

# Design a Relational Database for Smart Toys Co.

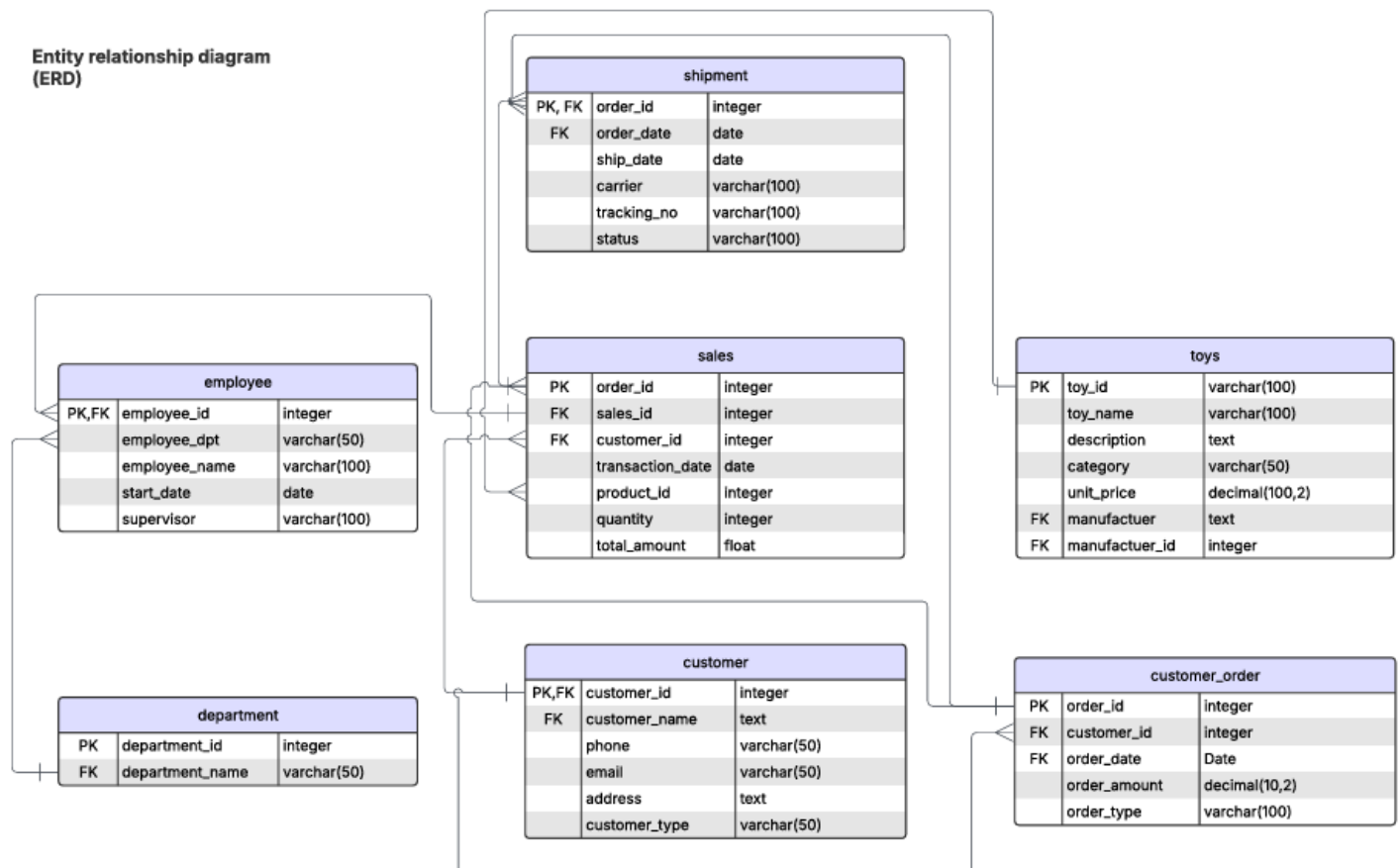
This project consists of 3 parts, including:

Part I: Design the database schema that defines the key entities and their relationships.

Part II: Construct a relational database and tables.

Part III: Write queries to answer business questions.

## Part I: Design the Database Schema



## Part II: Create a Relational Database

```
CREATE TABLE `customer` (  
  `customer_id` integer,  
  `customer_name` text,  
  `phone` varchar(50),  
  `email` varchar(50),  
  `address` text,  
  `customer_type` varchar(50),  
  PRIMARY KEY (`customer_id`)  
);
```

```
CREATE TABLE `customer_order` (  
  `order_id` integer,  
  `customer_id` integer,  
  `order_date` Date,  
  `order_amount` decimal(10,2),  
  `order_type` varchar(100),  
  PRIMARY KEY (`order_id`),  
  FOREIGN KEY (`customer_id`)  
    REFERENCES `customer` (`customer_id`)  
);
```

```
CREATE TABLE `toys` (  
  `toy_id` varchar(100),  
  `toy_name` varchar(100),  
  `description` text,  
  `category` varchar(50),  
  `unit_price` decimal(100,2),  
  `manufactuer` text,  
  `manufactuer_id` integer,  
  PRIMARY KEY (`toy_id`)  
);
```

```
CREATE TABLE `sales` (  
  `order_id` integer,  
  `sales_id` integer,  
  `customer_id` integer,  
  `transaction_date` date,  
  `product_id` integer,  
  `quantity` integer,  
  `total_amount` float,  
  PRIMARY KEY (`order_id`),  
  FOREIGN KEY (`product_id`)  
    REFERENCES `toys` (`toy_id`),  
  FOREIGN KEY (`customer_id`)  
    REFERENCES `customer` (`customer_id`),  
  FOREIGN KEY (`order_id`)  
    REFERENCES `customer_order` (`order_id`)  
);
```

```
CREATE TABLE `shipment` (  
  `order_id` integer,  
  `order_date` date,  
  `ship_date` date,  
  `carrier` varchar(100),  
  `tracking_no` varchar(100),  
  `status` varchar(100),  
  PRIMARY KEY (`order_id`),  
  FOREIGN KEY (`order_id`)  
    REFERENCES `sales` (`order_id`),  
  FOREIGN KEY (`order_id`)
```

```

REFERENCES `customer_order` (`order_id`)
);

CREATE TABLE `department` (
  `department_id` integer,
  `department_name` varchar(50),
  PRIMARY KEY (`department_id`)
);

CREATE TABLE `employee` (
  `employee_id` integer,
  `employee_dpt` varchar(50),
  `employee_name` varchar(100),
  `start_date` date,
  `supervisor` varchar(100),
  PRIMARY KEY (`employee_id`),
  FOREIGN KEY (`employee_dpt`)
    REFERENCES `department` (`department_name`),
  FOREIGN KEY (`employee_id`)
    REFERENCES `sales` (`sales_id`)
);

```

## Part III: Query Data

**Question 1: Who are the top 3 salesperson with sales\_id, what is their total sales and corresponding sales rank?**

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sales employee

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```

12 --Question 1: Who are the top 3 salesperson with their sales_id, total sales amount and rank number?
13 select
14   sales_id,
15   employee_name as sales_full_name,
16   sum(total_amount) as total_sales,
17   rank() over (
18     order by sum(total_amount) desc
19   ) as sales_rank
20 from `smart_toys.sales` as s
21 left join `smart_toys.employee` as e
22 on s.sales_id = e.employee_id
23 group by sales_id, sales_full_name
24 order by sales_rank
25 limit 3;
26

```

✔ This script will process 2.03 KB when run.

Query results

Job information	Results	Chart	JSON	Execution details	Execution graph
Row	sales_id	sales_full_name	total_sales	sales_rank	
1	2137	Alice Hartin	159341.38	1	
2	2126	Emily Carter	115848.59	2	
3	2169	David Thompson	105959.95	3	

**Question 2: What are the top 3 bestselling toys, their categories, and the total sales amount?**

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Schedule

```
11
12 --Question 2: Name the top 3 bestselling toys and list the total sales amount?
13
14 select
15   s.product_id,
16   t.category,
17   sum(s.total_amount) as total_sales
18 from `smart-toys.sales` as s
19 inner join `smart-toys.toys` as t
20 on s.product_id = t.toy_id
21 group by s.product_id, t.category
22 order by total_sales desc
23 limit 3;
24
```

This script will process 2.79 KB when run.

Query results

Job information

Results

Chart

JSON

Execution details

Execution graph

Row	product_id	category	total_sales
1	gb010	STEM Toys	102523.24
2	gb009	Creative Toys	94484.12
3	gb007	Stuffed Animals	78344.07

Question 3: What is the average shipping duration for each carrier and total shipment?

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Search

Run

Save query (Classic)

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```
25
26 -- Question 3: List of average shipping duration in days for all carriers with least days on top.
27 SELECT
28   carrier,
29   ROUND(AVG(DATETIME_DIFF(DATETIME(ship_date), DATETIME(order_date), DAY)), 1) AS avg_ship_duration,
30   COUNT(*) AS total_shipments
31 FROM `smart-toys.shipment`
32 GROUP BY carrier
33 ORDER BY avg_ship_duration;
34
35
```

This script will process 2.79 KB when run.

Query results

Job information

Results

Chart

JSON

Execution details

Execution graph

Row	carrier	avg_ship_duration	total_shipments
1	DHL	2.9	10
2	USPS	3.7	13
3	UPS	4.2	11
4	FedEx	4.6	16