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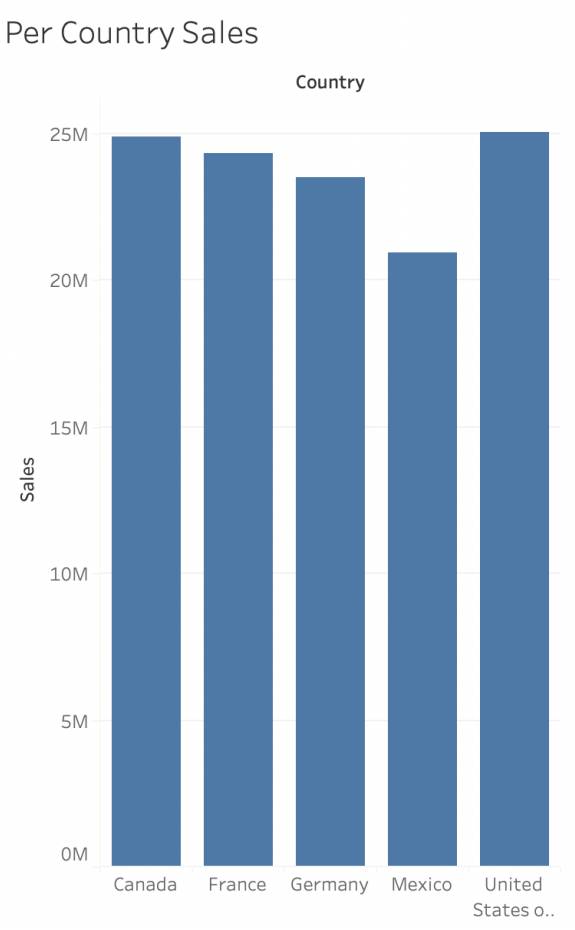
● Data Analysis Part (Mandatory)

Download the data from the given link by clicking here. And build a dashboard using Data studio/ Tableau/ Power BI (Or any other platform of your choice). Preprocess data if necessary.

a) Add necessary Filter/ Control in Dashboard (i.e.: date range, Country, Segment, Products, etc.)
b) Show Monthly Sales Trend
c) Show month-to-month Growth %
d) Show the sales and profit in different carts (i.e., by Country, products, segment, etc.)
e) Show discount induced Growth % (i.e., Did Discount result in better sales?)

Per Country Sales



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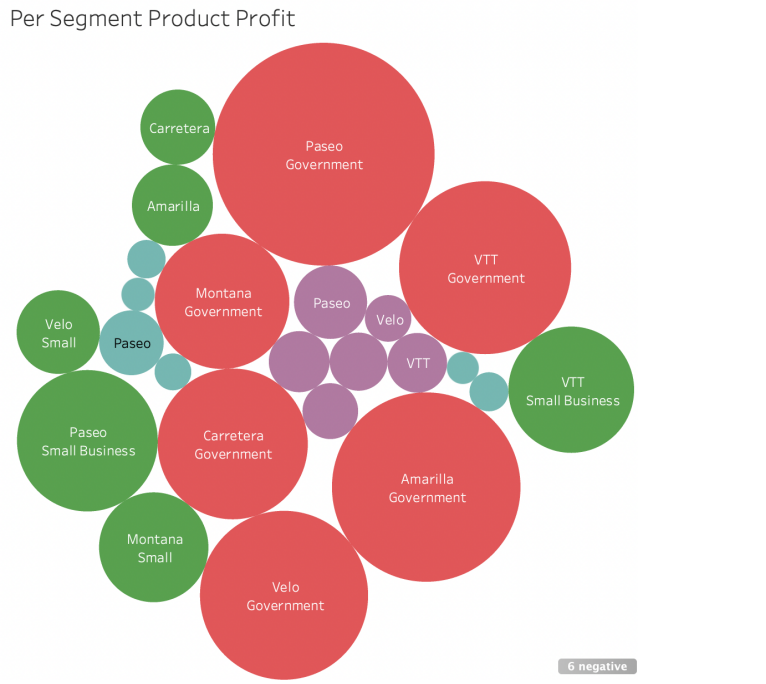
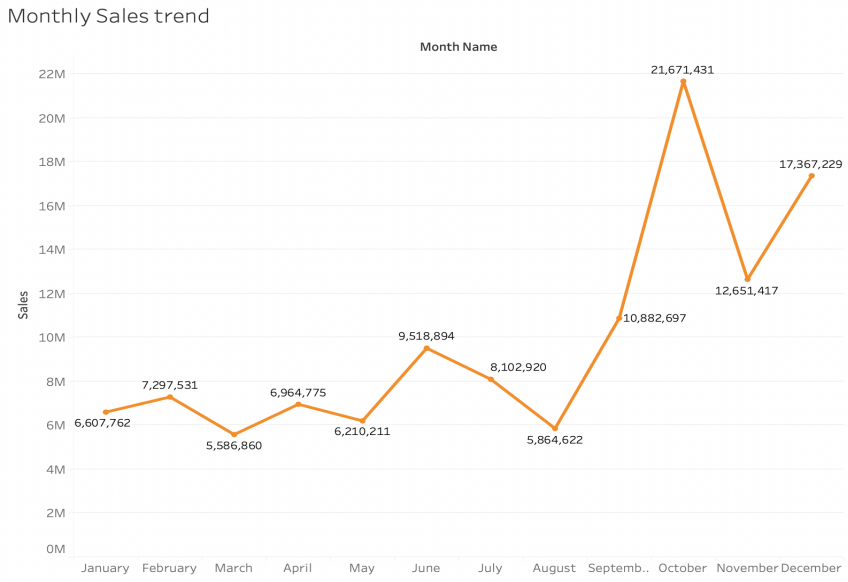
Per Segment Product Profit



Monthly Sales trend



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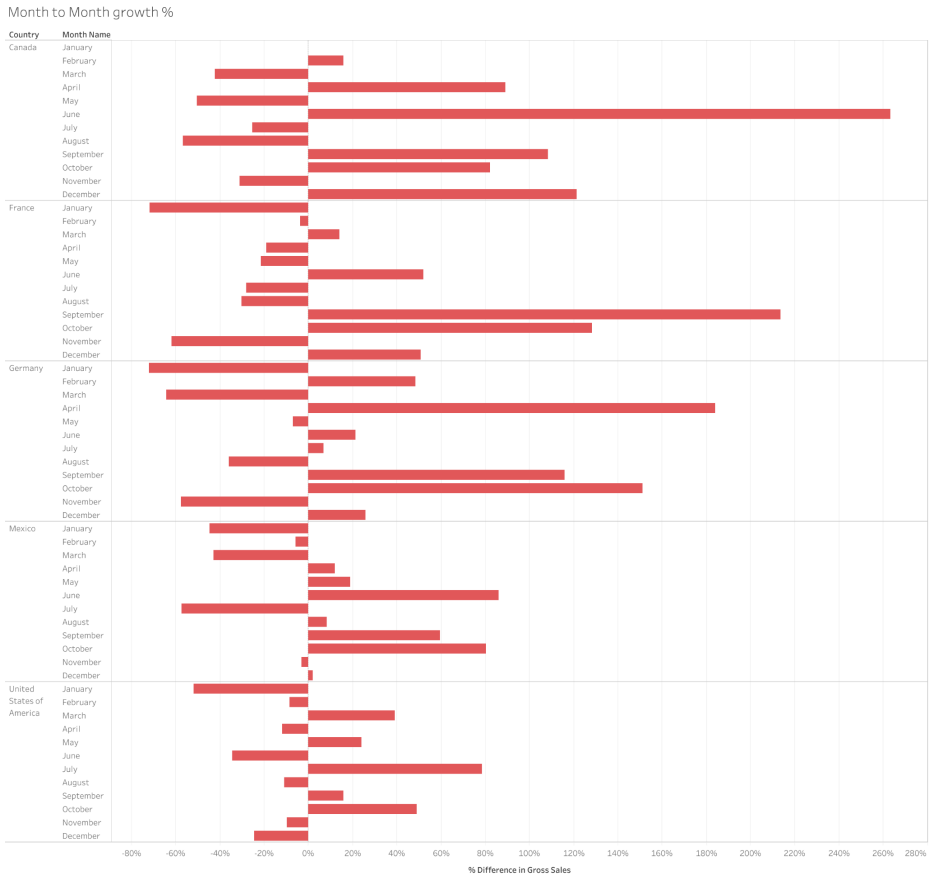
Month to Month growth %



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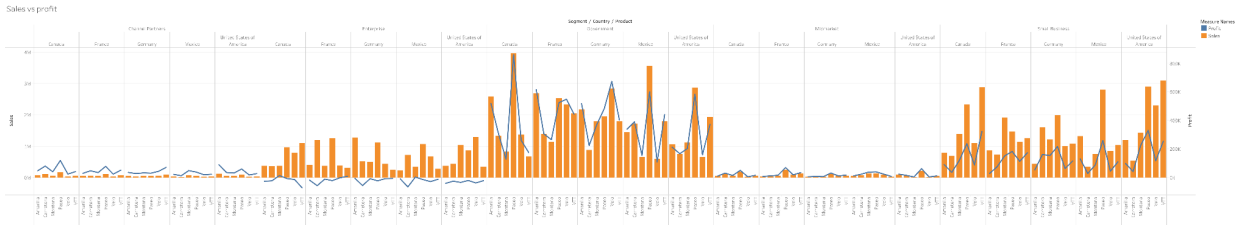
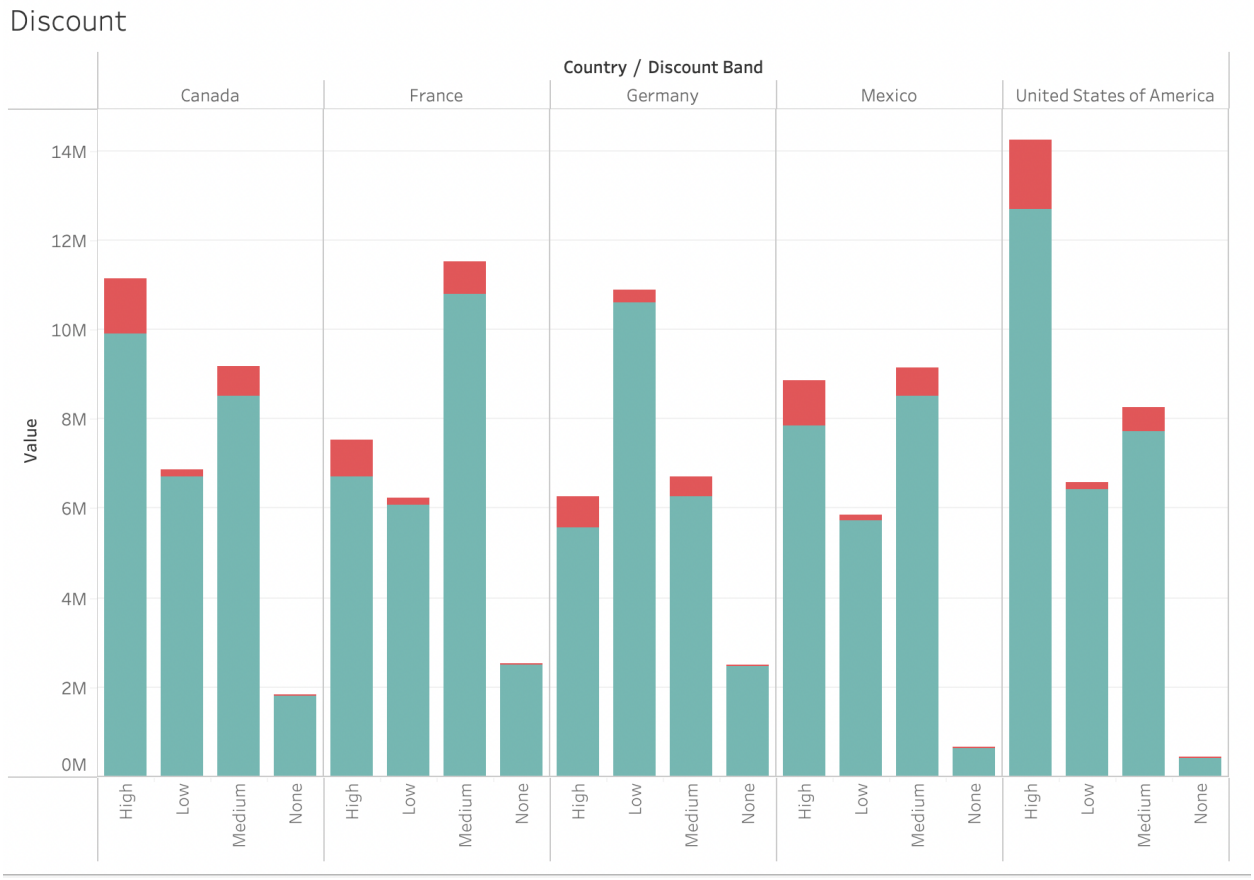
Sales vs profit



Discount



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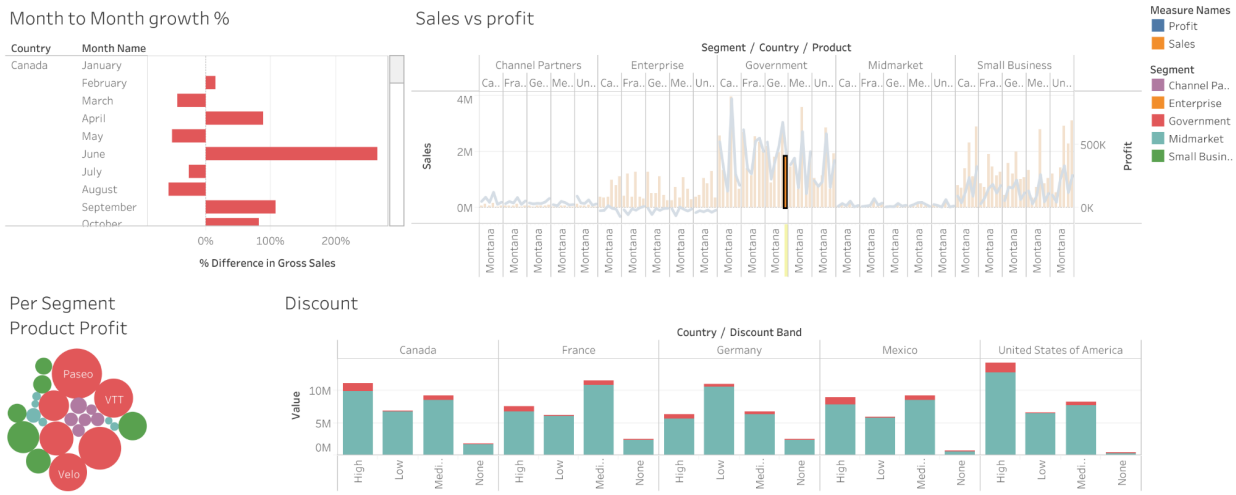
Dashboard



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● SQL Part (Mandatory)

Database: **office_management**

TABLE: **Users**

id	name	phone	role	Salary	Employers_id (fk)
7856	Mr Abul	02255666777	BR	25000	5588
7654	Mr Babul	01177555666	Supervisor	27500	6677
8768	Miss Jorina	02299000111	BR	40000	5588
5748	Mrs Morjina	01155886644	BR	38000	5588
5748	Mrs Morjina	01155886644	BR	38000	5588

TABLE: **Employers**

id	name	Role	Salary
5588	Mr Rahim	Area Coordinator	50000
6677	Mr Karim	Regional coordinator	50000

i) “select count(*) from users”, Write an optimized query against this.
Answer: CREATE INDEX company_id ON users (id);

ii) View all users and employers who get a maximum salary from each group?
Answer: SELECT name, SALARY
FROM users
WHERE salary IN (SELECT MAX(SALARY) FROM users group by role)
union
SELECT name, SALARY
FROM employers
WHERE salary IN (SELECT MAX(SALARY) FROM employers group by role);

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iii) You want to delete everything from Users, write a query.
Answer: Delete from users;

iv) Is the database currently normalized? If yes, in which normal form? If not, why not & what can be done to normalize it?
Answer: Normalization is a database design technique that reduces data redundancy and eliminates undesirable characteristics like Insertion, Update, and Deletion Anomalies. The given table is already in 1NF and 2NF form. Now to make it 3NF we need to make a new table with Employe_id and Salary.

vi) Get the second highest salary from the Users table and which users get them.
Answer: SELECT distinct name, salary
from users
WHERE Salary IN (SELECT MAX(Salary)
FROM users
WHERE Salary NOT IN (SELECT MAX(Salary)
FROM users));

vii) How to get distinct records from the Names from the user’s table without using distinct keywords.
Answer: select * from users group by name;

viii) How to find the count of duplicate rows from a table?

Answer: SELECT
COUNT(*)
FROM users
GROUP BY id
HAVING COUNT(*) > 1;

ix) Remove duplicates from users but keep one.

Answer: CREATE TEMPORARY TABLE tmp_user (
SELECT *
FROM users
GROUP BY name
);
DELETE FROM users;
INSERT INTO users (SELECT * FROM tmp_user);
DROP TABLE tmp_user;

● Data Warehouse Part (Optional)

Create this database in any RDBMS by executing the following queries, and then convert it suitably for a Data Warehouse. You can choose any schema (i.e., star, snowflake, etc.) and any database you want to design your warehouse

---Database Name: Sales

-- tables
-- Table: product
CREATE TABLE product (
id int NOT NULL,
name varchar(255) NOT NULL,
price_per_unit decimal(8,2) NOT NULL,
basic_unit varchar(255) NOT NULL,
tax_percentage decimal(4,2) NOT NULL,
limited bool NOT NULL,
in_stock decimal(8,2) NULL,
active_for_sale bool NOT NULL,

```
 CONSTRAINT product_pk PRIMARY KEY (id)
);

-- Table: sale
CREATE TABLE sale (
 id int NOT NULL,
 time_created timestamp NOT NULL,
 time_paid timestamp NULL,
 sale_amount decimal(8,2) NOT NULL,
 sale_amount_paid decimal(8,2) NULL,
 tax_amount decimal(4,2) NOT NULL,
 sale_status_id int NOT NULL,
```



```
CONSTRAINT sale_pk PRIMARY KEY (id)
);

-- Table: sale_item
CREATE TABLE sale_item (
 id int NOT NULL,
 quantity_sold decimal(8,2) NOT NULL,
 price_per_unit decimal(8,2) NOT NULL,
 price decimal(8,2) NOT NULL,
 tax_amount decimal(8,2) NOT NULL,
 sale_id int NOT NULL,
 product_id int NOT NULL,
 CONSTRAINT sale_item_pk PRIMARY KEY (id)
);

-- Table: sale_status
CREATE TABLE sale_status (
 id int NOT NULL,
 status_name varchar(255) NOT NULL,
 CONSTRAINT sale_status_pk PRIMARY KEY (id)
);

-- foreign keys
-- Reference: invoice_invoice_status (table: sale)
ALTER TABLE sale ADD CONSTRAINT invoice_invoice_status
 FOREIGN KEY (sale_status_id)
 REFERENCES sale_status (id)
 NOT DEFERRABLE
 INITIALLY IMMEDIATE;

-- Reference: invoice_item_invoice (table: sale_item)
```

```
ALTER TABLE sale_item ADD CONSTRAINT invoice_item_invoice
 FOREIGN KEY (sale_id)
 REFERENCES sale (id)
 NOT DEFERRABLE
 INITIALLY IMMEDIATE;

-- Reference: invoice_item_product_service (table: sale_item)
ALTER TABLE sale_item ADD CONSTRAINT invoice_item_product_service
FOREIGN KEY (product_id)
 REFERENCES product (id)
 NOT DEFERRABLE
 INITIALLY IMMEDIATE;
```