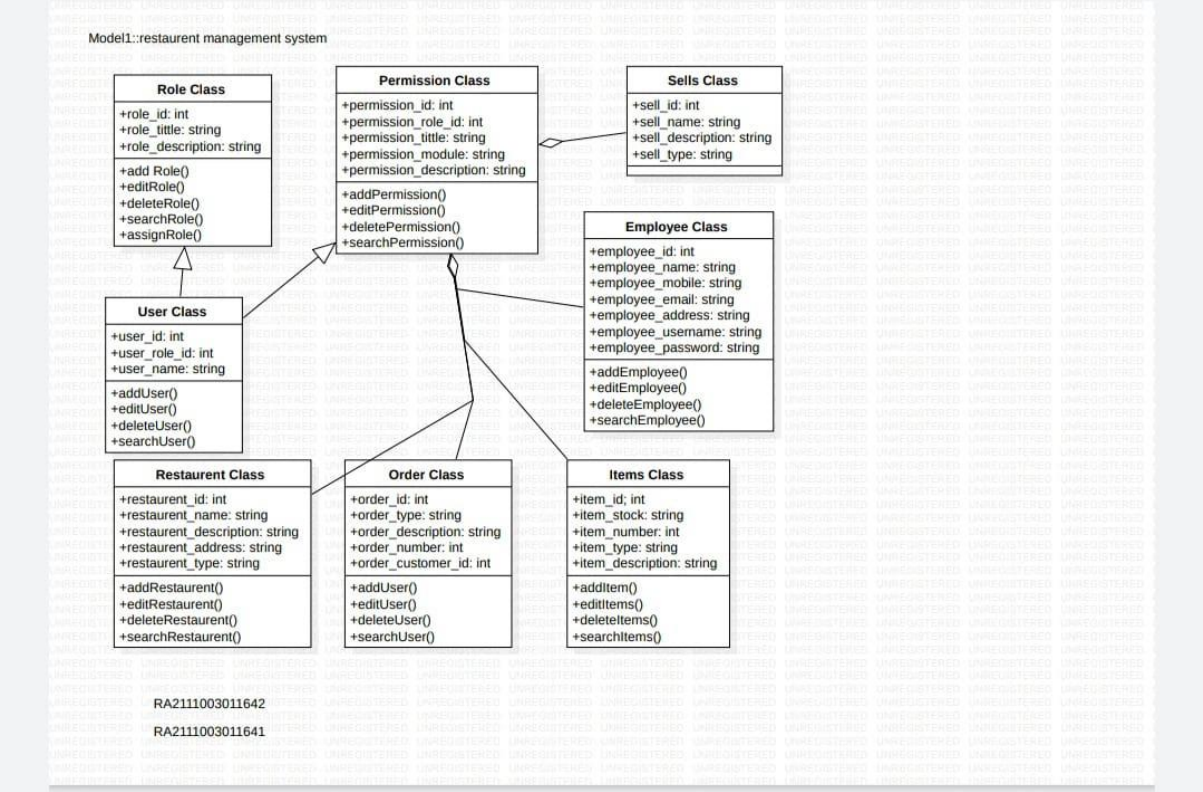


This Use Case Diagram is a graphic depiction of the interactions among the elements of Restaurent Management System. It represents the methodology used in system analysis to identify, clarify, and organize system requirements of Restaurent Management System. The main actors of Restaurent Management System in this Use Case Diagram are: Super Admin, System User, Waiters, Customers, who perform the different type of use cases such as Manage Restaurent, Manage Employees, Manage Items, Manage Sells, Manage Payments, Manage Orders, Manage Item Categoary, Manage Users and Full Restaurent Management System Operations. Major elements of the UML use case diagram of Restaurent Management System are shown on the picture below.

The relationships between and among the actors and the use cases of Restaurent Management System:

- **Super Admin Entity** : Use cases of Super Admin are Manage Restaurent, Manage Employees, Manage Items, Manage Sells, Manage Payments, Manage Orders, Manage Item Categoary, Manage Users and Full Restaurent Management System Operations
- **System User Entity** : Use cases of System User are Manage Restaurent, Manage Employees, Manage Items, Manage Sells, Manage Payments, Manage Orders, Manage Item Categoary
- **Waiters Entity** : Use cases of Waiters are Create Orders, Upload orders, Create Bills, Collect Payments
- **Customers Entity** : Use cases of Customers are Order request, Check Bills, Make Payments

Class diagram explanation



Restaurent Management System Class Diagram describes the structure of a Restaurent Management System classes, their attributes, operations (or methods), and the relationships among objects. The main classes of the Restaurent Management System are Restaurent, Employees, Items, Sells, Payments, Orders.

Classes of Restaurent Management System Class Diagram:

- **Restaurent Class** : Manage all the operations of Restaurent
- **Employees Class** : Manage all the operations of Employees
- **Items Class** : Manage all the operations of Items
- **Sells Class** : Manage all the operations of Sells
- **Payments Class** : Manage all the operations of Payments
- **Orders Class** : Manage all the operations of Orders

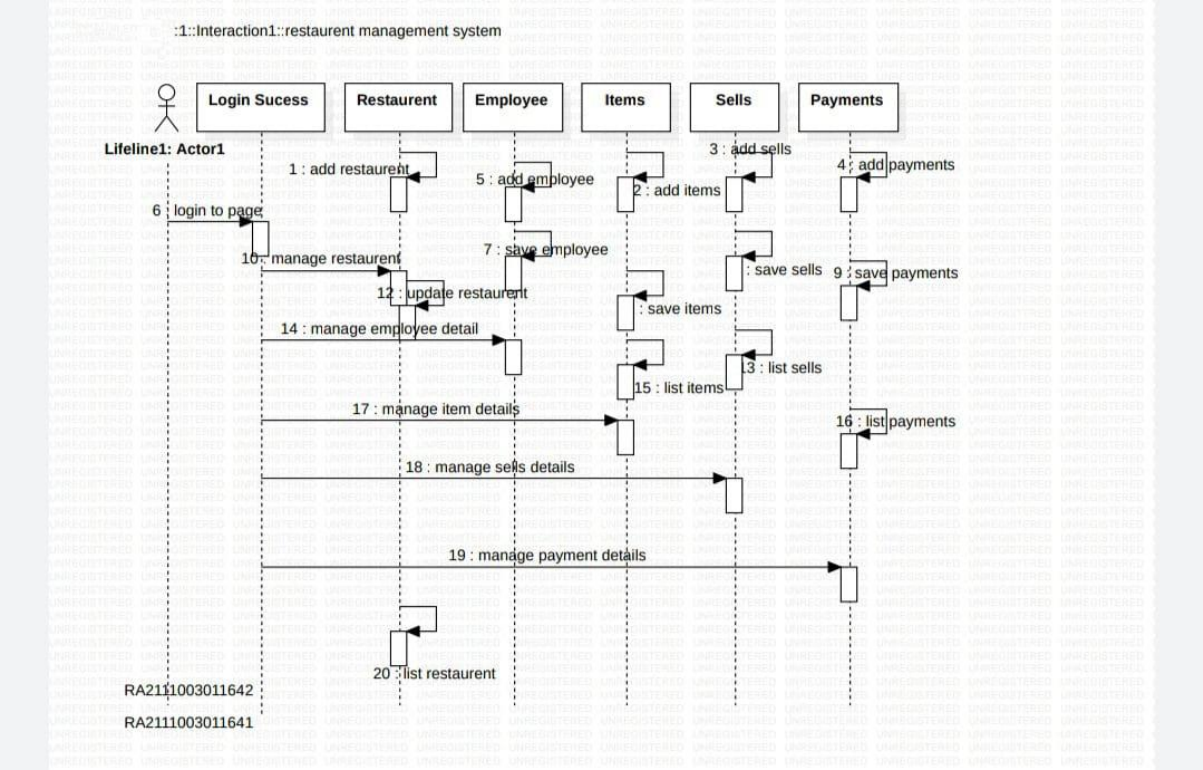
Classes and their attributes of Restaurent Management System Class Diagram:

- **Restaurent Attributes** : resturent_id, resturent_name, resturent_type, resturent_description, resturent_address
- **Employees Attributes** : employee_id, employee_name, employee_mobile, employee_email, employee_username, employee_password, employee_address
- **Items Attributes** : item_id, item_stocks, item_number, item_type, item_description
- **Sells Attributes** : sell_id, sell_name, sell_type, sell_sercription
- **Payments Attributes** : payment_id, payment_customer_id, payment_date, payment_amount, payment_description
- **Orders Attributes** : order_id, order_customer_id order_type, order_number, order_description

Classes and their methods of Restaurent Management System Class Diagram:

- **Restaurent Methods** : addRestaurent(), editRestaurent(), deleteRestaurent(), updateRestaurent(), saveRestaurent(), searchRestaurent()
- **Employees Methods** : addEmployees(), editEmployees(), deleteEmployees(), updateEmployees(), saveEmployees(), searchEmployees()
- **Items Methods** : addItems(), editItems(), deleteItems(), updateItems(), saveItems(), searchItems()
- **Sells Methods** : addSells(), editSells(), deleteSells(), updateSells(), saveSells(), searchSells()
- **Payments Methods** : addPayments(), editPayments(), deletePayments(), updatePayments(), savePayments(), searchPayments()
- **Orders Methods** : addOrders(), editOrders(), deleteOrders(), updateOrders(), saveOrders(), searchOrders()

Sequence diagram explanation



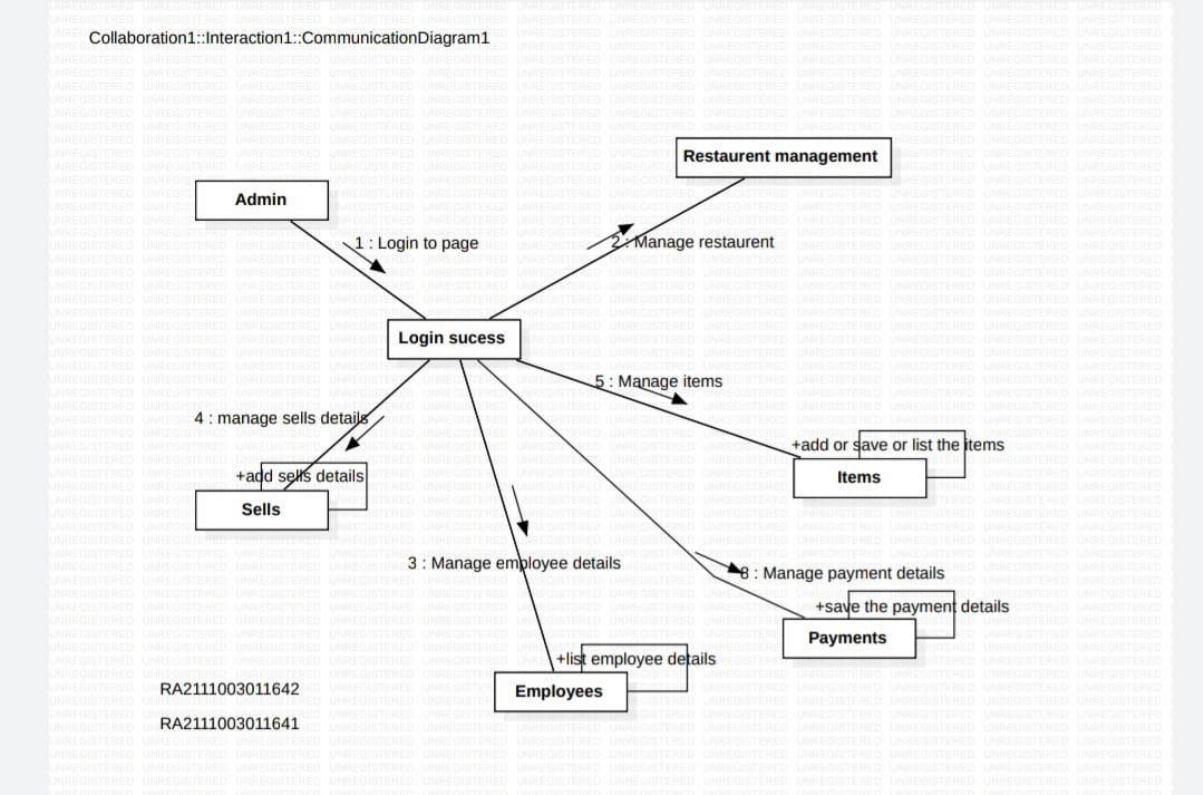
A restaurant management system refers to software that aids in the efficiency of food service operations. It also integrates with your existing restaurant technology systems (such as accounting and employee management software) and uses open APIs to connect to any third-party application.

By computerizing meal ordering, billing, and inventory control, the Restaurant Management System assists the business manager in managing the restaurant more successfully and efficiently. It also allows people to place orders instantaneously through a website, smartphone application, or even a social network brand page. In order to properly build digital sales channels, restaurants must have online ordering.

The Restaurant Management System is a sort of interaction sequence diagram that shows how a group of items interacts and in what order. Software engineers and business experts use these diagrams to understand the requirements for a new system or to describe an existing process.

The Restaurant Management System must have a designed diagram to define event sequences that will result in a desired outcome. The series in which communications appear is more important than the message itself. The majority of sequence diagrams, on the other hand, will show what messages are transmitted and in what order they usually occur.

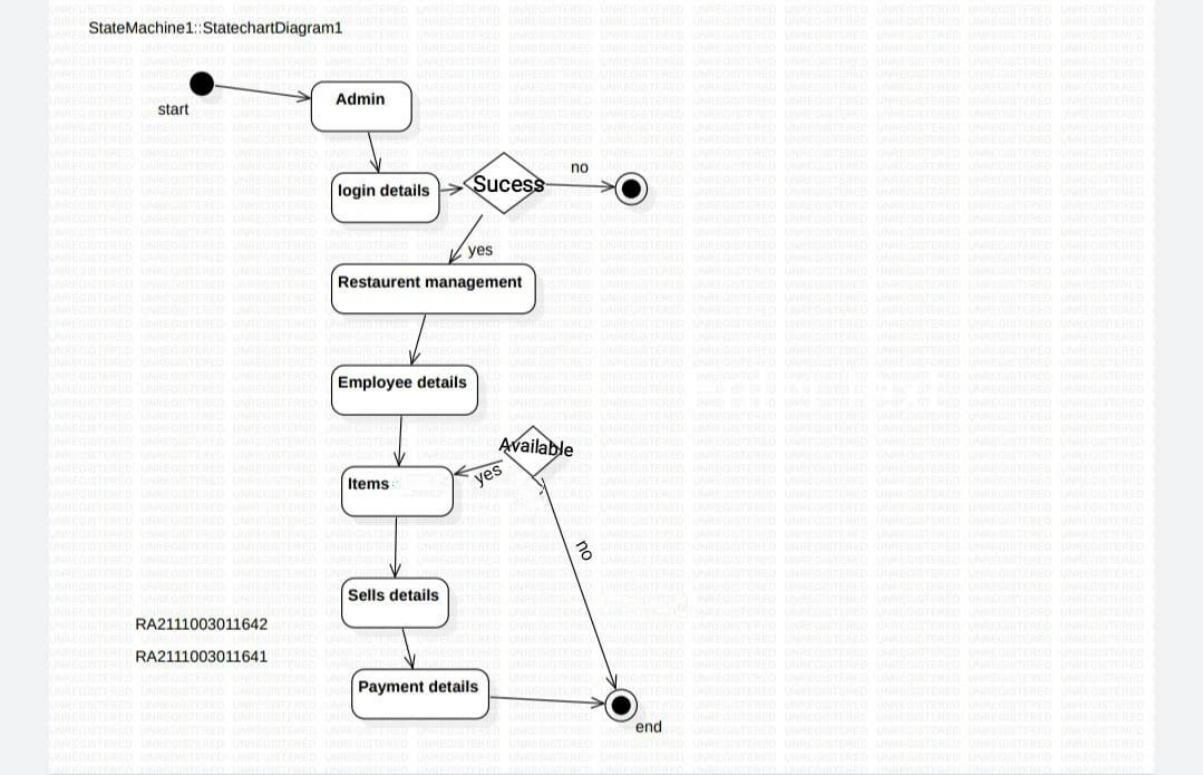
Communication diagram explanation



Uml communication diagram illustrates how components are wired together to larger components and software systems that shows the structure of arbitrarily complex systems. A communication diagram of restaurant management system models the interaction between the objects or parts in terms of sequenced messages communication diagram represents a combination of information taken from class, sequence and use case diagram describing both the static

structure and dynamic behavior of a system communication diagram of restaurant management system. Communication diagram of restaurant management system use the free form of arrangement of objects and links as used in object diagram. In order to maintain the ordering of messages in such a free form diagram, messages are labeled with a chronological number and placed near the link message is sent over. Reading a communication diagram involves starting at message 1:0 and following the messages from object to object.

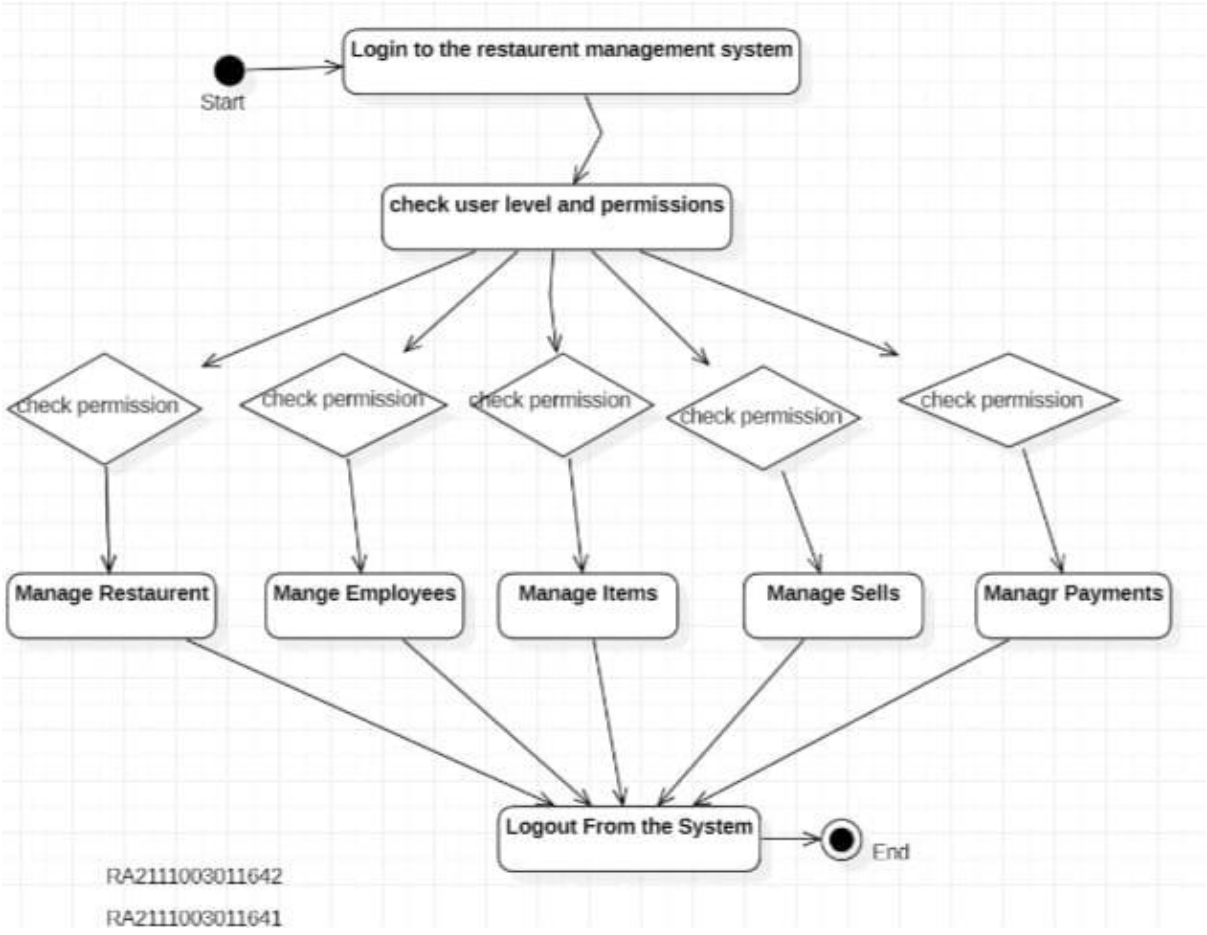
State chart diagram explanation



The name of the diagram itself clarifies the purpose of the diagram and other details. It describes different states of a component in a system. The states are specific to a component / object of a system. A state chart

diagram describes a state machine. State machine can be defined as a machine which defines different states of an object and these states are controlled by external or internal events. It is used to model the dynamic nature of the system. They define different states of an object during its lifetime and these states are changed by events. State chart diagram describes flow pf control from one state to another state. States are defined as a condition in which an object exists and it changes when some event is triggered. The first state is an idle state from where the process starts. The next states are arrived from events like in restaurant management system, checking user level, manage accounts, deposits and so on. Diagram ends with the final state.

Activity diagram explanation



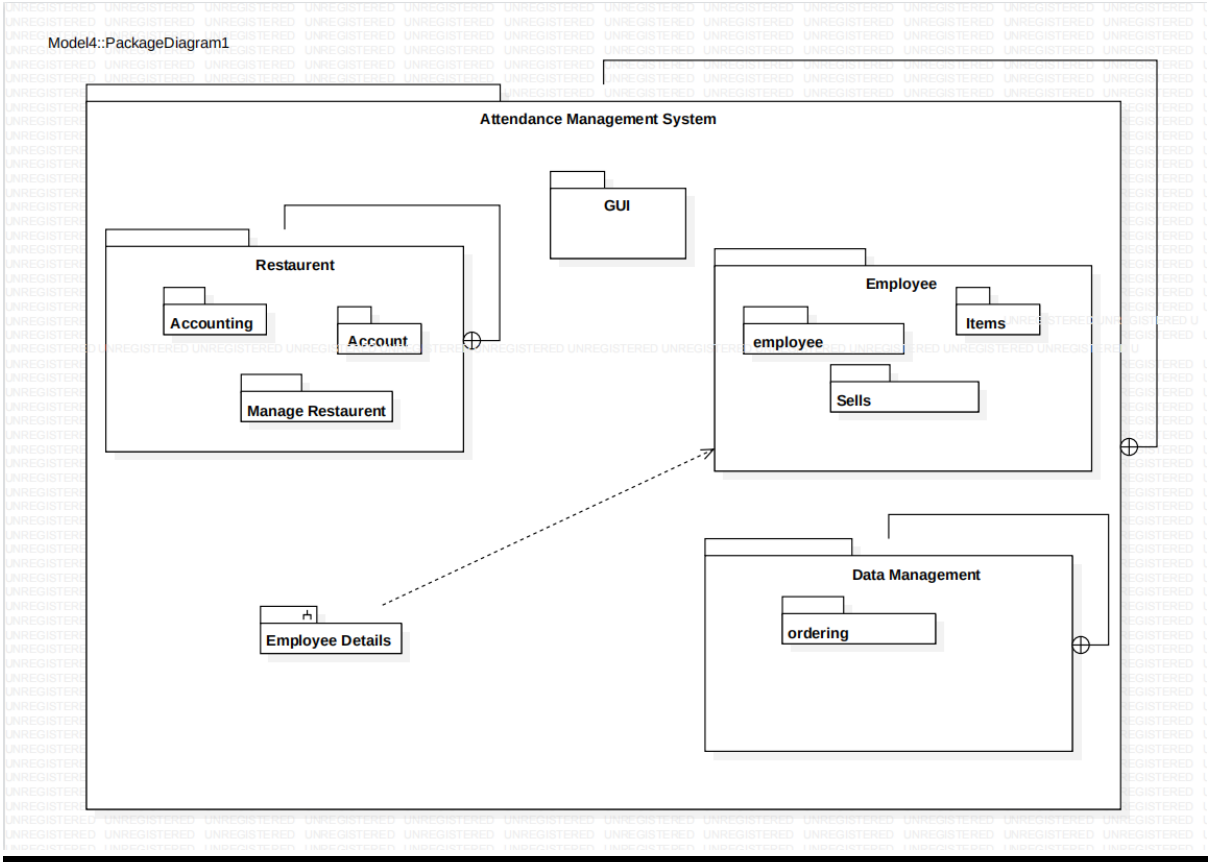
This is the **Activity UML diagram of Restaurent Management System** which shows the flows between the activity of Sells, Restaurent, Items, Orders, Payments. The main activity involved in this **UML Activity Diagram of Restaurent Management System** are as follows:

- Sells Activity
- Restaurent Activity
- Items Activity
- Orders Activity
- Payments Activity

Features Of The Activity UML Diagram Of Restaurent Management System

- Admin User can search Sells, view description of a selected Sells, add Sells, update Sells and delete Sells.
- Its shows the activity flow of editing, adding and updating of Restaurent
- User will be able to search and generate report of Items, Orders, Payments
- All objects such as (Sells, Restaurent, Payments) are interlinked
- Its shows the full description and flow of Sells, Orders, Payments, Items, Restaurent

Package diagram with explanation



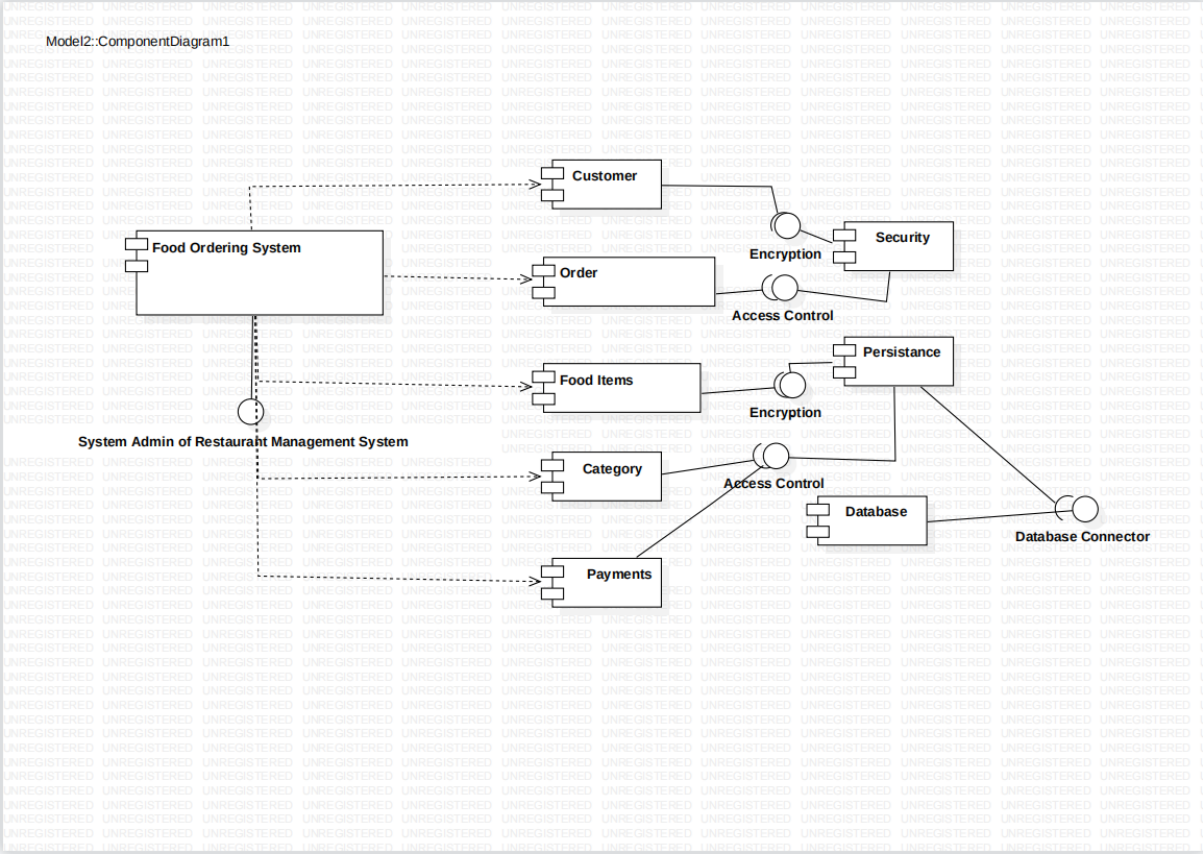
A package diagram in the unified modeling language depicts the dependencies between the packages that make up a model. In addition to the standard uml dependency relationship, they are two special types of dependencies defined between packages:

Package import

Package merge

Package is a general purpose mechanism for organizing model elements and diagrams into groups. It provides an encapsulated name space with in which all the names must be unique it is used to group semantically related elements. It is a namespace as well as an element that can be contained in other packages namespace. In restaurant management system sub packages transaction contains the classes used to represent individual transactions that a customer invites. The close session depends on the transaction package because it creates individual transaction objects. Finally the package restaurant management system contains classes that represents the banking enterprises itself and the information communicated back and forth between the restaurant and customer.

Component diagram Explanation



The Restaurant Management System UML component diagram explains the sketch of the required software and hardware components and the dependencies between them. These components are labeled to clarify their part in the system's operation. They were represented by symbols that explain their function and role in the overall restaurant management system operation. The dependencies on each component are explained through the lines and arrows drawn in the diagram

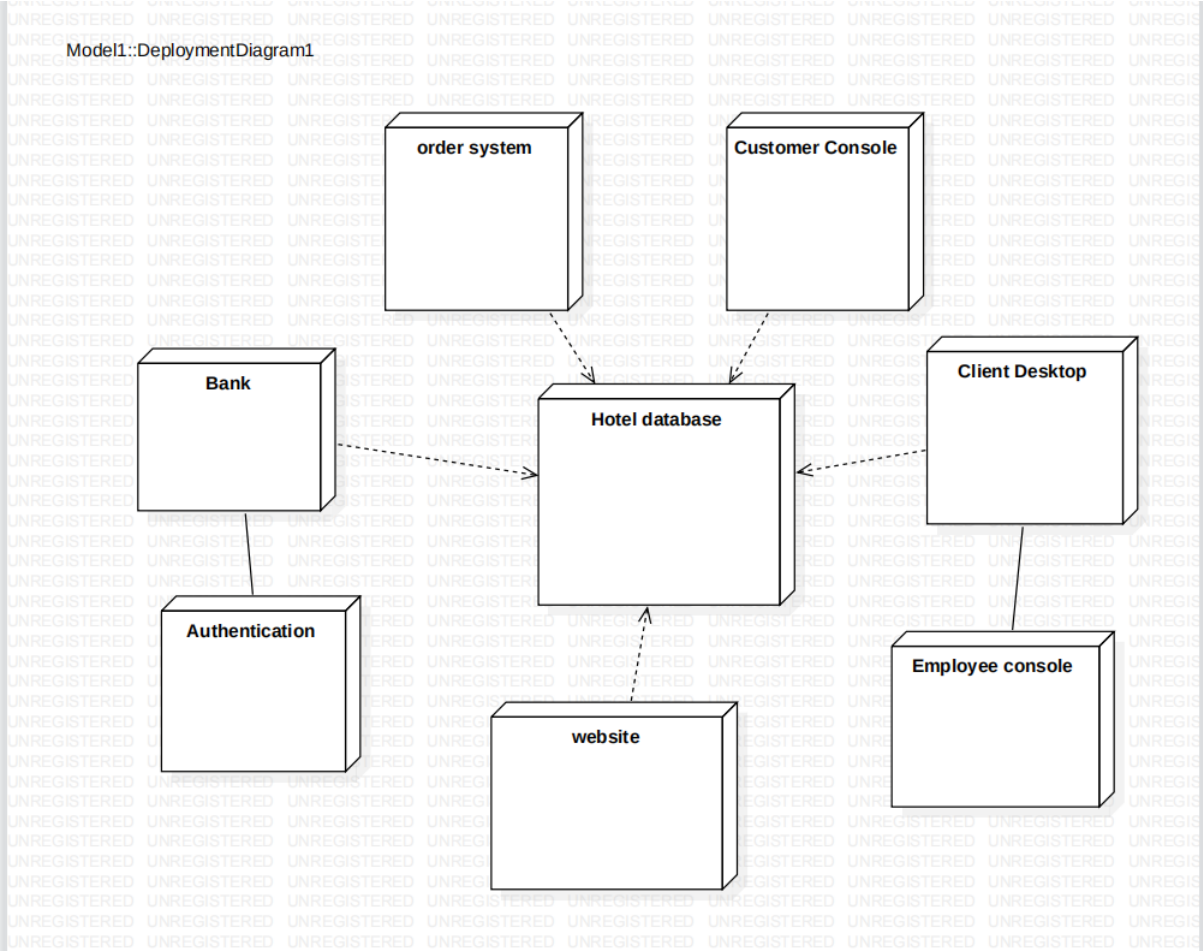
The component diagram of the restaurant management system has 7 components which are the system database, online ordering, food details, delivery options, contact information, payment options, system access, and payment account. This diagram shows several interfaces that are provided and required. The required interfaces (components) were on the semi-circle side symbol of the dependency and the provided were on the full-circle side

Benefits of using Component Diagram

As complicated as it looks, the component diagram is very important when you're building your system because it shows how everything works together. Here are the benefits of designing the restaurant management system component diagram:

- Imagine how the system looks in real life.
- Pay attention to the system's parts and how they work together.
- Pay attention to how the service behaves when it comes to the interface

Deployment diagram explanation



The Restaurant Management System UML deployment diagram explains the sketch of the relationship between software and hardware. These hardware and software are labeled to clarify their part in the system's operation. They were represented by nodes and the connections were represented by labeled arrows.

The deployment diagram shows the scenario when the system is deployed. It has 6 nodes represented with boxes and relationship connections. The nodes are the restaurant management system, the customer's device, the admin's device, the system database, online hosting (system server), and the developer's device. The online hosting (server) node will host the developed system and database that will be accessed by the users online.

For the connection, the system and the database are connected to the server (online hosting) using a private network which enables it to pass the data and information to the devices and enable users to access the system and database. The developer will have the back-end access which will only be utilized when there are errors or when the system needs an update

Benefits of Designing Deployment Diagram:

- It aids in the visualization of the various aspects involved.
- Helps in the better description of all the hardware components used by software components.
- For better understanding, it assists in defining the involved runtime processing nodes.
- This diagram depicts the software installation process on the hardware component.
- It shows how a piece of software interacts with hardware to carry out its tasks.

Conclusion

The UML Diagrams works together to achieve the most desired functions of the Restaurent Management System Project. All of these were designed to learn the behavior and structure of Restaurent Management System.

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