SHOW CODE

SHOW HIDDEN OUTPUT

```
import sqlite3
sqlite3.sqlite_version
```

```
'3.35.3'
```

Question 1

Given a database of the results of an election, find the number of seats won by each party. There are some rules to going about this:

- There are many constituencies in a state and many candidates who are contesting the election from each constituency.
- Each candidate belongs to a party.
- The candidate with the maximum number of votes in a given constituency wins for that constituency.

The output should be in the following format: Party Seats_won The ordering should be in the order of seats won in descending order.

Expected Output:

Democratic 2

Republic 1

```
# Prepare Query Data
import sqlite3

conn = sqlite3.connect('test.db')
print("Opened database successfully");

conn.execute('''DROP TABLE IF EXISTS candidates;''')
conn.execute('''DROP TABLE IF EXISTS results;''')

conn.execute('''
CREATE TABLE IF NOT EXISTS candidates(id integer
                                     , gender text
                                     , age integer
                                     , party string);''')

conn.execute('''
CREATE TABLE IF NOT EXISTS results(constituency_id integer
                                     , candidate_id integer
                                     , votes integer);''')

# INSERTING VALUES

conn.execute("INSERT INTO candidates VALUES(1, 'M', 55, 'Democratic');")
conn.execute("INSERT INTO candidates VALUES(2, 'M', 51, 'Democratic');")
```

```
conn.execute("INSERT INTO candidates VALUES(3, 'F', 62, 'Democratic');")
conn.execute("INSERT INTO candidates VALUES(4, 'M', 60, 'Republic');")
conn.execute("INSERT INTO candidates VALUES(5, 'F', 61, 'Republic');")
conn.execute("INSERT INTO candidates VALUES(6, 'F', 58, 'Republic');")

# INSERTING VALUES

conn.execute("INSERT INTO results VALUES(1, 1, 847529);")
conn.execute("INSERT INTO results VALUES(1, 4, 283409);")
conn.execute("INSERT INTO results VALUES(2, 2, 293841);")
conn.execute("INSERT INTO results VALUES(2, 5, 394385);")
conn.execute("INSERT INTO results VALUES(3, 3, 429084);")
conn.execute("INSERT INTO results VALUES(3, 6, 303890);")

conn.commit()
conn.close()
print("Data Preparation - Done");
```

```
    Opened database successfully
    Data Preparation - Done
```

```
# Test Data Load
import pandas as pd
# Create your connection.
cnx = sqlite3.connect('test.db')

df_candidates = pd.read_sql_query("SELECT * FROM candidates", cnx)
df_results = pd.read_sql_query("SELECT * FROM results", cnx)
```

```
df_candidates
```

	id	gender	age	party
0	1	M	55	Democratic
1	2	M	51	Democratic
2	3	F	62	Democratic
3	4	M	60	Republic
4	5	F	61	Republic
5	6	F	58	Republic

```
df_results
```

	constituency_id	candidate_id	votes
0	1	1	847529
1	1	4	283409
2	2	2	293841
3	2	5	394385
4	3	3	429084
5	3	6	303890

```
##SQL SOLUTION
query = '''
SELECT party, count(*) as seats_won from (
SELECT c.party
, r.constituency_id
, r.candidate_id
, r.votes
, ROW_NUMBER() OVER (PARTITION BY constituency_id ORDER BY votes desc) as r_num
FROM
  results as r
INNER JOIN
  candidates as c
ON c.id = r.candidate_id
)
WHERE r_num = 1
GROUP BY party
'''
df_solution = pd.read_sql_query(query, cnx)
df_solution
```

	party	seats_won
0	Democratic	2
1	Republic	1

```
# SOLUTION USING PANDAS LIBRARY
df_temp = df_results.sort_values(by=['constituency_id', 'votes']
                                 , ascending=[True,False])\
    .groupby(['constituency_id']).head(1)

df_final = pd.merge(df_temp[['candidate_id']]
         , df_candidates[['id', 'party']]
         , left_on='candidate_id'
         , right_on='id'
         , how='inner'
         )[['party', 'candidate_id']].groupby(['party']).agg(
    count_col=pd.NamedAgg(column="candidate_id", aggfunc="count")
)
df_final.columns = ['seats_won']


df_final
```

party	seats_won
Democratic	2
Republic	1

```
# LINK TO COLAB PYTHON NOTEBOOK
# https://colab.research.google.com/drive/1vsf_H57wp_8MZ4zFnFJf918pUHtPhBKV
```