SQLite Restaurant Project

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1. Join 1 fact table with 4 dimension tables
2. SQL 3 questions
    a. Question1: Top 5 products that generate the highest sales?
    b. Question2: Which branch has the most orders in February?
    c. Question3: Total Sales in each months?

Join 1 fact table with 4 dimension tables

`CREATE` + `INSERT` value into Fact table

```
CREATE TABLE "orders" (
  "order_id" INT PRIMARY KEY,
  "employee_id" INT,
  "order_date" TEXT,
  "item_id" INT,
  "promotion_id" INT,
  "branch_id" INT,
  "qty" INT,

  FOREIGN KEY (employee_id) REFERENCES employee(employee_id),
  FOREIGN KEY (item_id) REFERENCES item(item_id),
  FOREIGN KEY (promotion_id) REFERENCES promotion(promotion_id),
  FOREIGN KEY (branch_id) REFERENCES branch(branch_id)
);

INSERT INTO orders VALUES
  (1211, 1, '2023-01-01', 101, 3, 1, 1),
  (1212, 2, '2023-01-01', 102, 3, 1, 2),
  (1213, 3, '2023-01-01', 103, 2, 2, 1),
  (1214, 4, '2023-02-01', 104, 1, 3, 2),
  (1215, 1, '2023-02-01', 105, 1, 1, 3),
  (1216, 2, '2023-02-01', 106, 3, 1, 1),
  (1217, 3, '2023-03-01', 107, 3, 2, 2),
  (1218, 4, '2023-03-01', 101, 1, 3, 1),
  (1219, 1, '2023-03-01', 102, 2, 1, 2),
  (1220, 2, '2023-04-01', 103, 3, 1, 1)
;
```

`CREATE` + `INSERT` value into Dimension Table

```
--Dim 1
CREATE TABLE "employees" (
  "employee_id" INT PRIMARY KEY,
  "name" TEXT,
  "gender" TEXT
);

INSERT INTO employees VALUES
```

```
  (1, 'Justin', 'M'),
  (2, 'Mark', 'M'),
  (3, 'Donny', 'F'),
  (4, 'Pinkie', 'F')
;

--Dim 2
CREATE TABLE "items" (
  "item_id" INT PRIMARY KEY,
  "item_name" TEXT,
  "price" REAL
);

INSERT INTO items VALUES
  (101, 'Pizza', 20),
  (102, 'Ham', 5),
  (103, 'Pork', 2),
  (104, 'Chicken', 2),
  (105, 'Noodle', 5),
  (106, 'Coffee', 1),
  (107, 'Tea', 1)
;

--Dim 3
CREATE TABLE "promotions" (
  "promotion_id" INT PRIMARY KEY,
  "promotion_name" TEXT
);

INSERT INTO promotions VALUES
  (1, 'Member Discount 20%'),
  (2, 'Buy 1 Get 1 Free'),
  (3, 'No Promotion')
;

--Dim 4
CREATE TABLE "branchs" (
  "branch_id" INT PRIMARY KEY,
  "location" TEXT
);

INSERT INTO branchs VALUES
  (1, 'Bangkok'),
  (2, 'Chonburi'),
  (3, 'Phuket')
;
```

`Join` Table

```
SELECT *
FROM orders as ord
JOIN employees AS em
  on ord.employee_id = em.employee_id
JOIN items AS it
  on ord.item_id = it.item_id
JOIN promotions AS pr
  on ord.promotion_id = pr.promotion_id
JOIN branchs AS br
  on ord.branch_id = br.branch_id;
```

order_id	empl...	order_date	item_id	pro...	bra...	q...	empl...	name	g...	ite...	item_n...	price	pro...	promotion_name	br...	location
1211	1	2023-01-01	101	3	1	1	1	Justin	M	101	Pizza	20	3	No Promotion	1	Bangkok
1212	2	2023-01-01	102	3	1	2	2	Mark	M	102	Ham	5	3	No Promotion	1	Bangkok
1213	3	2023-01-01	103	2	2	1	3	Donny	F	103	Pork	2	2	Buy 1 Get 1 Free	2	Chonburi
1214	4	2023-02-01	104	1	3	2	4	Pinkie	F	104	Chicken	2	1	Member Discount 20%	3	Phuket
1215	1	2023-02-01	105	1	1	3	1	Justin	M	105	Noodle	5	1	Member Discount 20%	1	Bangkok
1216	2	2023-02-01	106	3	1	1	2	Mark	M	106	Coffee	1	3	No Promotion	1	Bangkok
1217	3	2023-03-01	107	3	2	2	3	Donny	F	107	Tea	1	3	No Promotion	2	Chonburi
1218	4	2023-03-01	101	1	3	1	4	Pinkie	F	101	Pizza	20	1	Member Discount 20%	3	Phuket
1219	1	2023-03-01	102	2	1	2	1	Justin	M	102	Ham	5	2	Buy 1 Get 1 Free	1	Bangkok
1220	2	2023-04-01	103	3	1	1	2	Mark	M	103	Pork	2	3	No Promotion	1	Bangkok

`SELECT` specific columns

```
SELECT
  ord.order_id,
  em.name,
  ord.order_date,
  it.item_id,
  it.item_name,
  it.price,
  pr.promotion_name,
  br.location,
  ord.qty

FROM orders as ord
JOIN employees AS em
  on ord.employee_id = em.employee_id
JOIN items AS it
  on ord.item_id = it.item_id
JOIN promotions AS pr
  on ord.promotion_id = pr.promotion_id
JOIN branchs AS br
  on ord.branch_id = br.branch_id;
```

order_id	name	order_date	item_id	item_name	price	promotion_name	location	qty
1211	Justin	2023-01-01	101	Pizza	20	No Promotion	Bangkok	1
1212	Mark	2023-01-01	102	Ham	5	No Promotion	Bangkok	2
1213	Donny	2023-01-01	103	Pork	2	Buy 1 Get 1 Free	Chonburi	1
1214	Pinkie	2023-02-01	104	Chicken	2	Member Discount 20%	Phuket	2
1215	Justin	2023-02-01	105	Noodle	5	Member Discount 20%	Bangkok	3
1216	Mark	2023-02-01	106	Coffee	1	No Promotion	Bangkok	1
1217	Donny	2023-03-01	107	Tea	1	No Promotion	Chonburi	2
1218	Pinkie	2023-03-01	101	Pizza	20	Member Discount 20%	Phuket	1
1219	Justin	2023-03-01	102	Ham	5	Buy 1 Get 1 Free	Bangkok	2
1220	Mark	2023-04-01	103	Pork	2	No Promotion	Bangkok	1

additional calculated & create more columns

```
SELECT
  ord.order_id,
  em.name,
  ord.order_date,
```

```
  it.item_id,
  it.item_name,
  it.price,
  pr.promotion_name,
  br.location,
  ord.qty,
  it.price * ord.qty AS amount,
  CASE
    WHEN pr.promotion_name = 'Buy 1 Get 1 Free' THEN qty*2
    ELSE qty
  END AS qty_include_free,
  CASE
    WHEN pr.promotion_name = 'Member Discount 20%' THEN (it.price * ord.qty)*0.8
    ELSE it.price * ord.qty
  END AS real_amount

FROM orders as ord
JOIN employees AS em
  on ord.employee_id = em.employee_id
JOIN items AS it
  on ord.item_id = it.item_id
JOIN promotions AS pr
  on ord.promotion_id = pr.promotion_id
JOIN branchs AS br
  on ord.branch_id = br.branch_id;
```

order_id	name	order_date	item_id	item_name	price	promotion_name	location	qty	amount	qty_include_free	real_amount
1211	Justin	2023-01-01	101	Pizza	20	No Promotion	Bangkok	1	20	1	20
1212	Mark	2023-01-01	102	Ham	5	No Promotion	Bangkok	2	10	2	10
1213	Donny	2023-01-01	103	Pork	2	Buy 1 Get 1 Free	Chonburi	1	2	2	2
1214	Pinkie	2023-02-01	104	Chicken	2	Member Discount 20%	Phuket	2	4	2	3.2
1215	Justin	2023-02-01	105	Noodle	5	Member Discount 20%	Bangkok	3	15	3	12
1216	Mark	2023-02-01	106	Coffee	1	No Promotion	Bangkok	1	1	1	1
1217	Donny	2023-03-01	107	Tea	1	No Promotion	Chonburi	2	2	2	2
1218	Pinkie	2023-03-01	101	Pizza	20	Member Discount 20%	Phuket	1	20	1	16
1219	Justin	2023-03-01	102	Ham	5	Buy 1 Get 1 Free	Bangkok	2	10	4	10
1220	Mark	2023-04-01	103	Pork	2	No Promotion	Bangkok	1	2	1	2

using sub-query `(...)` to group script

```
SELECT *
FROM
(SELECT
    ord.order_id,
    em.name,
    ord.order_date,
    it.item_id,
    it.item_name,
    it.price,
    pr.promotion_name,
    br.location,
    ord.qty,
    it.price * ord.qty AS amount,
    CASE
        WHEN pr.promotion_name = 'Buy 1 Get 1 Free' THEN qty*2
        ELSE qty
    END AS qty_include_free,
    CASE
        WHEN pr.promotion_name = 'Member Discount 20%' THEN (it.price * ord.qty)*0.8
        ELSE it.price * ord.qty
    END AS 'real_amount'

FROM orders as ord
JOIN employees AS em
```

```
  on ord.employee_id = em.employee_id
JOIN items AS it
  on ord.item_id = it.item_id
JOIN promotions AS pr
  on ord.promotion_id = pr.promotion_id
JOIN branchs AS br
  on ord.branch_id = br.branch_id);
```

refactor sub-query by `WITH` clause

```
with sub AS
(
  SELECT
      ord.order_id,
      em.name,
      ord.order_date,
      it.item_id,
      it.item_name,
      it.price,
      pr.promotion_name,
      br.location,
      ord.qty,
      it.price * ord.qty AS amount,
      CASE
          WHEN pr.promotion_name = 'Buy 1 Get 1 Free' THEN qty*2
          ELSE qty
      END AS qty_include_free,
      CASE
          WHEN pr.promotion_name = 'Member Discount 20%' THEN (it.price * ord.qty)*0.8
          ELSE it.price * ord.qty
      END AS 'real_amount'

  FROM orders as ord
  JOIN employees AS em
    on ord.employee_id = em.employee_id
  JOIN items AS it
    on ord.item_id = it.item_id
  JOIN promotions AS pr
    on ord.promotion_id = pr.promotion_id
  JOIN branchs AS br
    on ord.branch_id = br.branch_id
)

SELECT *
FROM sub
;
```

order_id	name	order_date	item_id	item_name	price	promotion_name	location	qty	amount	qty_include_free	real_amount
1211	Justin	2023-01-01	101	Pizza	20	No Promotion	Bangkok	1	20	1	20
1212	Mark	2023-01-01	102	Ham	5	No Promotion	Bangkok	2	10	2	10
1213	Donny	2023-01-01	103	Pork	2	Buy 1 Get 1 Free	Chonburi	1	2	2	2
1214	Pinkie	2023-02-01	104	Chicken	2	Member Discount 20%	Phuket	2	4	2	3.2
1215	Justin	2023-02-01	105	Noodle	5	Member Discount 20%	Bangkok	3	15	3	12
1216	Mark	2023-02-01	106	Coffee	1	No Promotion	Bangkok	1	1	1	1
1217	Donny	2023-03-01	107	Tea	1	No Promotion	Chonburi	2	2	2	2
1218	Pinkie	2023-03-01	101	Pizza	20	Member Discount 20%	Phuket	1	20	1	16
1219	Justin	2023-03-01	102	Ham	5	Buy 1 Get 1 Free	Bangkok	2	10	4	10
1220	Mark	2023-04-01	103	Pork	2	No Promotion	Bangkok	1	2	1	2

this table will be using for sample question below

SQL 3 questions

Q1 : Top 5 products that generate the highest sales?

```
with sub AS
(
  SELECT
      ord.order_id,
      em.name,
      ord.order_date,
      it.item_id,
      it.item_name,
      it.price,
      pr.promotion_name,
      br.location,
      ord.qty,
      it.price * ord.qty AS amount,
      CASE
          WHEN pr.promotion_name = 'Buy 1 Get 1 Free' THEN qty*2
          ELSE qty
      END AS qty_include_free,
      CASE
          WHEN pr.promotion_name = 'Member Discount 20%' THEN (it.price * ord.qty)*0.8
          ELSE it.price * ord.qty
      END AS 'real_amount'

  FROM orders as ord
  JOIN employees AS em
    on ord.employee_id = em.employee_id
  JOIN items AS it
    on ord.item_id = it.item_id
  JOIN promotions AS pr
    on ord.promotion_id = pr.promotion_id
  JOIN branchs AS br
    on ord.branch_id = br.branch_id
)

SELECT
    item_name,
    sum(real_amount) AS sum_sales
FROM sub
GROUP by item_name
ORDER by sum(real_amount) DESC
LIMIT 5
;
```

item_name	sum_sales
Pizza	36
Ham	20
Noodle	12
Pork	4
Chicken	3.2

Q2 : Which branch has the most orders in February

```
with sub AS
(
  SELECT
      ord.order_id,
      em.name,
      ord.order_date,
      it.item_id,
      it.item_name,
      it.price,
      pr.promotion_name,
      br.location,
      ord.qty,
      it.price * ord.qty AS amount,
      CASE
          WHEN pr.promotion_name = 'Buy 1 Get 1 Free' THEN qty*2
          ELSE qty
      END AS qty_include_free,
      CASE
          WHEN pr.promotion_name = 'Member Discount 20%' THEN (it.price * ord.qty)*0.8
          ELSE it.price * ord.qty
      END AS 'real_amount'

  FROM orders as ord
  JOIN employees AS em
    on ord.employee_id = em.employee_id
  JOIN items AS it
    on ord.item_id = it.item_id
  JOIN promotions AS pr
    on ord.promotion_id = pr.promotion_id
  JOIN branchs AS br
    on ord.branch_id = br.branch_id
)

SELECT
    location,
    order_date,
    COUNT(*) AS count_order
FROM sub
WHERE STRFTIME('%m',order_date) = '02'
GROUP by location
ORDER by COUNT(*) DESC
;
```

location	order_date	count_order
Bangkok	2023-02-01	2
Phuket	2023-02-01	1

Q3 : Total Sales in each months?

```
with sub AS
(
  SELECT
      ord.order_id,
      em.name,
      ord.order_date,
      it.item_id,
      it.item_name,
      it.price,
```

```
      pr.promotion_name,
      br.location,
      ord.qty,
      it.price * ord.qty AS amount,
      CASE
          WHEN pr.promotion_name = 'Buy 1 Get 1 Free' THEN qty*2
          ELSE qty
      END AS qty_include_free,
      CASE
          WHEN pr.promotion_name = 'Member Discount 20%' THEN (it.price * ord.qty)*0.8
          ELSE it.price * ord.qty
      END AS 'real_amount'

  FROM orders as ord
  JOIN employees AS em
    on ord.employee_id = em.employee_id
  JOIN items AS it
    on ord.item_id = it.item_id
  JOIN promotions AS pr
    on ord.promotion_id = pr.promotion_id
  JOIN branchs AS br
    on ord.branch_id = br.branch_id
)

SELECT
    STRFTIME('%m',order_date) AS month,
    CASE
        WHEN STRFTIME('%m',order_date) = '01' THEN 'Jan'
        WHEN STRFTIME('%m',order_date) = '02' THEN 'Feb'
        WHEN STRFTIME('%m',order_date) = '03' THEN 'Mar'
        ELSE 'Apr'
    END AS month_name,
    sum(real_amount) AS sum_sales
FROM sub
GROUP by STRFTIME('%m',order_date)
ORDER by month
;
```

month	month_name	sum_sales
01	Jan	32
02	Feb	16.2
03	Mar	28
04	Apr	2