Requirement Analysis and Conceptual Design for Popular Pizza

Part 1 – Requirements

Data Requirements

Order Processing

Order

Customer

Discount Program

* New orders will be received in-store or via the phone
* Completed orders will be finalised in-store or via delivery service
* Customer data will be stored for confirmation of present and future orders
* Information regarding any discounts will also be stored – current promotions and their requirements.
* Order data:
  + OrderNo
  + DateOfOrder
  + CustomerInfo
  + NoOfItems
  + ItemQuantity
  + ItemPrice
  + Subtotal
  + DiscountProgram
  + Tax
  + TotalDue
  + PaymentMethod
  + PaymentApprovalNo
  + Status
  + OrderType
  + DriverInfo
* Customer data:
  + CustomerId
  + CustomerName
  + CustomerAddress
  + CustomerPhone
* Discount program data:
  + DiscountCode
  + DiscountPercentage
  + StartDate
  + EndDate
  + Requirements

Menu Items, Ingredients and Suppliers

Supply Orders

Suppliers

Menu Items

Ingredients

* Menu items data:
  + ItemCode
  + ItemName
  + ItemSize
  + ItemPrice
  + IngredientType
  + IngredientQuantity
* Ingredients data:
  + IngredientCode
  + IngredientName
  + IngredientType
  + DateOfLastStocktake
  + CurrentStock
  + SuggestedStock
  + StockToOrder
  + AvailableSuppliers
* Suppliers data:
  + SupplierName
  + SupplierAddress
  + SupplierABN
  + SupplierPhone
  + SupplierStock
  + SupplierRepInfo
* Supply order data:
  + SupplyOrderNo
  + SupplierInfo
  + DateOrdered
  + DateDelivered
  + IngredientsCode
  + IngredientsQuantity
  + TotalCost

Employees

Shift Worked

Employee

* Employee data:
  + EmployeeNo
  + EmployeeName
  + EmployeeAddress
  + EmployeePhone
  + TFN
  + EmployeeBankCode
  + EmployeeBankName
  + EmployeeAccountNo
  + PayRate
  + Status
* Shift worked data:
  + EmployeeData
  + ShiftDate
  + StartTime
  + EndTime
  + OrdersDelivered

Transaction Requirements

* Create/update relevant personal data for each customer
* Create/edit customer orders
* Add/delete/edit information about discount programs
* Edit menu items or prices
* Manage stocktake data – what was present as of the last stocktake, what should be present and what is needed
* Edit details of suppliers and their stock
* Add new supply order – what was ordered for what cost, when, from whom and for which date
* Add/edit/delete employee information
* Add shifts that each employee works – if delivery driver, details of deliveries

Business Rules

* Customers must be verified before orders are completed
* Conflicting or outdated customer information must be verified and updated
* Payment must be made as either cash, debit or credit card
* If paying by card, the PaymentApprovalNo must be stored with the order data
* No more than one discount program can be utilised per order
* Ingredient levels must be updated every time one is used
* Stocktake must be performed weekly
* When stock falls below the suggested level, it must be reordered
* When receiving stock, the stock must be accounted for and the database updated as soon as possible
* Employees must be employed as either a manager, in-store team member or delivery driver
* Employees must only be paid casual, part-time or full-time
* Delivery drivers must have a record of all of their past and current deliveries
* All employees must enter their start and finish times into the database

Part 2 – EER

EER Model

1..\*

1..1

Contains

Ordered In

1..\*

1..1

1..\*

1..\*

0..1

1..1

0..1

0..\*

Requests

1..\*

1..\*

1..\*

1..1

0..1

1..1

Discount Program

* DiscountCode {PK}
* DiscountPercentage
* StartDate
* EndDate

Works On / Delivers

Contained In

WorkedBy

Supplier

* SupplierABN {PK}
* SupplierName
* SupplierAddress
* SupplierPhone
* SupplierStock
* SupplierRepInfo

Delivers

Shift Worked

* EmployeeData
* ShiftDate
* StartTime
* EndTime
* OrdersDelivered

Menu Item

* ItemCode {PK}
* ItemName
* ItemSize
* ItemPrice
* IngredientType
* IngredientQuantity

Order

* OrderNo {PK}
* DateOfOrder
* CustomerInfo
* NoOfItems
* ItemQuantity
* ItemPrice
* Subtotal
* DiscountProgram
* Tax
* TotalDue
* PaymentMethod
* PaymentApprovalNo
* Status
* OrderType
* Description
* DriverInfo

Customer

* CustomerId {PK}
* CustomerName
* CustomerAddress
* CustomerPhone

Supplements

Ingredient

* IngredientCode {PK}
* IngredientName
* IngredientType
* DateOfLastStocktake
* CurrentStock
* SuggestedStock
* StockToOrder
* AvailableSuppliers

Employee

* EmployeeNo {PK}
* EmployeeName
* EmployeeAddress
* EmployeePhone
* TFN
* EmployeeBankCode
* EmployeeBankName
* EmployeeAccountNo
* PayRate
* Status

Supply Order

* SupplyOrderNo {PK}
* SupplierInfo
* DateOrdered
* DateDelivered
* IngredientsCode
* IngredientsQuantity
* TotalCost

Documentation – Data Dictionary

Entities

|  |  |  |
| --- | --- | --- |
| Name | Relationship | Description |
| Order | Customer, Discount Program, Employee, Menu Item | A customer’s order for food |
| Customer | Order | A person that has placed an order |
| Discount Program | Order | Current promotion or discount for when certain requirements are filled |
| Menu Item | Order, Ingredient | An item that is available for customers to order |
| Supply Order | Supplier, Ingredient | An array of ingredients delivered by a supplier |
| Supplier | Supply Order | An organisation that delivers ingredients |
| Ingredient | Menu Item, Supply Order | A component of any number of menu items |
| Employee | Shift Worked, Order | A person who is employed by the business |
| Shift Worked | Employee | The details of a day worked by an employee |

Relationships

|  |  |  |
| --- | --- | --- |
| To | From | Description |
| Supply Order (0..1) | Supplier (1..1) | One supplier delivers at most one supply order at a time to the business |
| Ingredient (1..\*) | Supply Order (1..1) | One supply order can contain one or more ingredients to be delivered |
| Menu Item (1..\*) | Ingredient (1..\*) | Any amount of ingredients can be used to prepare any amount of menu items |
| Order (1..1) | Menu Item (1..\*) | One order can consist of one or many items |
| Order (0..\*) | Discount Program (0..1) | An order can benefit from at most one discount program |
| Order (0..1) | Customer (1..1) | A customer can have at most one active order |
| Order (1..\*) | Employee (1..\*) | The team of employees can work on any amount of orders (within reason) |
| Employee (1..1) | Shift Worked (1..\*) | An employee will have all of their worked shifts in the database |

Attributes

|  |  |  |
| --- | --- | --- |
| Name | Entity | Description |
| OrderNo {PK} | Order | Unique order identifying number |
| DateOfOrder | Order | When the order was processed |
| CustomerInfo | Order | The details of the customer entity |
| NoOfItems | Order | The number of different items on the order |
| ItemQuantity | Order | The amount of each item on the order |
| ItemPrice | Order | The price of each item |
| Subtotal | Order | The total cost, less any discount |
| DiscountProgram | Order | The details of the discount program (if using) |
| CustomerId {PK} | Customer | Unique customer identifying number |
| CustomerName | Customer | Name of the customer |
| CustomerAddress | Customer | Address of the customer |
| CustomerPhone | Customer | Contact number of the customer |
| DiscountCode {PK} | Discount Program | Unique discount program number |
| DiscountPercentage | Discount Program | Percentage subtracted from the total cost |
| StartDate | Discount Program | When the discount program begins |
| EndDate | Discount Program | When the discount program ends |
| ItemCode {PK} | Menu Item | Unique menu item identifier |
| ItemName | Menu Item | Name of the item on the menu |
| ItemSize | Menu Item | Menu item size |
| ItemPrice | Menu Item | Menu item price |
| IngredientType | Menu Item | Type of ingredient in the menu item |
| IngredientQuantity | Menu Item | Quantity of ingredient in the menu item |
| SupplyOrderNo {PK} | Supply Order | Unique supply order identifier |
| SupplierInfo | Supply Order | Information regarding the supplier |
| DateOrdered | Supply Order | Date that the order was placed |
| DateDelivered | Supply Order | Date that the order was delivered |
| IngredientsCode | Supply Order | Identifying code for ingredient |
| IngredientsQuantity | Supply Order | Amount of ingredient ordered |
| TotalCost | Supply Order | Cost of all ingredients |
| SupplierABN {PK} | Supplier | Business number of the supplier |
| SupplierName | Supplier | Name of the supplier |
| SupplierAddress | Supplier | Address of the supplier |
| SupplierPhone | Supplier | Contact number of the supplier |
| SupplierStock | Supplier | Stock available from the supplier |
| SupplierRepInfo | Supplier | Sales representative employed by supplier |
| IngredientCode {PK} | Ingredient | Unique ingredient identifier |
| IngredientName | Ingredient | Name of ingredient |
| IngredientType | Ingredient | Type of ingredient |
| DateOfLastStocktake | Ingredient | When stocktake was last performed |
| CurrentStock | Ingredient | Current stock levels |
| SuggestedStock | Ingredient | What stock should be based on projections |
| StockToOrder | Ingredient | How much stock needs to be ordered |
| AvailableSuppliers | Ingredient | Which suppliers deliver the ingredient |
| EmployeeNo {PK} | Employee | Unique employee identifier |
| EmployeeName | Employee | Name of employee |
| EmployeeAddress | Employee | Address of employee |
| EmployeePhone | Employee | Contact number of employee |
| TFN | Employee | Tax file number of employee |
| EmployeeBankCode | Employee | Employee’s bank information |
| EmployeeBankName | Employee | Name of employee’s bank |
| EmployeeAccountNo | Employee | Employee’s account number |
| PayRate | Employee | Employee’s hourly/weekly pay rate |
| Status | Employee | Employment status |
| EmployeeData | Shift Worked | Details of the relevant employee |
| ShiftDate | Shift Worked | The date of the shift |
| StartTime | Shift Worked | When the shift began |
| EndTime | Shift Worked | When the shift ended |
| OrdersDelivered | Shift Worked | For deliverers, information regarding the shift’s deliveries |