# Informal description – Wireless restaurant management

In the past restaurants were managed with paper, except for payment, where often a register was used. Now more and more restaurants are managed using wireless devices. Each waiter has a wireless device (ex a modified PDA with wi-fi connection), the kitchen has one or more PCs, the acceptance desk has a PC too, all are connected.

Key functions to be considered are:

- Order from waiter to kitchen: the waiter takes orders from a table and sends them to the kitchen
- Modify order from waiter to kitchen: the waiter takes changes from a table and sends them to the kitchen
- Inquiry: the waiter asks about the status of an order
- Dish from kitchen to waiter: the waiter should be alarmed to collect a dish ready to be dispatched to the right table
- Checkout: compute the amount due by a table, manage payment, issue receipt. Payment by the customer could be made at the table (the waiter handles the credit card or cash and the receipt) or at a register.

Consider also that usually restaurants, unless very small, are divided in zones allocated to one or more waiters. Besides, large restaurants could have many exits and many registers for payment.

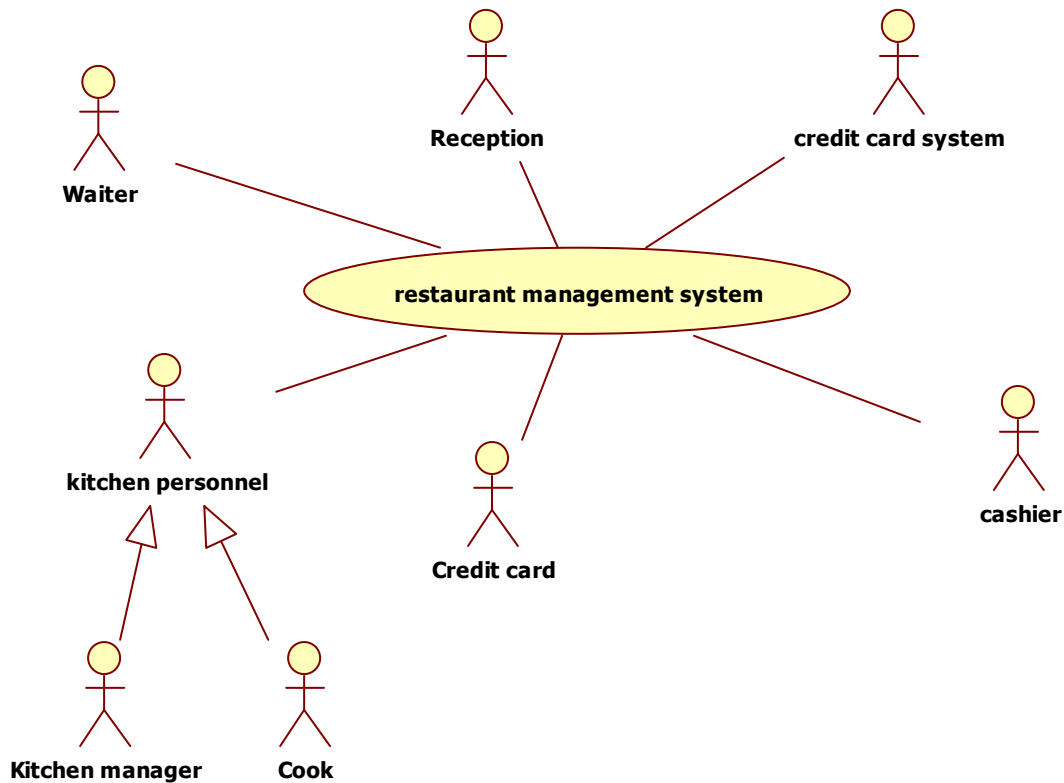# Requirements document for restaurant management system

(technical annex to a contract between restaurant owner and a company that developes the system)

## STAKEHOLDERS:

end users: waiter, kitchen,  cashier? , reception people?, accountant

procurer: restaurant owner

## Context diagram



Interfaces

| Actor | Physical interface | Logical interface |
|---|---|---|
| Waiter | Portable device with touch screen and wifi connection (could be tablet, or smartphone, or specific device) | Welcome screen<br>Login screen<br>Logout screen<br>Menu (create order, change order, compute bill, send to kitchen ..)<br>Create order screen<br>Select dish from list of dishes<br>… (many more) |
| kitchen | PC with touch screen | Welcome screen<br>Login logout<br>List of dishes to prepare, with status, delay, and button to call waiter |
| cashier | PC (with normal screen??) and | Welcome screen , login logout, |

| | printer for receipt | Menu<br>Payment screen<br>Type of payment screen<br>Credit card payment screen |
|---|---|---|
| Reception | PC | Welcome screen, login logout, Table scheme (all tables with status free/busy) |
| Credit card system | Internet connection, BJ11 cable | Boolean checkCardValid(cardnumber)<br>Boolean has Amount(cardnumber, amount)<br>Debit(cardNumber, amount) |
| Customer / creditCard | Credit card reader | ReadCreditCardNumber<br>ReadPIN<br>VerifyPIN<br>EjectCreditCard |
| Customer | paper | receipt |

## LIST OF REQUIREMENTs

| F1 | Define user types (waiter, admin..) | |
|---|---|---|
| F2 | Create new user | |
| F3 | Create an order | |
| F4 | Associate an order to a table | |
| F5 | Add a dish/drink to an order | |
| F6 | Delete a dish to an order | |
| F7 | Send order to kitchen | |
| F8 | Kitchen signals waiter dish is ready | |
| F9 | Compute check  for a table | |
| F10 | Manage payment at register | |
| 11 | Compute total income per day | |
| 12 | Compute total expenses per day | |
| 13 | Compute gain/loss per day | |
| 14 | Compute average amount for a bill | |
| 15 | Compute how many orders per table per day | |
| F16 | Keep trace of status of tables (free/busy) | |
| F17 | Set status of table to free /busy | |
| F18 | Take charge of order | |
| F19 | Schedule dishes in an order | |
| F20 | Take charge of dish | |
| F21 | Signal dish is ready | |
| F22 | Signal dish has to be prepared | |
| NF1 (efficiency) | Every function F1 to F10 should complete in < 0.1seconds | |

| | | |
|---|---|---|
| NF2 (usability) | Number of commands to use any function f1 to f10 should be <3<br>All waiters should rate the system at least 3 (on a scale 1 to 5) (customer satisfaction) | |
| NF3 (domain) | The fiscal system is .. (chinese? Italian? Usa?)<br>(ex tax rate is 21% VAT in Italy)<br>(ex state tax x% + federal tax y% in US)<br><br>Milk is 10% | |
| | Currency is RMB | |
| NF4 (reliability) | No more than 10 errors in one year | |

Functional requirements (in the *form "do something")*

## Glossary
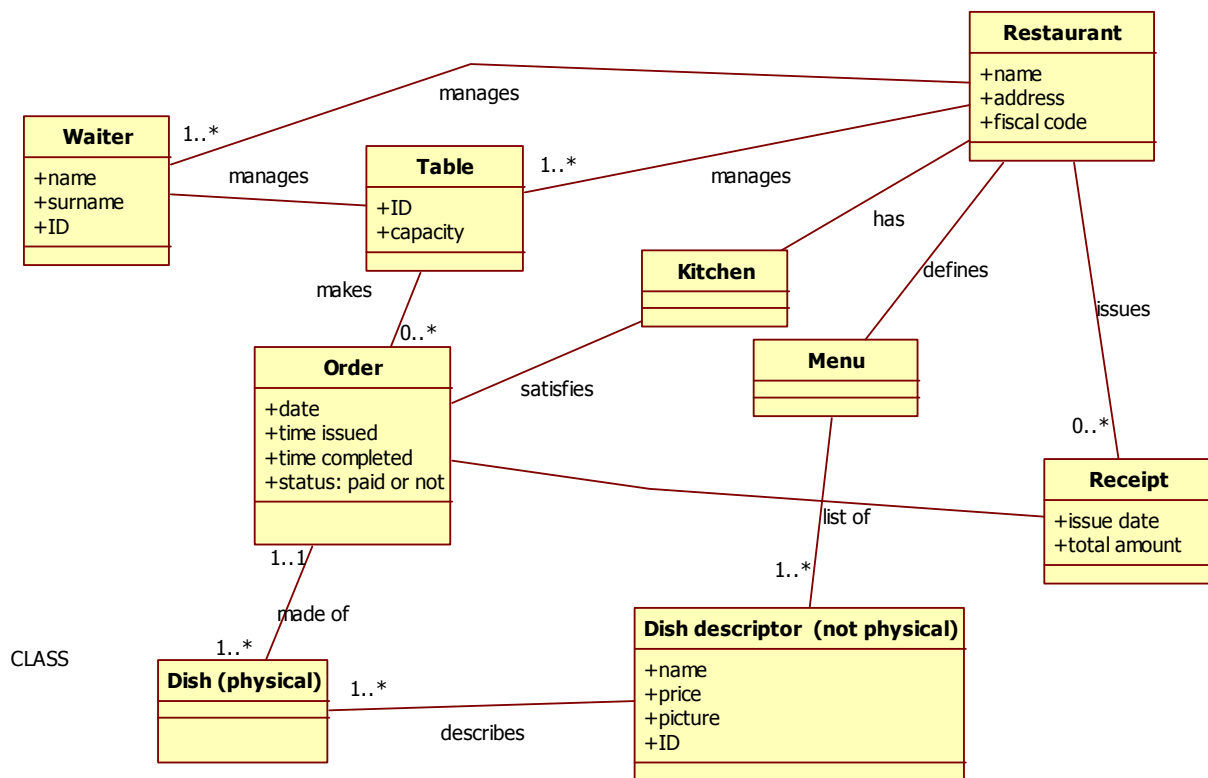
# Use case diagram
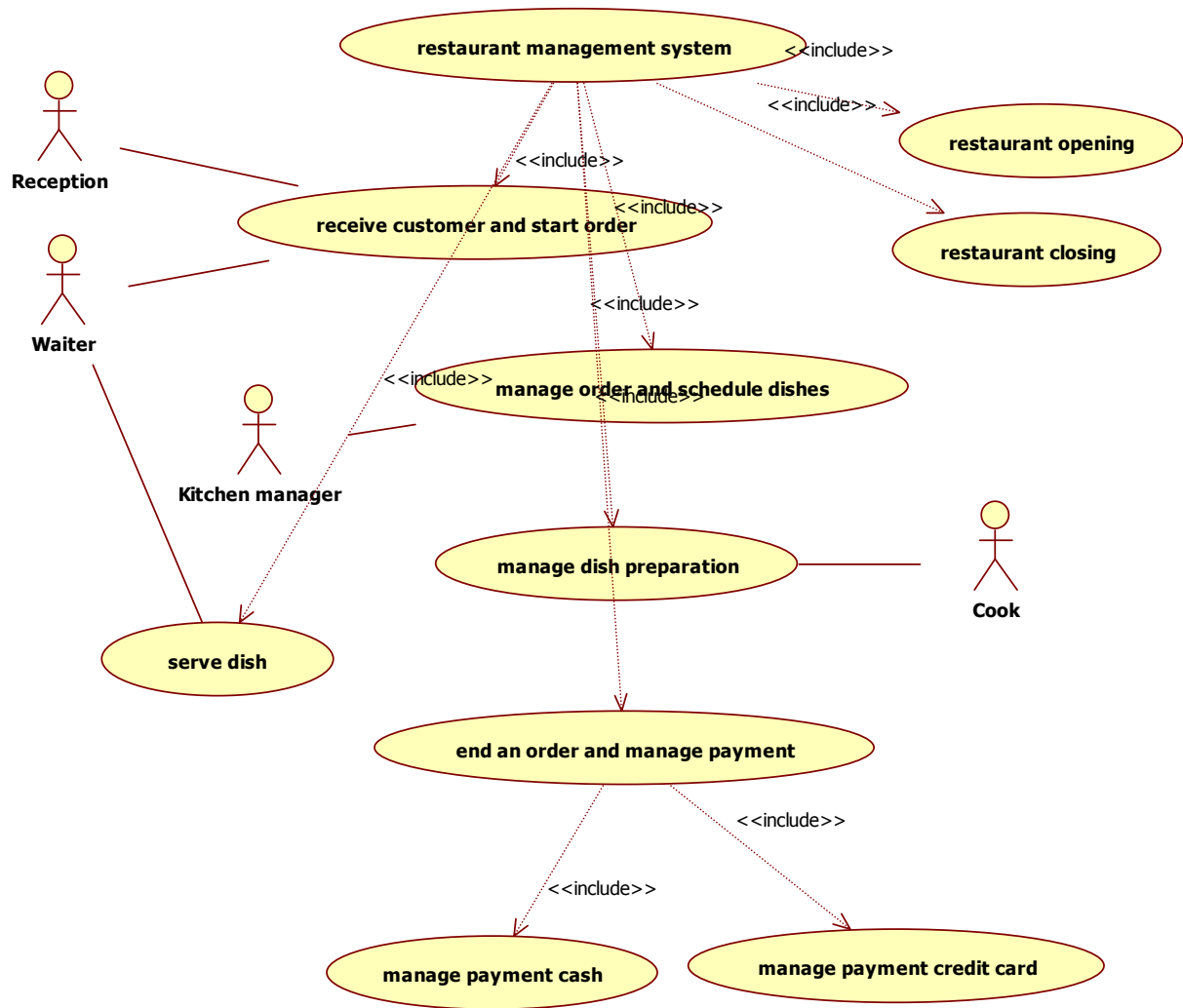


# Scenarios (stories)

## Scenario 1: Restaurant opening

Actor involved: reception, waiter

Trigger: restaurant opens

| Step | description | Requirement ID |
|------|-------------|----------------|
| 1 | Reception login | |
| 2 | Waiter login | |
| 3 | Cashier login | |

## Scenario2_1: Receive customer and start order

Actor involved: reception, waiter

Trigger: customer enters the restaurant

| Step | description | Requirement ID |
|------|-------------|----------------|
| 1 | Customer enters in the restaurant and asks a table | - |

| 2 | Reception checks status of tables | F16 |
|---|---|---|
| 3 | Reception assigns table to customer | F17 |
| 4 | Customer reads menu | -- |
| 5 | Waiter takes order | F3 |
| 6 | Waiter attaches order to table | F4 |
| 7 | Add dish/drink | F5 |
| 8 | Add dish/drink | F5 |
| 9 | Add dish/drink | F5 |
| 10 | Delete dish | F6 |
| 11 | Add dish/drink | F5 |
| 12 | Send order to kitchen, alarm kitchen | F7 |

## Scenario2_2: Receive customer and start order

Actor involved: reception, waiter

Trigger: customer enters the restaurant

| Step | description | Requirement ID |
|---|---|---|
| 1 | Customer enters in the restaurant and asks a table | - |
| 2 | Reception checks status of tables | F16 |
| 3 | Reception assigns table to customer | F17 |
| 4 | Customer reads menu | -- |
| 5 | Waiter takes order | F3 |
| 6 | Waiter attaches order to table | F4 |
| 7 | Add dish/drink | F5 |
| 8 | Add dish/drink | F5 |
| 9 | Delete dish | F6 |
| 10 | Add dish/drink | F5 |
| 11 | Add dish/drink | F5 |
| 12 | Send order to kitchen, alarm kitchen | F7 |

## Scenario2_3: Receive customer and start order

Actor involved: reception, waiter

Trigger: customer enters the restaurant

| Step | description | Requirement ID |
|---|---|---|
| 1 | Customer enters in the restaurant and asks a table | - |
| 2 | Reception checks status of tables | F16 |
| 3 | Reception assigns table to customer | F17 |
| 4 | Customer reads menu | -- |
| 5 | Waiter takes order | F3 |
| 6 | Waiter attaches order to table | F4 |
| 7 | Add dish/drink | F5 |
| 8 | Add dish/drink | F5 |
| 9 | Send order to kitchen, alarm kitchen | F7 |

## Scenario3_1: Manage order and Schedule dishes

Actor involved: Kitchen manager

Trigger: new order arrives

| Step | Description | Requirement ID |
|---|---|---|
| 1 | Kitchen manager takes charge of order (order has 3 dishes) | F18 |
| 2 | Kitchen manager schedules dish1  in 10 minutes | F19 |
| 3 | Kitchen manager schedules dish2  now | F19 |
| 4 | Kitchen manager schedules dish3  in 5 minutes | F19 |
| 5 | System sends alarm for dish2 | F22 |
| | 5 minutes pass | |
| 6 | System sends alarm for dish3 | F22 |
| | 5 minutes pass | |
| 7 | System sends alarm for dish1 | F22 |
| | | |

## Scenario3_2:  Manage order and Schedule dishes

Actor involved: Kitchen manager

Trigger: new order arrives

| Step | Description | Requirement ID |
|---|---|---|
| 1 | Kitchen manager takes charge of order (order has 3 dishes) | F18 |
| 2 | Kitchen manager schedules dish1  in 2 minutes | F19 |
| 3 | Kitchen manager schedules dish2  now | F19 |
| 4 | Kitchen manager schedules dish3  in 5 minutes | F19 |
| 5 | System sends alarm for dish2 | F22 |
| | 2 minutes pass | |
| 6 | System sends alarm for dish1 | F22 |
| | 3 minutes pass | |
| 7 | System sends alarm for dish3 | F22 |
| | | |

## Scenario4 : Manage dish preparation

Actor involved: Cook

Trigger: alarm for dish

| Step | Description | Requirement ID |
|---|---|---|
| 1 | Cook takes charge of dish to prepare | F20 |
| 2 | Cook prepares dish | -- |
| 3 | Cook signals dish is ready | F21 |

## Scenario5: Serve dish

## Scenario6: End an order and payment

# System design

Wireless restaurant management system components

**ADSL modem**

usb cable

**Server PC**

usb cable

**wifi credit card reader**

wifi channel

**WI FI transceiver**

wifi channel

in reception

wifi channel

**PC with touch screen**

in kitchen

**fixed credit card reader**

usb cable

**PC**

usb cable

wifi channel

for receipts

**Printer**

**Portable device**

for each waiter