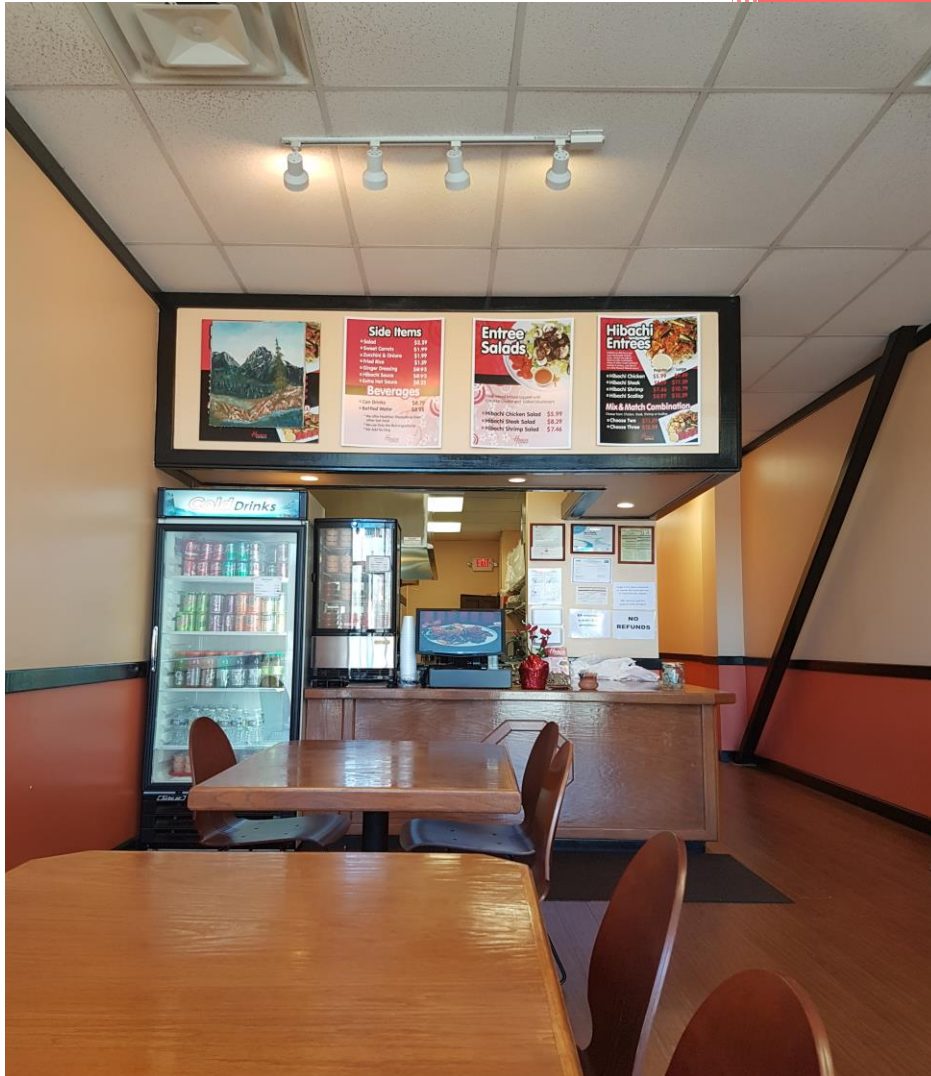


Logical Model Report: Project Hibachi Express



CIS 3730 – 012 Database Management
Professor Shane Givens
Wednesdays 7:15 – 9:45pm

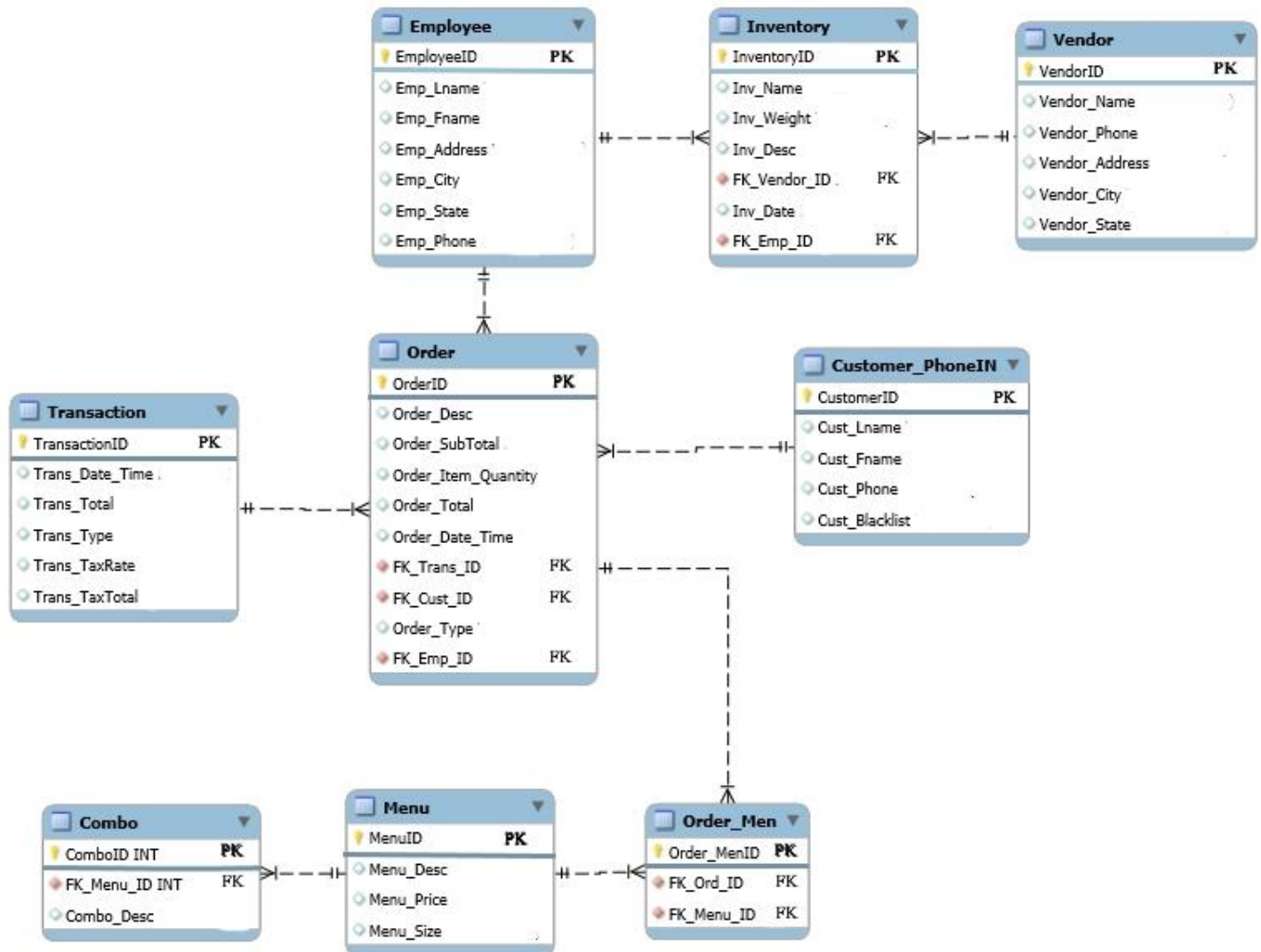
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Table of Contents

I.	Logical Model – Hibachi Express Database.....	Pg. 2
II.	Entity Relationship Diagram – Entity & Attributes.....	Pg. 3–5
III.	Database Business Rules Model.....	Pg. 6
IV.	Appendices.....	Pg. 7–9
	A. Interview Document.....	Pg. 7
	B. Photos.....	Pg. 8-9

I. Logical Model – Hibachi Express Database



II. Entity Relationship Diagram – Entity & Attribute Significance Expanded

Vendor Entity – This represents the specific vendors that supply Hibachi Express with different foods and food related items that are used to create an active inventory. The Vendor Entity is related to Inventory in that 1 Vendor can supply many inventory items. Information about this relationship was discovered while interviewing the Owner about how she obtained materials (food, Styrofoam trays, etc.) for running the business. We determined the attributes below based on the owner's need to know who is providing the food she is serving and how to contact the vendor when it is time to order more inventory.

Attributes:

Vendor ID= Surrogate Key, Primary Key

Vendor Name= Name of the vendor supplying the item

Vendor Phone= Phone number of the vendor

Vendor Address= Where the item is coming from

Vendor City= Vendors Location

Vendor State= Vendors Location

Inventory Entity – This represents the different food and food related items that will be active in the planned to be constructed database. 1 Vendor supplies many Inventory Items. 1 Employee checks Many Inventory shipments. Information about this relationship was discovered while interviewing the Owner and it was determined by D.F.I.U. team members that it would benefit the owner to have a database that would reflect inventory of related food materials that could be checked by one employee. This makes sense because the establishment is a small business and only has 3 employees. We determined the attributes below based on the owner's need to know what each product is and when she received the item.

Attributes:

Inventory ID= Surrogate Key, Primary Key

Inventory Name= Name of product stored in store

Inventory Weight= How much a certain product weighs

Inventory Description= What the product is used for

Inventory Date= Way to check if product is in date or out

Employee ID= Foreign Key, One to Many relationship with Employee

Vendor ID= Foreign Key, One to Many relationship with Vendor

Employee Entity - This represents the different employees that work at the restaurant. Many inventory shipments are checked by 1 employee. 1 employee can receive many customer orders. Information was gathered by interviewing the owner and observing the Point-of-sales system. The attributes were determined by evaluating what information Hibachi Express keeps on record for each employee. We determined the attributes below based on the owner's need to track her employee's information for

Attributes:

Employee ID= Surrogate Key, Primary Key

Employee Last Name= An employee's last name

Employee First Name= An employee's first name

Employee Address= An employee's street address

Employee City= An employee's city

Employee State= An employee's state

Employee Phone= An employee's primary phone number

Order Entity – This represents the point of contact between the customer, employee, menu items, and financial transaction. Many Orders can be received by 1 employee. Many Orders can be placed by 1 Customer. Many Orders can be paid for under 1 Transaction. 1 Order is reflected in many instances of Order_Men which is an associative pattern type entity that will eliminate unnecessary redundancies and reduce database anomalies. Information was gathered by looking at receipts, interviewing the owner, and observing the Point-Of-Sales system. We determined the attributes in the order entity by understanding the business processes involved with tracking order information.

Attributes:

Order ID= Surrogate Key, Primary Key

Order Description= Identifies each item within a single order

Order Type= Order can either be carryout or dine-in

Order Subtotal= Order pre-tax total

Order Total= Order total including tax

Order Item Quantity= Number of items ordered in an order

Order DateTime= Date and time an order was placed

Transaction ID= Foreign Key, One to Many relationship with Transaction

Customer ID= Foreign Key, One to Many relationship with Customer

Employee ID= Foreign Key, One to Many relationship with Employee

Transaction Entity – Reflects financial record of an order and how it is paid for. 1 transaction can have many orders. This was determined by looking at receipts and the P-O-S system and was decided upon by Team members. We determined the attributes below based on the type of information needs to be stored for each transaction. These attributes help determine how much an order was, what type of transaction was processed, and when it occurred.

Attributes:

Transaction ID= Surrogate Key, Primary Key

Transaction DateTime= Date and time transaction was processed

Transaction Total= Total amount paid by customer

Transaction Type= How the transaction was paid (Cash, credit, debit, check)

Transaction Tax Rate= Current county tax rate

Transaction Tax Total= Dollar value of total taxes charged on orders

Customer Phone In Entity – This represents customers that will be ordering at Hibachi Express. 1 customer can place many orders under his or her name. This was determined by interviewing the owner, looking at receipts, and the P-O-S system. It was also determined that I would be beneficial to keep a record of customers that ordered over phone. We determined the attributes below based on the owner's need to keep track of who the customer is and if they should be able to continue to order from Hibachi Express

Attributes:

Customer ID= Surrogate Key, Primary Key

Customer Last Name= A customer's last name

Customer First Name= A customer's first name

Customer Phone= A customer's phone number

Customer Blacklist= Customer able to place order over the phone. Customer can be blacklisted if the customer fails to come pick up order placed over the phone.

Order_Men Entity – Created a bridge entity for Order and Menu because they had a many to many relationship. We determined the attributes below based on the need to create a bridge entity correctly.

Attributes:

Order Menu ID= Surrogate Key, Primary Key
 Order ID= Foreign Key, One to Many relationship with Order
 Menu ID= Foreign Key, One to Many relationship with Menu

Menu Entity – This represents the different selections a customer could choose from to make an order. Many customers can choose many items and in redundancy. Order_Men Entity uses associative pattern to address many to many relationship. The decision to make this entity was taken from observation of the restaurant menu, receipts, and P-O-S system. We determined the attributes below based on the owner to track each menu item that was sold and frequency, which is included in the order.

Attributes:

Menu ID=Surrogate Key, Primary Key
 Menu Description=Describes menu item
 Menu Price= Price of each menu item
 Menu Size= Customer can choose between regular or large portion

Combo Entity- This represents the mix and match combinations on the menu. There are two menu items that represent a multi-value attribute. There are two menu items that are entrees that you can choose multiple variations of food selections. For instance, you choose a pick two entree and have your choice of doubling your food selection for a list of choices that include steak, chicken, shrimp, and scallops. A customers can order 1 chicken and 1 steak or 1 shrimp and 2 steak. We determined the attributes below based on the how the customer can order off the menu. The menu has an option to pick two or three types of proteins, which makes a multi-valued attribute.

Attributes:

Combo ID= Surrogate key, Primary Key
 Combo Description= Customer can choose between multiple protein options
 Menu ID, Foreign Key, One to Many relationship with Menu

Our group went through multiple iterations of designing the database model. As a group we observed, interviewed, and gathered detailed information about the small business Hibachi Express. During development of our conceptual model we anticipated creation of the attributes necessary for our logical model. The documents provided below were gathered to help develop our logical model.

III. Database Business Rules Model

Business Rules: Hibachi Express Database				
Entity	Entity Relation(s)	Cardinality	Source:	Business Rule
Vendor	Inventory	1 to Many	Owner	One vendor supplies many inventory shipments
				Many inventory shipments are supplied by one supplier
Inventory	Vendor	Many to 1	Owner	Same as above: See Vendor Entity
	Employee	Many to 1	Owner	Many inventory shipments are inspected by one employee
				One employee inspects many inventory shipments
Employee	Inventory	1 to Many	Owner	Same as above: See Inventory Entity
	Order	1 to Many	Owner/Point Of Sales System	1 Employee receives many customer orders
				Many customer orders are received by one employee
Order	Employee	Many to 1	Owner/Point Of Sales System	Same as above: See Employee Entity
	Transaction	Many to 1	Receipts/POS System	See: Transaction Entity
	Customer	Many to 1	Receipts/POS System/Owner	See: Customer Entity
	Order_Men	1 to Many	Receipts/Owner	See: Order_Men Entity
Transaction	Order	1 to Many	Receipts/POS System	1 Transaction can have many orders
				Many orders may have 1 transaction
Customer	Order	1 to Many	Receipts/POS System/Owner	1 Customer can place many orders
				Many orders may have only one Customer
Order_Men	Order	Many to 1	Receipts/Owner/Menu	Associative Pattern: Many to Many Relationship between Menu & Order
				Many Orders can have many Menu Items & Many Menu Items can be on Many Orders
	Menu	Many to 1	Receipts/Owner/Menu	Associative Pattern: Many to Many Relationship between Menu & Order
Menu	Order_Men	1 to Many	Receipts/Owner/Menu	See: Order_Men Entity

V. Appendices

A. Interview Document

Hibachi Express

Interviewee: Myungnam Kim (The owner of Hibachi Express)

Date: Saturday February 25, 2017

1. Do you have any specific business rules for the employee and the customers?
 - For the employees, we have common policies such as, being on time, keeping personal cleanliness and having proper clothing and restraints. We always double check the food in front of the customers before it is served and we don't do additional charge for extra sauce or drinks for regular customers. We take the last calling order 30 minutes before we close. We don't give refunds in general and \$5 is the minimum for credit card purchases.
2. What kind of problems do you usually have?
 - For the food, we mostly have complaints about the portion. As you saw when you came in, location is the second issue. We are sharing the parking lot with the gas station next to us. It is too small for our customers especially when the refueling trailer block the whole driveway and the entrance.
3. What kind of data you want to keep about?
 - We mainly keep data about our food. The source of getting fresh ingredients and the recipes. We also keep data about our regular customers' preferences.
4. What would you like to improve?
 - We have had some customers who called for orders and didn't show up. We could have made a blacklist on our system or got a customer payment information every time we get calling orders, but it is inefficient and inconvenient way to prevent the problem. So that is still the biggest thing we would like to improve.

B. Photos/Notes

Handwritten notes on lined paper, dated 11/11/18, titled "myungnami K&N". The notes include database schema diagrams and lists of attributes for various tables.

Customer Table:

- cust_id PK
- cust_name
- cust_phone
- cust_type
- cust_blacklist

Order Table:

- order_id PK
- order_description
- order_price
- order_quantity
- order_total
- order_date
- order_time

Employee Table:

- emp_id PK
- emp_name
- emp_email
- emp_address
- emp_city
- emp_state
- emp_phone

Menu Table:

- menu_id PK
- menu_name
- menu_desc
- menu_price
- menu_size

Vendor Table:

- vendor_id PK
- vendor_name
- vendor_phone
- vendor_address
- vendor_city
- vendor_state

Inventory Table:

- inv_id PK
- inv_name
- inv_weight
- inv_desc
- vendor_id FK
- emp_id FK

Hibachi Entrees Menu:

Grilled to perfection in our tasty homemade teriyaki sauce. Served over hot of choice of either sweet corn or zucchini & onions, and side of our tasty featured Hibachi sauce.

	Regular	Large
◦ Hibachi Chicken	\$5.99	\$9.49
◦ Hibachi Steak	\$8.29	\$11.59
◦ Hibachi Shrimp	\$7.46	\$10.79
◦ Hibachi Scallop	\$8.97	\$12.59

Mix & Match Combination

Choose from: Chicken, Steak, Shrimp or Scallop

- Choose Two \$11.29
- Choose Three \$13.99

Entree Salads Menu:

Fresh mixed lettuce topped with Cheddar Cheese and Grilled Mushroom

- Hibachi Chicken Salad \$5.99
- Hibachi Steak Salad \$8.29
- Hibachi Shrimp Salad \$7.46

Side Items Menu:

- Salad \$2.39
- Sweet Carrots \$1.99
- Zucchini & Onions \$1.99
- Fried Rice \$1.39
- Ginger Dressing \$0.93
- Hibachi Sauce \$0.93
- Extra Hot Sauce \$0.25

Beverages Menu:

- Can Drinks \$0.79
- Bottled Water \$0.93

* We offer Healthier Alternatives from other fast food
 * We use Only the Best Ingredients
 * We Add No Msg

