Team 16 Presentation

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Timeline 1: Functional Dependencies & Logical Design

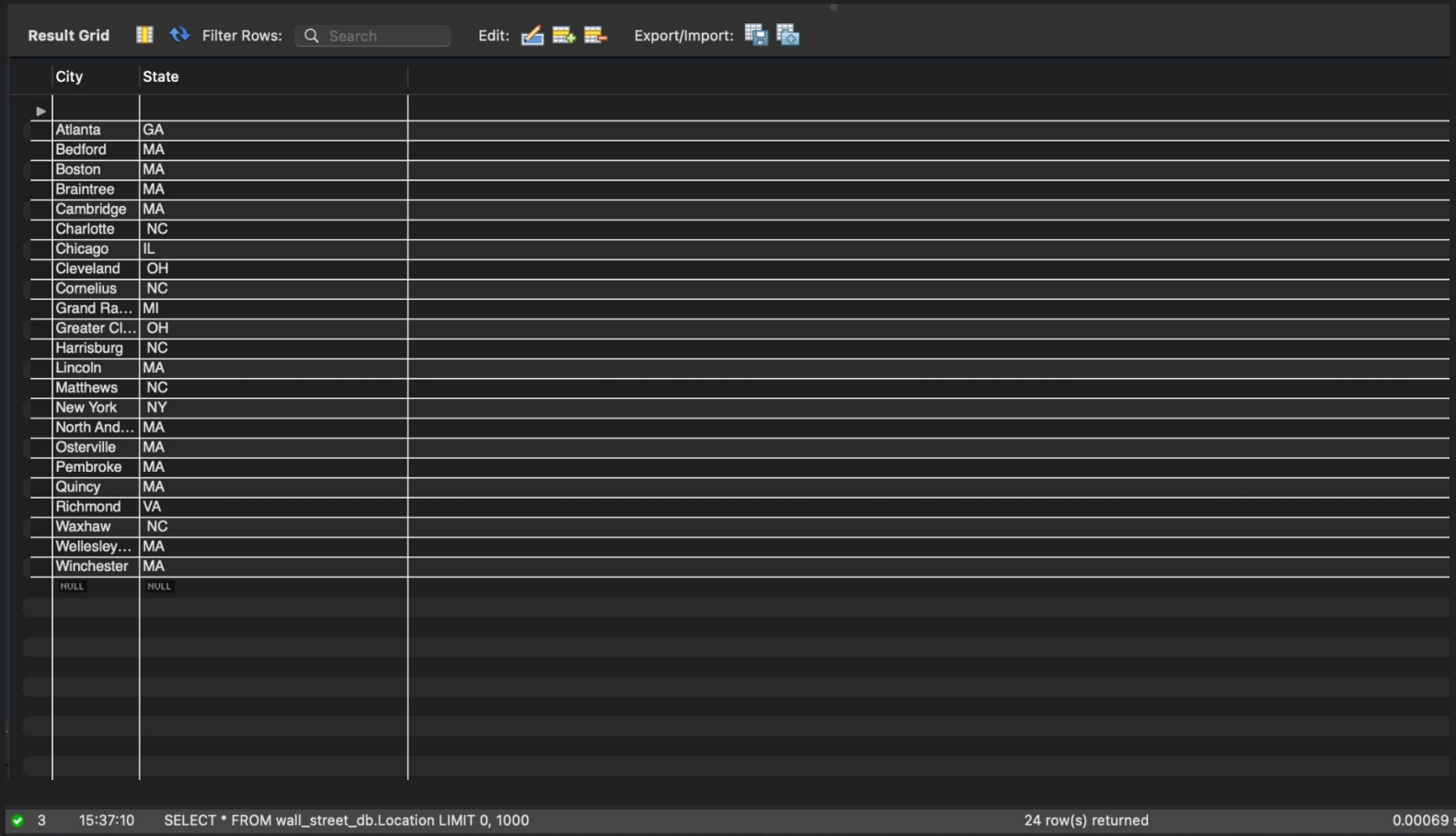
- Normalization
  - 1NF
    - The table is already in 1NF, no changes needed
  - 2NF
    - The table is already in 2NF, no changes needed
  - 3NF: The table is not in 3NF
    - The violation of 3NF was that city determines state, which is a transitive dependency.
    - Conversion
      - EMPLOYEEDATA (Linkedin URL, First Name, Last Name, Position, Company, Specialties, Industry, City)
      - Location(City, State)
    -
  - BCNF
    - The table is already in BCNF, no changes needed
  - For both tables, the highest normalization form was 3NF, as both of the tables were already finished in 1NF and 2NF, and upon completion of 3NF BCNF was also completed.

Timeline 2: Table Creation & Information Importation

- **Table:** Location
- **Columns:** pk-City, State
- **Data Import:** Columns imported matched columns from company csv file

- **Table:** EmployeeData
- **Columns:** pk-Linkedin URL-uk, First Name, Last Name, Position, Company, Specialties, Industry, fk-City
- **Data Import:** Columns imported matched columns from company csv file

Table: Location



City	State
Atlanta	GA
Bedford	MA
Boston	MA
Braintree	MA
Cambridge	MA
Charlotte	NC
Chicago	IL
Cleveland	OH
Cornelius	NC
Grand Ra…	MI
Greater Cl…	OH
Harrisburg	NC
Lincoln	MA
Matthews	NC
New York	NY
North And…	MA
Osterville	MA
Pembroke	MA
Quincy	MA
Richmond	VA
Waxhaw	NC
Wellesley…	MA
Winchester	MA
NULL	NULL

3 15:37:10 SELECT * FROM wall_street_db.Location LIMIT 0, 1000 24 row(s) returned 0.00069 sec / 0.000…

Table: EmployeeData

Result Grid Filter Rows: Search Edit: Export/Import:

Linkedin URL	First Name	Last Name	Position	Company	Specialties	Industry	City
			NULL	NULL	NULL	NULL	
https://www.linkedin.com/in/164945	Melanie	Castellanos	Senior Associate at	Mesirow Financial		Investment Banking	Chicago
https://www.linkedin.com/in/aaron-small-a84876…	Aaron	Small	Associate	Macquarie Group	IB	Investment Banking	Chicago
https://www.linkedin.com/in/aaron-zwiebach-14b…	Aaron	Zwiebach	Vice President	Evolution Credit Partners		Investment Banking	Cambridge
https://www.linkedin.com/in/aaronj-solomon	Aaron	Solomon	Director	BNY Mellon		Investment Banking	New York
https://www.linkedin.com/in/aaronlhaney	Aaron	Haney	Vice President	Baird	IB	Investment Banking	Chicago
https://www.linkedin.com/in/abhay-patwardhan	Abhay	Patwardhan	Executive Director	Global Technology Infrastructure Division	Technology	Investment Banking	New York
https://www.linkedin.com/in/abishai-pinto-50885…	Abishai	Pinto	Senior Associate at	Red Arts Capital		Investment Banking	Chicago
https://www.linkedin.com/in/abraham-bailin-520…	Abraham	Bailin	Vice President	Lincoln International	IB	Investment Banking	Chicago
https://www.linkedin.com/in/adam-bontrager-79…	Adam	Bontrager	Vice President	KeyBanc Capital Markets		Investment Banking	Cleveland
https://www.linkedin.com/in/adam-green-700780…	Adam	Green	Director	Livingstone Partners		Investment Banking	Chicago
https://www.linkedin.com/in/adam-waite-97726b8	Adam	Waite	Managing Director	D.A. Davidson	Technology	Investment Banking	Boston
https://www.linkedin.com/in/adamcfine	Adam	F.	Vice President	Goldman Sachs		Investment Banking	New York
https://www.linkedin.com/in/aditi-dekhane-5519…	Aditi	Dekhane	Vice President	BNP Paribas CIB		Investment Banking	New York
https://www.linkedin.com/in/adityakonda	Aditya	Vardhan	Associate	JPMorgan Chase		Investment Banking	Chicago
https://www.linkedin.com/in/adnan831	Adnan	Q.	Healthcare Invest…	Kaufman Hall	Healthcare	Investment Banking	Chicago
https://www.linkedin.com/in/agupta94	Anant	Gupta	Investment Banki…	BMO Capital Markets	IB	Investment Banking	Chicago
https://www.linkedin.com/in/ajsilverman1	AJ	Silverman	Investment Banki…	Deloitte Investment Banking	IB	Investment Banking	Charlotte
https://www.linkedin.com/in/akirshenbaum	Alex	Kirshenba…	Technology M&A	M&A	Technology	Investment Banking	New York
https://www.linkedin.com/in/al-laufenberg-4b354a9	Al	Laufenberg	Managing Director	Stifel Nicolaus		Investment Banking	Chicago
https://www.linkedin.com/in/alenaantigua	Alena	Antigua	Managing Director	Stifel Financial Corp.		Investment Banking	Chicago
https://www.linkedin.com/in/alex-jasiek-329986144	Alex	Jasiek	Associate	Stephens	IB	Investment Banking	Chicago
https://www.linkedin.com/in/alex-l-drechsler-009…	Alex	L.	Vice President	Goldman Sachs	Technology	Investment Banking	New York
https://www.linkedin.com/in/alex-pavlovich-423a…	Alex	Pavlovich	Managing Director	Truist		Investment Banking	Chicago
https://www.linkedin.com/in/alex-ross-43181156	Alex	Ross	Vice President	Covington Associates		Investment Banking	Boston
https://www.linkedin.com/in/alex-sienkiewicz	Alex	Sienkiewicz	Associate	Barclays Investment Bank	Technology	Investment Banking	New York
https://www.linkedin.com/in/alex-sir	Alex	Sir	Associate	William Blair	IB	Investment Banking	Chicago
https://www.linkedin.com/in/alex-st-pierre	Alex	(AJ)	Analyst	Houlihan Lokey		Investment Banking	Chicago
https://www.linkedin.com/in/alex-teeter-36ab5423	Alex	Teeter	Managing Director	Citizens M&A Advisory		Investment Banking	Cleveland
https://www.linkedin.com/in/alexander-devries-2…	Alexander	DeVries	Associate	Solomon Partners		Investment Banking	Chicago
https://www.linkedin.com/in/alexander-lavery-81…	Alexander	Lavery	Investment Banki…	Baird	IB	Investment Banking	Chicago
https://www.linkedin.com/in/alexander-tsvetkov-…	Alexander	Tsvetkov	Platform Researc…	Teza Technologies		Investment Banking	New York
https://www.linkedin.com/in/alexander-zigerelli-4…	Alexander	Zigerelli	Associate	BMO Capital Markets	IB	Investment Banking	Chicago
https://www.linkedin.com/in/alexandra-gole	Ali	Gole	Associate	Bank of America	IB	Investment Banking	Chicago
https://www.linkedin.com/in/alexbcohen	Alex	Cohen	Associate	William Blair	IB	Investment Banking	Chicago
https://www.linkedin.com/in/alexlaurn	J.	Alexander	Director	Baird	IB	Investment Banking	Chicago
https://www.linkedin.com/in/alicia-benting-pmp-8…	Alicia	Benting	Technology Proje…	State Street Corporation	Technology	Investment Banking	Pembroke

2 14:56:05 SELECT * FROM wall_street_db.EmployeeData LIMIT 0, 1000 946 row(s) returned 0.0054 sec / 0.0036…

Timeline 3: Data Integrity, Disaster Recovery, & Security

Data is a very important tool for any operation. In order to efficiently and effectively use data, we need to manage and organize it properly. We need to ensure data integrity. There are several forms of integrity, namely entity, referential, and domain.

Basics of Data Integrity:

Data Backup:

1. Identify the failure
2. Stop all activity to prevent any more damage or loss
3. Find the cause
4. Restore the database from a backup
5. Use an incremental backup to ensure data is up to date
6. Find a solution to the failure
7. Test to ensure that the database functions properly and that data is correct
8. Communicate with the company to inform them of said failure and what was done to eliminate it and recover data.
9. Improve the recovery plan

Security:

We will mostly use row-based security. Depending on the company and what data they consider to be sensitive, the security model should determine which specific user rows have what permissions. Each row or column should have different permissions. These permissions decided whether a particular user row can update and view data or even update the procedure. Some other useful security measures are:

- strong passwords

- two-factor authentication

Timeline 4: Functions, Procedures, Views

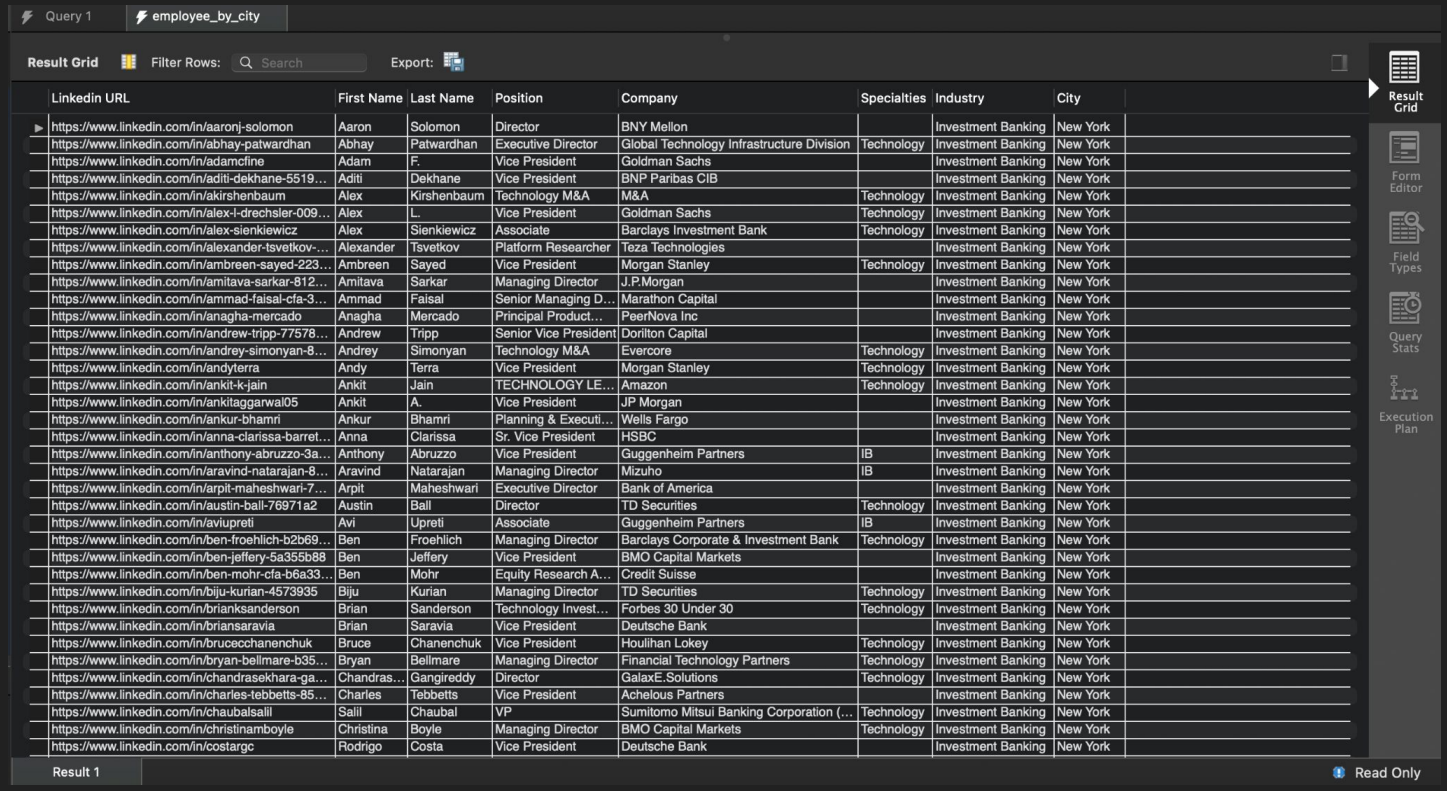
- **Stored Procedure: (Employee Data By City)** This stored procedure takes in a VARCHAR parameter (City Name) which then locates all the associated data that matches that city name and returns all of the employee information from employees that live in the specified city.
- **Stored Function: (Number Of Employees In City)** This stored function takes in a VARCHAR parameter (City Name) which then locates all the associated data that matches that city name and then counts the number of rows that are returned and returns that number in the form of an INT. *(eg. Enter 'New York', function returns 222 as that is the number of employees that are located in that city.)*
- **Views:**

  - city_state (City, State)

  - company_data (Company, Industry, City)

  - employee_data (Linkedin URL, First Name, Last Name, City)

Stored Procedure: Employee Data By City (New York)



Query 1 | employee_by_city

Result Grid | Filter Rows: Search | Export:

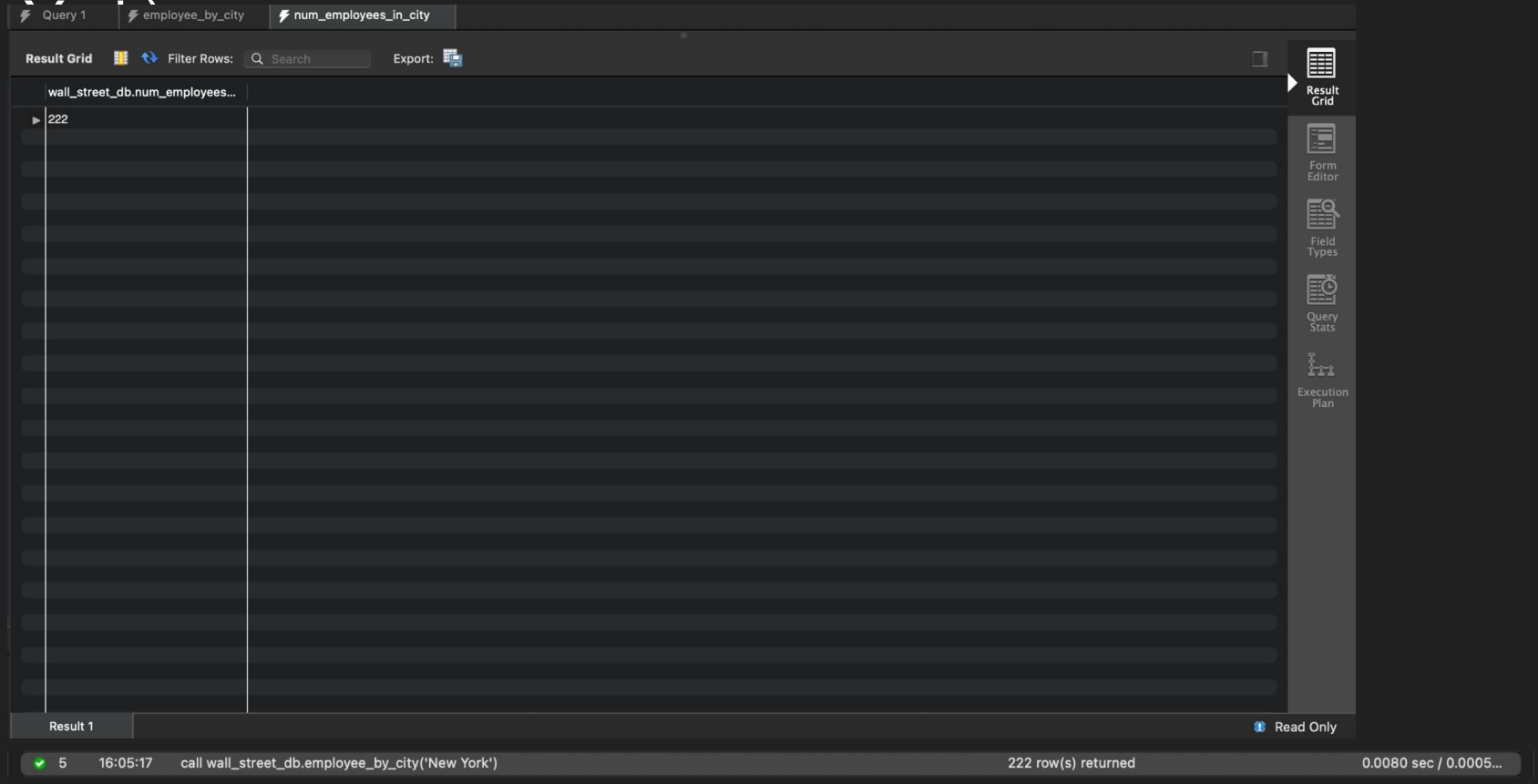
Linkedin URL	First Name	Last Name	Position	Company	Specialties	Industry	City
https://www.linkedin.com/in/aaronj-solomon	Aaron	Solomon	Director	BNY Mellon		Investment Banking	New York
https://www.linkedin.com/in/abhay-patwardhan	Abhay	Patwardhan	Executive Director	Global Technology Infrastructure Division	Technology	Investment Banking	New York
https://www.linkedin.com/in/adamcfine	Adam	F.	Vice President	Goldman Sachs		Investment Banking	New York
https://www.linkedin.com/in/aditi-dekhane-5519…	Aditi	Dekhane	Vice President	BNP Paribas CIB		Investment Banking	New York
https://www.linkedin.com/in/akirshenbaum	Alex	Kirshenbaum	Technology M&A	M&A	Technology	Investment Banking	New York
https://www.linkedin.com/in/alex-l-drechsler-009…	Alex	L.	Vice President	Goldman Sachs	Technology	Investment Banking	New York
https://www.linkedin.com/in/alex-sienkiewicz	Alex	Sienkiewicz	Associate	Barclays Investment Bank	Technology	Investment Banking	New York
https://www.linkedin.com/in/alexander-tsvetkov-…	Alexander	Tsvetkov	Platform Researcher	Teza Technologies		Investment Banking	New York
https://www.linkedin.com/in/ambreen-sayed-223…	Ambreen	Sayed	Vice President	Morgan Stanley	Technology	Investment Banking	New York
https://www.linkedin.com/in/amitava-sarkar-812…	Amitava	Sarkar	Managing Director	J.P.Morgan		Investment Banking	New York
https://www.linkedin.com/in/ammad-faisal-cfa-3…	Ammad	Faisal	Senior Managing D…	Marathon Capital		Investment Banking	New York
https://www.linkedin.com/in/anagha-mercado	Anagha	Mercado	Principal Product…	PeerNova Inc		Investment Banking	New York
https://www.linkedin.com/in/andrew-tripp-77578…	Andrew	Tripp	Senior Vice President	Dorilton Capital		Investment Banking	New York
https://www.linkedin.com/in/andrey-simonyan-8…	Andrey	Simonyan	Technology M&A	Evercore	Technology	Investment Banking	New York
https://www.linkedin.com/in/andyterra	Andy	Terra	Vice President	Morgan Stanley	Technology	Investment Banking	New York
https://www.linkedin.com/in/ankit-k-jain	Ankit	Jain	TECHNOLOGY LE…	Amazon	Technology	Investment Banking	New York
https://www.linkedin.com/in/ankitaggarwal05	Ankit	A.	Vice President	JP Morgan		Investment Banking	New York
https://www.linkedin.com/in/ankur-bhamri	Ankur	Bhamri	Planning & Executi…	Wells Fargo		Investment Banking	New York
https://www.linkedin.com/in/anna-clarissa-barret…	Anna	Clarissa	Sr. Vice President	HSBC		Investment Banking	New York
https://www.linkedin.com/in/anthony-abruzzo-3a…	Anthony	Abruzzo	Vice President	Guggenheim Partners	IB	Investment Banking	New York
https://www.linkedin.com/in/aravind-natarajan-8…	Aravind	Natarajan	Managing Director	Mizuho	IB	Investment Banking	New York
https://www.linkedin.com/in/arpit-maheshwari-7…	Arpit	Maheshwari	Executive Director	Bank of America		Investment Banking	New York
https://www.linkedin.com/in/austin-ball-76971a2	Austin	Ball	Director	TD Securities	Technology	Investment Banking	New York
https://www.linkedin.com/in/aviupreti	Avi	Upreti	Associate	Guggenheim Partners	IB	Investment Banking	New York
https://www.linkedin.com/in/ben-froehlich-b2b69…	Ben	Froehlich	Managing Director	Barclays Corporate & Investment Bank	Technology	Investment Banking	New York
https://www.linkedin.com/in/ben-jeffery-5a355b88	Ben	Jeffery	Vice President	BMO Capital Markets		Investment Banking	New York
https://www.linkedin.com/in/ben-mohr-cfa-b6a33…	Ben	Mohr	Equity Research A…	Credit Suisse		Investment Banking	New York
https://www.linkedin.com/in/biju-kurian-4573935	Biju	Kurian	Managing Director	TD Securities	Technology	Investment Banking	New York
https://www.linkedin.com/in/brianksanderson	Brian	Sanderson	Technology Invest…	Forbes 30 Under 30	Technology	Investment Banking	New York
https://www.linkedin.com/in/briansaravia	Brian	Saravia	Vice President	Deutsche Bank		Investment Banking	New York
https://www.linkedin.com/in/brucecchanenchuk	Bruce	Chanenchuk	Vice President	Houlihan Lokey	Technology	Investment Banking	New York
https://www.linkedin.com/in/bryan-bellmare-b35…	Bryan	Bellmare	Managing Director	Financial Technology Partners	Technology	Investment Banking	New York
https://www.linkedin.com/in/chandrasekhara-ga…	Chandras…	Gangireddy	Director	GalaxE.Solutions	Technology	Investment Banking	New York
https://www.linkedin.com/in/charles-tebbetts-85…	Charles	Tebbetts	Vice President	Achelous Partners		Investment Banking	New York
https://www.linkedin.com/in/chaubalsalil	Salil	Chaubal	VP	Sumitomo Mitsui Banking Corporation (…	Technology	Investment Banking	New York
https://www.linkedin.com/in/christinamboyle	Christina	Boyle	Managing Director	BMO Capital Markets	Technology	Investment Banking	New York
https://www.linkedin.com/in/costargc	Rodrigo	Costa	Vice President	Deutsche Bank		Investment Banking	New York

Result Grid | Form Editor | Field Types | Query Stats | Execution Plan

Result 1 | Read Only

4 15:46:40 SELECT * FROM wall_street_db.EmployeeData LIMIT 0, 1000 946 row(s) returned 0.0019 sec / 0.0037 s...

Stored Function: Number Of Employees In City (New



Updated Conceptual Design:

Entity: **Location**

Entity: **EmployeeData**

Relationship: **Location** contains **EmployeeData**

Cardinality: One to many. Each Employee can only be associated with one City while each city can have multiple employees associated with it.

Participation:

Entity 1: (**Location**) has total participation, meaning each location must be associated with at least one employee (assuming that “City” attribute in “EmployeeData” entity is required and cannot be null).

Entity 2: (**EmployeeData**) has partial participation, meaning that an employee may or may not be associated with a location (assuming that “City” attribute in “EmployeeData” entity is optional and can be null).

Updated Logical Design:

Tables: Location & EmployeeData

Columns: Location(pk_City, State)

EmployeeData(pk_LinkedIn_URL, FirstName, LastName, Position, Company, Specialties, Industry, City (foreign key; references pk_City of Location table))

Indexes: Clustered(pk_City), Non-Clustered(City, State), Clustered(pk_LinkedIn_URL), Non-Clustered(City)

Views: company_data, employee_data, city_state

Stored Procedure: Employee Data by City

Stored Function: Number of Employees in City

Future Feature Implementation:

1. Cloud Based Hosting: Remote access, migrating MySQL database.
2. Data Warehousing: Easy to analyze data, consolidate employee data.
3. Business Intelligence: Tools to turn data into useful decision.
4. Predictive Analysis: Forecast future, employee turnover and satisfaction.
5. Mobile Access: Employee personal info, engagement, and company resource.