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## Part A

See attached file.

## Part A1

See attached files.

## Part A2

1. Login to Labs On Demand.
2. Save the Tableau packaged workbook file named D211-dashboard.twbx to the Labs On Demand desktop.
3. Double-click the Tableau packaged workbook file to open it with Tableau Desktop.
4. When prompted, enter the following password to connect the Tableau packaged workbook to the database: Passw0rd!

## Part A3

To navigate the dashboard, first click on the dashboard tab at the bottom of the screen named Telecom vs Banking Dashboard. There are a total of two charts on the dashboard. Depending on your screen size, you may not see all the charts at once. To view all the charts, use the vertical or horizontal scroll bars.

## Part A4

***Create bank\_churn table in database***

```
CREATE TABLE public.bank_churn
```

```
(  
  row_number integer,  
  customer_id integer,  
  surname character(100),  
  credit_score integer,  
  geography character,  
  gender character(20),  
  age integer,  
  tenure integer,  
  balance double precision,
```

```
num_of_products integer,  
has_cr_card integer,  
is_active_member integer,  
estimated_salary double precision,  
exited integer  
);  
  
ALTER TABLE public.bank_churn  
OWNER to postgres;
```

### ***Import CSV to bank\_churn table***

```
--command " "\\copy public.bank_churn (row_number, customer_id, surname, credit_score,  
geography, gender, age, tenure, balance, num_of_products, has_cr_card, is_active_member,  
estimated_salary, exited) FROM 'C:/Users/LabUser/Desktop/archive/CHURNM~1.CSV'  
DELIMITER ',' CSV HEADER QUOTE '\"' ESCAPE '\"';"
```

### ***JOIN between customer and bank\_churn tables in Tableau***

```
SELECT "bank_churn"."age" AS "age (bank_churn)",  
"customer"."age" AS "age",  
"bank_churn"."balance" AS "balance",  
"customer"."bandwidth_gp_year" AS "bandwidth_gp_year",  
"customer"."children" AS "children",  
CAST("customer"."churn" AS TEXT) AS "churn",  
"customer"."contacts" AS "contacts",  
"customer"."contract_id" AS "contract_id",  
"bank_churn"."credit_score" AS "credit_score",  
"bank_churn"."customer_id" AS "customer_id (bank_churn)",  
CAST("customer"."customer_id" AS TEXT) AS "customer_id",  
"customer"."email" AS "email",  
"bank_churn"."estimated_salary" AS "estimated_salary",
```

```

"bank_churn"."exited" AS "exited",
"bank_churn"."gender" AS "gender (bank_churn)",
CAST("customer"."gender" AS TEXT) AS "gender",
"bank_churn"."geography" AS "geography",
"bank_churn"."has_cr_card" AS "has_cr_card",
"customer"."income" AS "income",
"bank_churn"."is_active_member" AS "is_active_member",
"customer"."job_id" AS "job_id",
"customer"."lat" AS "lat",
"customer"."lng" AS "lng",
"customer"."location_id" AS "location_id",
CAST("customer"."marital" AS TEXT) AS "marital",
"customer"."monthly_charge" AS "monthly_charge",
"bank_churn"."num_of_products" AS "num_of_products",
"customer"."outage_sec_week" AS "outage_sec_week",
"customer"."payment_id" AS "payment_id",
"customer"."population" AS "population",
CAST("customer"."port_modem" AS TEXT) AS "port_modem",
"bank_churn"."row_number" AS "row_number",
"bank_churn"."surname" AS "surname",
CAST("customer"."tablet" AS TEXT) AS "tablet",
CAST("customer"."techie" AS TEXT) AS "techie",
"bank_churn"."tenure" AS "tenure (bank_churn)",
"customer"."tenure" AS "tenure",
"customer"."yearly equip_faiure" AS "yearly equip_faiure"
FROM "public"."customer" "customer"

INNER JOIN "public"."bank_churn" "bank_churn" ON ("customer"."age" =
"bank_churn"."age")

```

***Telecom average age by churn***

```
SELECT AVG("customer"."age") AS "avg:age:ok",  
       CAST("customer"."churn" AS TEXT) AS "churn"  
FROM "public"."customer" "customer"  
  
    INNER JOIN "public"."bank_churn" "bank_churn" ON ("customer"."age" =  
"bank_churn"."age")  
  
GROUP BY 2
```

***Bank average age by churn***

```
SELECT (CASE WHEN ("bank_churn"."exited" = 1) THEN 'Yes' ELSE 'No' END) AS  
"Calculation_1021472713301225472",  
  
    AVG("bank_churn"."age") AS "avg:age (bank_churn):ok"  
FROM "public"."customer" "customer"  
  
    INNER JOIN "public"."bank_churn" "bank_churn" ON ("customer"."age" =  
"bank_churn"."age")  
  
GROUP BY 1
```

***Telecom average age for churn by gender***

```
SELECT AVG("customer"."age") AS "avg:age:ok",  
       CAST("customer"."churn" AS TEXT) AS "churn",  
       CAST("customer"."gender" AS TEXT) AS "gender"  
FROM "public"."customer" "customer"  
  
    INNER JOIN "public"."bank_churn" "bank_churn" ON ("customer"."age" =  
"bank_churn"."age")  
  
GROUP BY 2,
```

3

***Bank average age for churn by gender***

```
SELECT (CASE WHEN ("bank_churn"."exited" = 1) THEN 'Yes' ELSE 'No' END) AS  
"Calculation_1021472713301225472",
```

```
AVG("bank_churn"."age") AS "avg:age (bank_churn):ok",  
"bank_churn"."gender" AS "gender (bank_churn)"  
FROM "public"."customer" "customer"  
  
INNER JOIN "public"."bank_churn" "bank_churn" ON ("customer"."age" =  
"bank_churn"."age")  
  
GROUP BY 1,  
3  
(Spicer, 2019)
```

## Part B

The presentation can be viewed at

<https://wgu.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=de19fc4d-87f3-412a-890c-b0bc001a6134>

## Part C1

The dashboard helps executive leaders understand which demographics may lead to higher churn rates.

## Part C2

Tableau was selected as the business intelligence tool for this analysis because of its ability to connect to external data sources, and the SQL export features available for visualizations.

## Part C3

The data did not require cleaning. As for preparation, the Exited variable of the external dataset was converted from numerical to categorical by creating a calculated field in Tableau. The calculated field converted values of 1 and 0 to Yes and No, respectively.

## Part C4

The dashboard was created by first connecting Tableau to the database. Then visualizations were created using tables from the connected database. The visualizations were created using fields from the customer and bank\_churn tables. A new dashboard tab was created, and the visualizations were added to the dashboard tab, along with a title for the dashboard.

## Part C5

The analysis shows that the average age of the customer who leaves the company is 38.9 and 44.9 for the telecom and banking industries, respectively. This supports executive decision

making by giving executives insight as to when to implement retention efforts on customers as their age approaches this benchmark.

The analysis also shows that the average age who leaves the company also varies by gender. This supports executive decision making by giving executives insight on creating unique retention campaigns that target the genders.

## Part C6

This data analysis is limited by the small number of common variables between the provided and external datasets. A larger selection of common data points could provide executives with deeper insight when creating marketing campaigns and products to increase customer retention.

## Part D

Kumar, S. (2019). *Bank Customers Churn* [Data set]. Kaggle. <https://www.kaggle.com/datasets/santoshd3/bank-customers>

Spicer, T. (2019, July 12). 7 Steps To Export SQL Statements From Tableau - Openbridge. *Medium*. <https://blog.openbridge.com/7-steps-to-export-sql-statements-from-tableau-7e51a2fd4277>