Title Page

Project Title : The Startup Ecosystem

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Chapter 1: Software Requirements Specification (SRS)

1. Problem Description

Case Study : The Startup Ecosystem Database

Meaning of Startup

A startup ecosystem is a network of people, organizations, and businesses that work together to create and grow new startups. These ecosystems can be physical or virtual, and can include

- Startups at different stages
- Entrepreneurs
- Investors
- Mentors and advisors
- Educational institutions
- Incubators and accelerators

Startup Ecosystem Database Meaning

A startup ecosystem database is a collection of information about a region's startup ecosystem, including startups, investors, and other stakeholders. These databases can help identify growth opportunities, encourage collaboration, and highlight a specific area's potential.

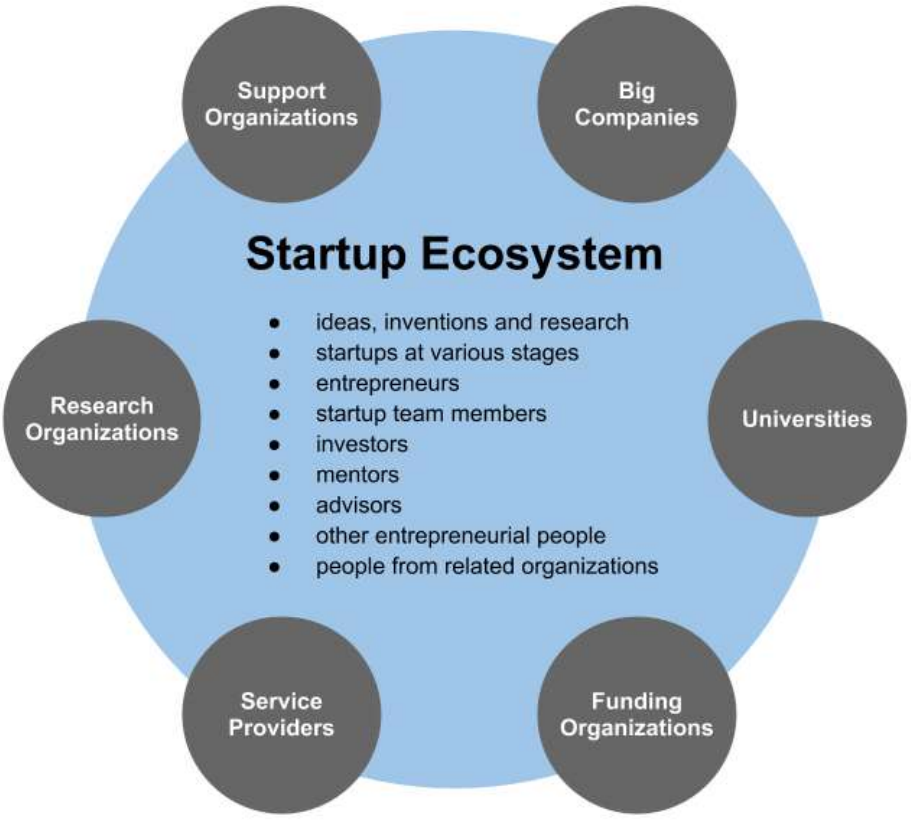
Suggestions

- Wright says : “Startup ecosystems rely on many factors, but people are by far the most important.”

- Startup Genome research shows that founders have unique skills and knowledge that can have outsized impact on the local economy when their talent is supported by key local stakeholders."

Ref -: https://www.startupblink.com/blog/building-a-database-for-your-startup-ecosystem/

Key Elements Of Startup Ecosystem



Ref : https://www.startupcommons.org/what-is-startup-ecosystem.html

Challenges for Startups

1. **Hiring and Managing Teams**
   - Difficulty in finding and retaining skilled employees due to competition from larger firms.
   - Many founders lack business management experience, impacting operational efficiency.
   - Startups often rely on bootstrapped funds or family support, making scaling challenging.

2. **Diversity and the Digital Divide**
   - Understanding and catering to India's diverse customer base is complex.
   - Regional differences limit startups' ability to scale nationally and effectively.
   - Founders from urban areas may have limited insight into rural customer needs.

3. **Market Penetration and Pricing**
   - High competition and presence of copycats make market entry difficult.
   - Indian customers are highly price-sensitive, affecting startups' pricing strategies.
   - Challenges in payment collection, especially without digital payment methods.

4. **Hiring Qualified Employees**
   - Difficulty attracting talent due to perceived instability compared to larger corporations.
   - Skills gap between academic training and industry requirements necessitates significant training.
   - Limited ability to attract international talent due to bureaucratic hurdles.

5. **Complex Regulatory Environment**

- Navigating bureaucratic and regulatory processes is time-consuming and unpredictable.
- Issues with tax policies, including GST and "Angel Tax," create compliance challenges.

- Lengthy and costly setup processes act as barriers to starting and scaling businesses.

Ref : https://www.orfonline.org/public/uploads/posts/pdf/20230725154621.pdf

2. Requirement Collection

Background Reading

Intended Audience

1. Entrepreneurial Talent

- Entrepreneurs are the core of the ecosystem.
- They drive innovation and bring new ideas to life.
- Their vision and ambition push the ecosystem forward.

2. Investment Resources

- Comprises venture capital firms, angel investors, and other funding sources.
- Provides the financial backing necessary for startup growth and scaling.
- Enables startups to access crucial capital at different stages of their journey.

3. Support Infrastructure

- Includes incubators, accelerators, coworking spaces, and service providers.
- Offers physical infrastructure, mentorship, and networking opportunities.
- Provides essential services like legal, marketing, and technical support.

4. Educational Institutions and Research Organizations

- Supply new knowledge, innovation, and a talented workforce.
- Collaborate with startups for research support and technology transfer.
- Play a critical role in the ongoing development of entrepreneurial skills.

5. Government and Policy Framework

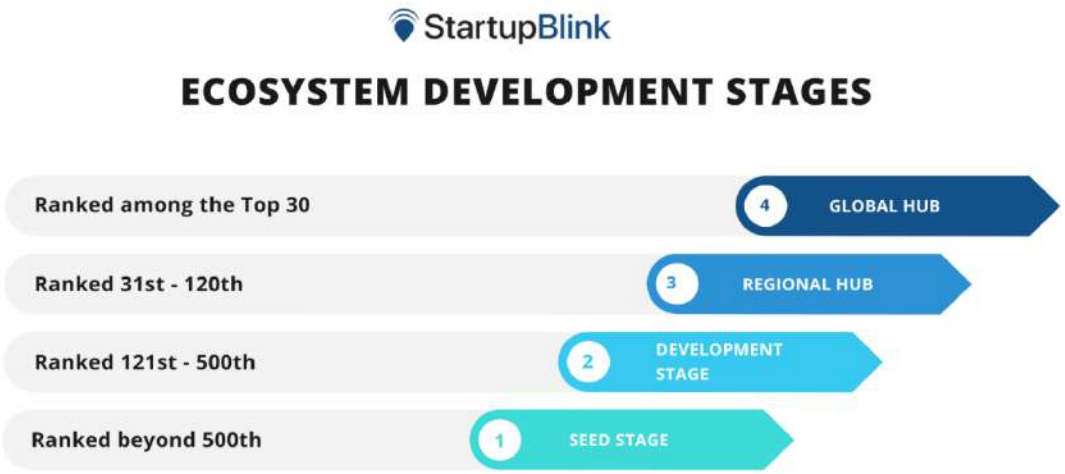
- Local government policies shape the ecosystem's success.
- Includes support like intellectual property protection and economic incentives.
- Affects startups through regulatory environments and policy support.

Ref : https://augment.org/blog/startup-ecosystem

Strategies to Build a Startup Ecosystem

- Evaluate the data of your ecosystem
- Provide a Startup-Business Friendly Environment
- Ensure the ecosystem has hubs for networking
- Boost the investment ecosystem
- Promote your ecosystem

Stages in Building a Startup Ecosystem



Product Scope

Startup ecosystems provide a variety of goods and services upon which other people and companies depend on. Thus, the principles of start-up ecosystem management suggest that rather than managing individual people or organizations, resources should be managed at the level of the startup ecosystem itself.

Ref : https://en.wikipedia.org/wiki/Startup_ecosystem

Indicators of growth in the startup ecosystem

- The pace of growth in the startup ecosystem has increased to 15% year-on-year in 2018, while the growth of the number of incubators and accelerators has grown to 11%.

- Significantly, the number of women entrepreneurs stood at 14%, up from 10% and 11% in the previous two years.

- Startups in the country have been able to create an estimated 40,000 new jobs over the year, taking the total jobs in the start-up ecosystem to 1.6-1.7 lakh.

- Bangalore has been listed within the world's 20 leading startup cities in the 2019 Startup Genome Project ranking. It is also ranked as one of the world's five fastest growing startup cities.

Ref : https://www.startupindia.gov.in/content/sih/en/international/go-to-market-guide/indian-startup-ecosystem.html

Building a Local Startup Ecosystem

1. Understanding Ecosystem Processes

- Comprehensive knowledge of the ecosystem's dynamics is crucial for its development.
- Failure to identify these processes can hinder the ecosystem's functionality.

2. Availability of Funding and Investment Opportunities

- Access to venture capital, angel investors, and other funding sources is essential for startup growth.
- Investment opportunities fuel innovation and scalability.

3. Presence of a Skilled and Educated Workforce

- A talented workforce with relevant skills is necessary for startup success.
- Collaboration with educational institutions can provide a steady stream of qualified individuals.

4. Access to Resources and Infrastructure

- Startups need access to resources such as technology, office space, and business services.
- A robust infrastructure supports operational efficiency and business growth.

5. Strategic Approach to Ecosystem Development

- Building a local startup ecosystem requires a well-planned strategy to address key factors.
- A coordinated effort among stakeholders helps promote a thriving entrepreneurial environment.

Ref : https://www.ramotion.com/blog/startup-ecosystem/#section-elements-of-a-startup-ecosystem

Analyzation of background reading

- **Vision and mission**: A strong vision and mission is essential for a successful startup ecosystem.

- **Stakeholders and programs**: A startup ecosystem needs a variety of stakeholders and supporting programs.

- **Measurements**: A startup ecosystem needs clear measurements to track its growth over time.

- **Local community**: Consider the needs of the local community.

- **Physical, social, and cultural environm**ent: Consider the physical, social, and cultural environment.

- **Political environment**: Consider the political environment.

- **Economic policies**: Consider the economic policies.

- **Availability of resources and talent**: Consider the availability of resources and talent.

- **Government initiatives**: The government can play a critical role by offering incentives, enabling connectivity, facilitating funding, and implementing a favorable regulatory environment.

- **Funding:** Startup funding is essential, and can come from loans, grants, or family and friends.

- **Ecosystem analysis and knowledge sharing**: Sharing stories of success can help create a culture of success and attract more entrepreneurs, investors, and talent.

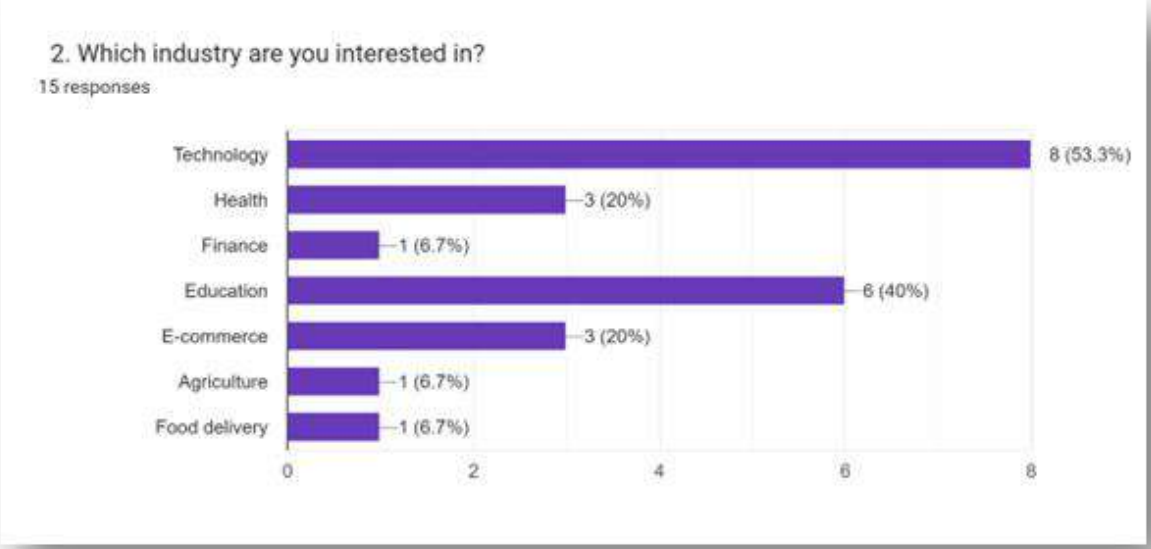
Interviews

- **Mentorship and Expertise**: Develop mentorship programs pairing founders with experienced industry professionals to guide strategic decisions.
- **Improved Funding Access**: Facilitate connections between startups and investors, focusing on seed and growth-stage funding.
- **Resource Sharing Platforms**: Create shared resources to reduce overhead costs for startups.
- **Streamlined Regulations**: Advocate for simplified regulatory requirements for startups to ease compliance and reduce entry barriers.
- **Networking Events**: Host networking events for startups to connect with investors, potential partners, and other entrepreneurs for collaboration opportunities.
- **Talent Acquisition Support**: Assist startups in finding skilled talent through partnerships with universities and job fairs targeting key skills.
- **Innovation and R&D Grants**: Provide or facilitate grants for startups engaged in innovative projects to encourage R&D.
- **Market Access Programs**: Create initiatives that help startups enter new markets, both locally and internationally.
- **Continuous Ecosystem Feedback**: Develop feedback loops with startups to understand their challenges and adapt ecosystem support services accordingly.
- **Data-Driven Insights**: Use analytics to identify trends and success patterns within the ecosystem, sharing these insights to benefit new startups and investors.

Questionnaires/Surveys

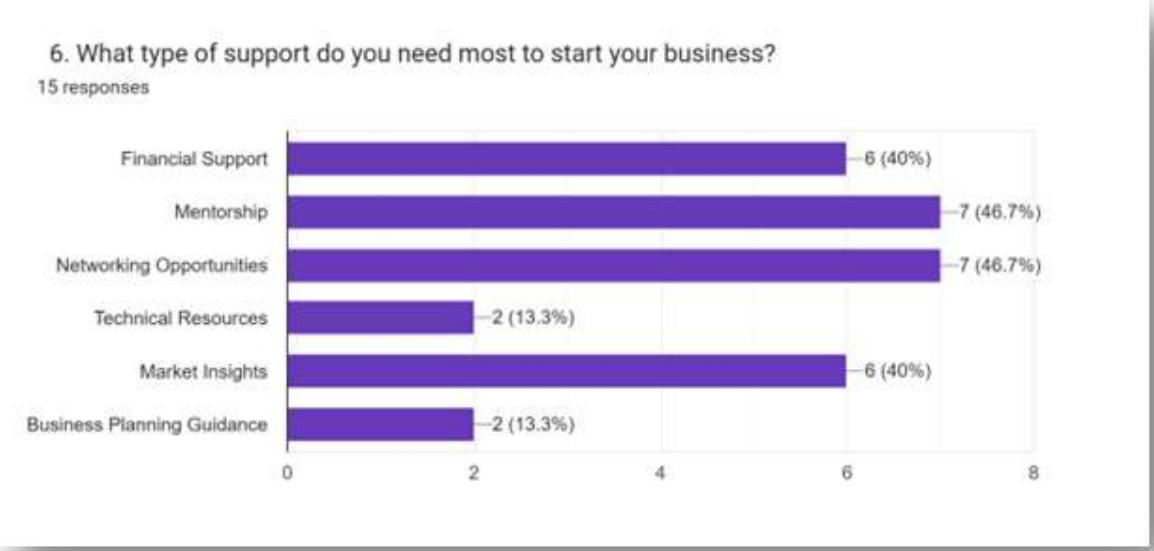
Summary Of Responses

1. **Interested Startup Industry**

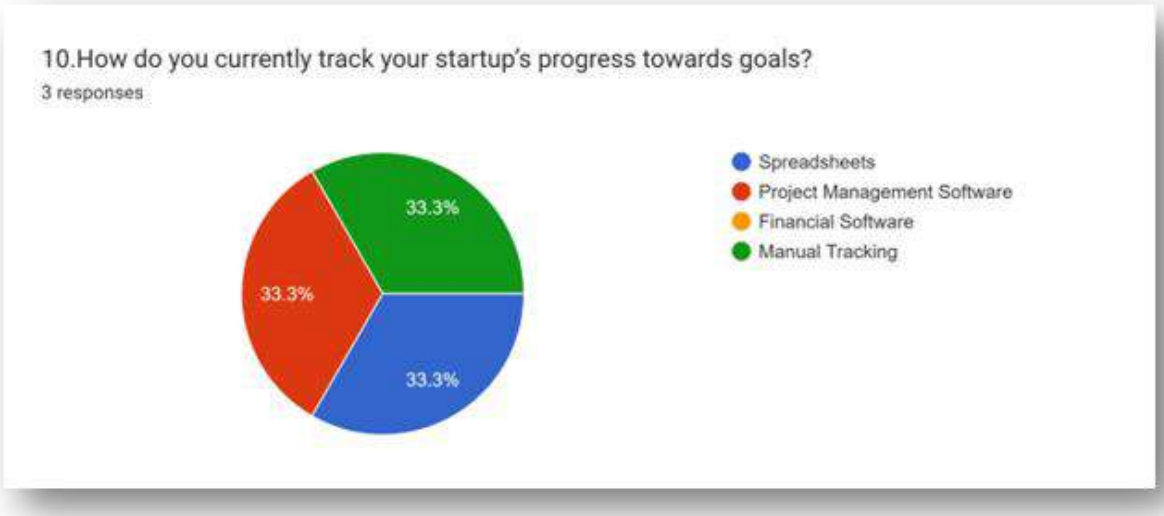


2. **Challenges Faced by Startups**

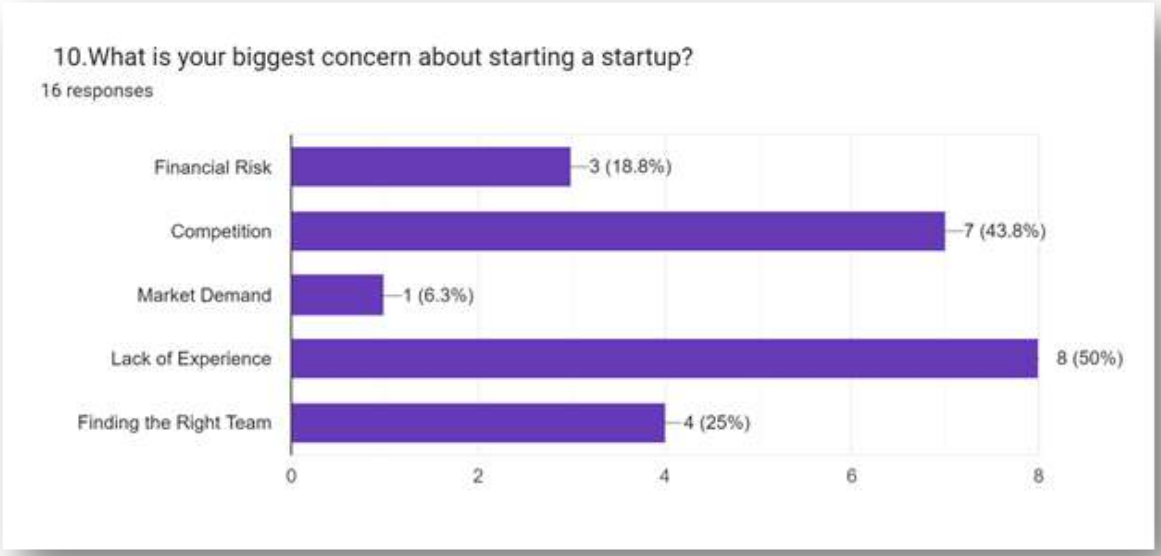
3. Support Needed by Startups



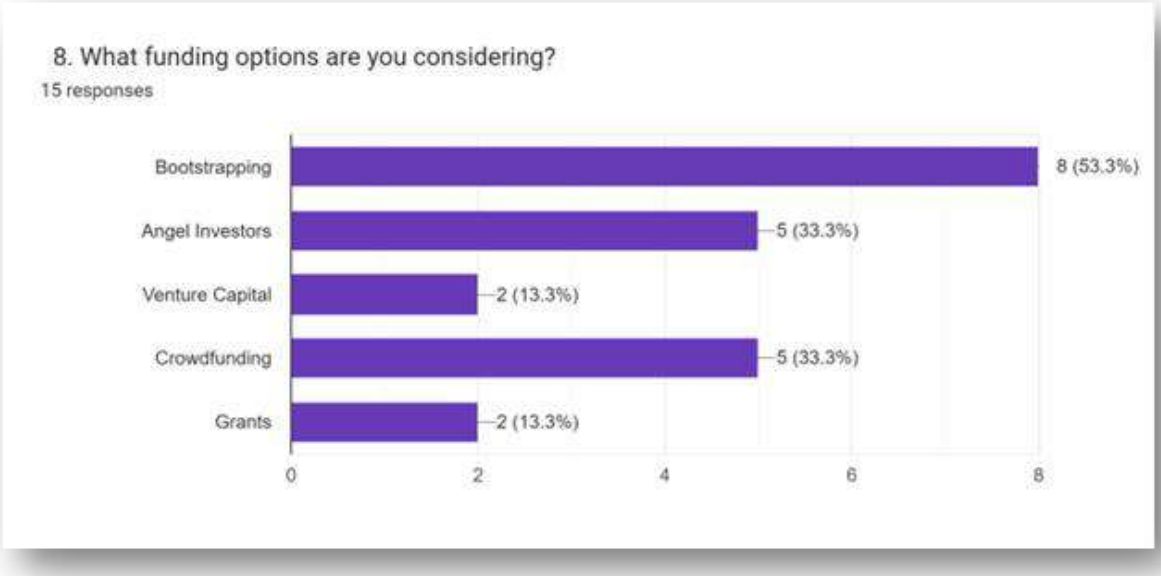
4. Tracking the Startup Progress



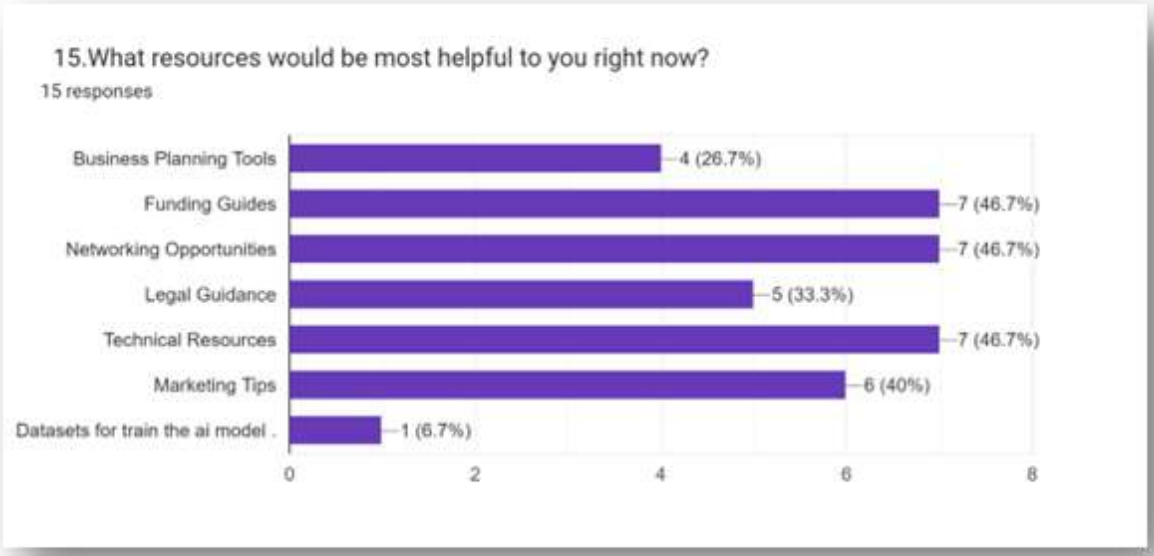
5. Biggest barrier growth



6. Funding Options



7. Helpful Resources



Combined Summary from overall responses

- **Funding:** Bootstrapping is the most popular funding option among respondents,

followed by angel investors and crowdfunding. Venture capital and grants are less favored.

- **Resources:** Respondents expressed a strong need for Funding Guides, Networking Opportunities, and Technical Resources. Legal Guidance was also in high demand, while Business Planning Tools and Marketing Tips were less frequently requested.

- **Challenges:** The biggest challenges faced by startups include finding the right idea, securing funding, and navigating market research, legal compliance, and regulations.

- **Support:** Respondents sought various types of support, with Financial Support, Mentorship, and Networking Opportunities being the most requested.

- **Industry Interest:** Technology is the most popular industry for startups, followed by Education and Health.

- **Progress Tracking:** Respondents use a variety of methods to track their startup's progress, including spreadsheets, project management software, and manual tracking.

Overall, the data suggests that startups are seeking a combination of financial resources, mentorship, networking, and industry-specific knowledge to overcome challenges and achieve success.

Observation

Observation Summary

- **Sector Focus:** High interest in technology and education sectors, indicating demand for innovative solutions in these fields.

- **Funding Challenges:** Securing initial capital and ongoing funding is a significant hurdle for many startups, emphasizing the need for better access to investors.

- **Mentorship Needs:** Founders seek mentorship in business strategy, scaling, and market entry, highlighting the importance of connecting with experienced mentors.

- **Support Services:** Startups require support in legal matters, marketing, and strategic guidance, pointing to a need for accessible service platforms.
- **Networking and Community:** Strong demand for networking opportunities to build connections and gain insights from other founders and experts.
- **Market Insights:** Startups value tools that provide competitive analysis and market trend updates to make informed business decisions.
- **Comprehensive Support System:** Overall, the ecosystem needs a robust support structure encompassing funding access, mentorship, market intelligence, and community resources to drive growth and innovation.

3. Fact-Finding Chart

Objective	Technique	Subject(s)	Time Commitment
To gather information about the startup ecosystem	Background reading	Industry reports, case studies, news Articles	1-2 days
To identify key stakeholders and their roles	Interviews	Founders, investors, mentors, partners, industry experts	2-4 hours each
To understand the challenges faced by startups	Interviews, surveys	Founders, industry experts	1-2 hours each
To assess the current state of the ecosystem	Interviews, surveys	Founders, investors, mentors, industry experts	1-2 hours each

To identify gaps in existing resources and support	Interviews, surveys	Founders, industry experts	1-2 hours each
To explore potential areas for innovation and growth	Interviews, surveys	Founders, industry experts	1-2 hours each
To assess the effectiveness of existing initiatives	Interviews, surveys	Founders, investors, mentors, industry experts	1-2 hours each
To identify potential partnerships and collaborations	Interviews, networking events	Founders, investors, mentors, industry experts	1-2 hours each
To understand the regulatory environment	Legal research, interviews	Legal experts, government officials	1-2 hours
To assess the availability of funding and support resources	Interviews, research	Investors, funding organizations, support networks	1-2 hours each

4. Requirements List

1. Startup Information

- **Store startup details**: Name, industry, country, date of founding, stage, revenue, number of employees.
- **Track lifecycle stages**: Capture stages such as seed, growth, expansion, exit, etc.

2. Startup Owners Information

- **Founder information**: Capture personal details (name, email, expertise, LinkedIn profile, nationality).
- **Maintain relationships**: Establish and track the relationship between startups and their founders.

3. Investment and Funding Information

- **Funding rounds**: Record each funding round including investment type, amount raised, and funding date.
- **Investor information**: Capture details about investors, their investments, and equity stakes.
- **Valuation and equity**: Track the valuation of startups post-funding and calculate equity stake for each investor.

4. Accelerators and Incubators

- **Accelerator/incubator details**: Store information like name, location, focus area, and contact info.
- **Startup-accelerator relationship**: Track startup participation in accelerators or incubators, including joining and exit dates and program details.

5. Mentors and Advisory Support

- **Mentor information**: Store mentor details (name, email, area of expertise, LinkedIn profile).
- **Mentorship relationships**: Track mentorship relationships between startups and mentors, including start date, end date, and type of mentorship.

6. Partnerships

- **Partnership tracking**: Track partnerships between startups and other organizations, including partnership type and start and end dates.

7. Stakeholders

- **Stakeholder information**: Store information about other stakeholders in the startup ecosystem.

- **Track stakeholder impact**: Track the involvement and impact of stakeholders on the ecosystem.

8. Ecosystem Metrics

- **Metrics and reports**: Provide metrics and reports on the health and growth of the startup ecosystem, such as the number of startups, investments, jobs created, etc.
- **Filtering**: Allow filtering of data based on region, industry, or stage of development.

9. Events and Networking Opportunities

- **Event tracking**: Allow startups to register for and track events, workshops, and networking opportunities.
- **Notifications**: Provide notifications or reminders for relevant events in the ecosystem.

10. Challenges and Barriers

- **Track startup challenges**: Capture challenges startups face, including regulatory issues, talent shortage, or market penetration barriers.
- **Solutions**: Log potential solutions or strategies to overcome these challenges.

11. Government and Regulatory Support

- **Government support**: Track government frameworks and policies that support startups.
- **Legal compliance**: Capture legal and regulatory compliance details for startups.

12. Knowledge Sharing and Resources

- **Educational materials**: Provide resources like educational content, reports, success stories, and guidelines for entrepreneurs.
- **Knowledge sharing**: Allow startups to share their journey, best practices, and success stories with the community.

5. User Privileges

User Classes and Privileges

1. Startup CEO

- **Role**: Chief Executive Officer
- **Privileges**:
  - Full access to all startup data, including financials, team members, and strategic documents.
  - Ability to add, modify, or remove team members.
  - Authority to manage funding rounds and interact with investors.
  - Access to performance analytics of the startup, including revenue, growth metrics, and investor engagement.
  - Control over partnership agreements and contractual obligations.

2. Team Lead

- **Role**: Head of a specific department
- **Privileges**:
  - Access to department-specific data, including project progress, team performance, and resources.
  - Authority to manage tasks and assign work to team members within their department.
  - Ability to view team member performance metrics and provide feedback.
  - Limited access to financial data relevant to their department, such as budgets for projects or initiatives.

3. Team Member

Role: Employee contributing to the startup's projects

- **Privileges:**
  - Access to tasks, project plans, and collaborative tools related to their work.
  - Ability to update their progress on tasks and projects.

- View access to relevant performance metrics for their role.
- No access to sensitive financial data or information about other team members beyond their immediate team.

4. Investor

- **Role**: Individual or entity that provides funding to the startup
- **Privileges**:
  - Access to investment portfolios and details about funding rounds they are involved in.
  - Ability to view financial reports, including revenue and growth projections of the startup.
  - Limited access to startup performance metrics, focusing primarily on their investment interests.
  - No access to internal team operations or proprietary project details.

5. Accelerator Program Manager

- **Role**: Overseer of accelerator programs that support startups
- **Privileges**:
  - Access to information about startups enrolled in the program, including progress reports and mentorship assignments.
  - Ability to assign mentors and review feedback from mentors about the startups.
  - View access to financial metrics and success metrics of the participating startups.
  - Can track and manage resources allocated to startups within the accelerator.

6. Mentor

- **Role**: Experienced professional providing guidance to startups
- **Privileges**:
  - Access to mentorship records and startup progress in areas of their expertise.

- Ability to provide feedback and advice to the startups they are mentoring.
- Can view performance metrics related to their mentees' growth and achievements.
- No access to financial data or sensitive operational information outside their mentorship scope.

7. System Administrator

- **Role**: Responsible for overall system maintenance and user management
- **Privileges**:
  - Full access to all system data, including user management and permissions.
  - Authority to add, modify, or remove users from the system, including changing roles and permissions.
  - Ability to run data backups and restore data as needed.
  - Monitor system usage and enforce security protocols to protect sensitive information.

8. Government Stakeholder

- **Role**: Government officials interested in the startup ecosystem
- **Privileges:**
  - Access to aggregate data on startup performance, funding, and job creation within the ecosystem.
  - Ability to view reports on startup health and trends affecting the ecosystem.
  - Limited access to information on initiatives supporting startups, without access to individual startup financial data.

9. Ecosystem Analyst

- **Role**: Individuals analyzing the startup ecosystem for research and development
- **Privileges**:
  - Access to aggregate data and analytics regarding startup growth, investment trends, and ecosystem performance.
  - Ability to create reports and present findings based on available data.

- No access to sensitive or proprietary data of individual startups or personal data of users.

Chapter 2 : Database Design

1. Noun Analysis

Table - Accepted Noun & Verbs list

Candidate Entity Set	Attribute Set	Candidate Relationship Set
Startup	Startup_ID (PK), Name, Industry, Stage, Founded_Date, Location, Funding_Amount, Employee_Count	Connected to Founders, Investments, Mentors, Accelerators, Partnerships

Founder	Founder_ID (PK), fName, lName, Role, LinkedIn_Profile, Startup_ID (FK)	Connects to Startups through Founding
Investor	Investor_ID (PK), Name, Type, Investment_Stage_Preference, Location	Connects to Startups via Investments
Investment	Investment_ID (PK), Investor_ID (FK), Startup_ID (FK), Amount, Date, Stage	Connects Investors and Startups
Mentor	Mentor_ID (PK), Name, Expertise, Affiliation, LinkedIn_Profile	Connects to Startups for Mentorship
Accelerator	Accelerator_ID (PK), Name, Location, Industry_Focus, Batch_Size, Program_Duration	Connects to Startups through Enrollment
Partnership	Partnership_ID (PK), Startup_ID (FK), Partner_Organization_ID (FK), Type, Start_Date, End_Date	Connects Startups with Partner Organizations
Ecosystem Resource	Resource_ID (PK), Name, Type, Provider, Contact_Info	Connected to Startups for support
Industry	Industry_ID (PK), Name, Sector, Description	Categorizes Startups by Industry
Mentor Contact Info	Mentor_ID (FK), phone_no	Holds Mentor Contact Details
Accelerator Contact Info	Accelerator_ID (FK), phone_no	Holds Accelerator Contact Details
Investor Contact Info	Investor_ID (FK), phone_no	Holds Investor Contact Details

Startup-Mentor	Startup_ID (FK), Mentor_ID (FK), Date_Joined	Connects Startups and Mentors
Startup-Accelerator	Startup_ID (FK), Accelerator_ID (FK), Date_Joined	Connects Startups and Accelerators

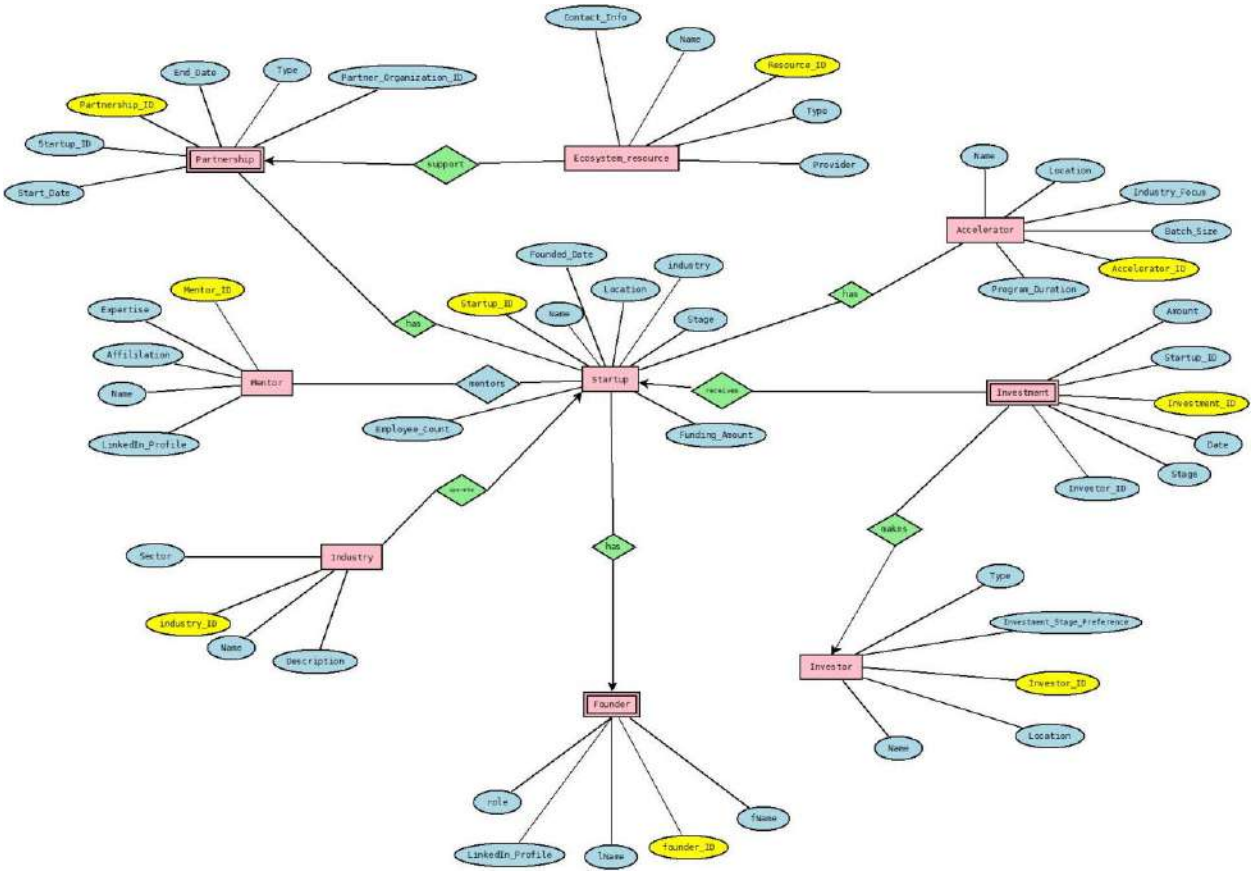
Relationships For ER Diagram Design

Entity 1	Entity 2	Relationship Type	Intermediate Table (if any)	Description
Startup	Founder	One-to-Many	-	Each startup can have multiple founders, and each founder is associated with only one startup.
Startup	Investor	Many-to-Many	Investment	An investor can invest in multiple startups, and a startup can receive funding from multiple investors.
Startup	Mentor	Many-to-Many	Startup_Mentor	Mentors can work with multiple startups, and startups can have guidance from multiple mentors.
Startup	Accelerator	Many-to-Many	Startup_Accelerator	Each startup can join multiple accelerators, and each accelerator can have multiple startups.
Startup	Partnership	One-to-Many	Partnership	Each partnership involves one startup and one partner organization,

				but a startup can have multiple partnerships.
Accelerator	Ecosystem Resource	Implicit	-	Accelerators can be part of an ecosystem and provide specific resources to startups.
Industry	Startup	One-to-Many	-	Each startup is associated with an industry, while an industry can contain multiple startups.
Mentor	Mentor_contact_info	One-to-Many	-	Each mentor can have multiple contact entries stored in the Mentor_contact_info table.
Accelerator	Accelerator_contact_info	One-to-Many	-	Each accelerator can have multiple contact entries stored in the Accelerator_contact_info table.
Investor	Investor_contact_info	One-to-Many	-	Each investor can have multiple contact entries stored in the Investor_contact_info table.

2. Schema and ER Diagram Design

Entity Relationship Diagram


Contact_Info
Name
Resource_ID
Type
Provider
Ecosystem_resource
support
End_Date
Type
Partner_Organization_ID
Partnership_ID
Startup_ID
Start_Date
Partnership
Name
Location
Industry_Focus
Batch_Size
Accelerator_ID
Program_Duration
Accelerator
has
Founded_Date
industry
Location
Startup_ID
Name
Stage
Startup
Mentor_ID
Expertise
Affiliation
Name
LinkedIn_Profile
Mentor
mentors
Employee_count
Funding_Amount
receives
Amount
Startup_ID
Investment_ID
Date
Stage
Investor_ID
Investment
has
Sector
Industry
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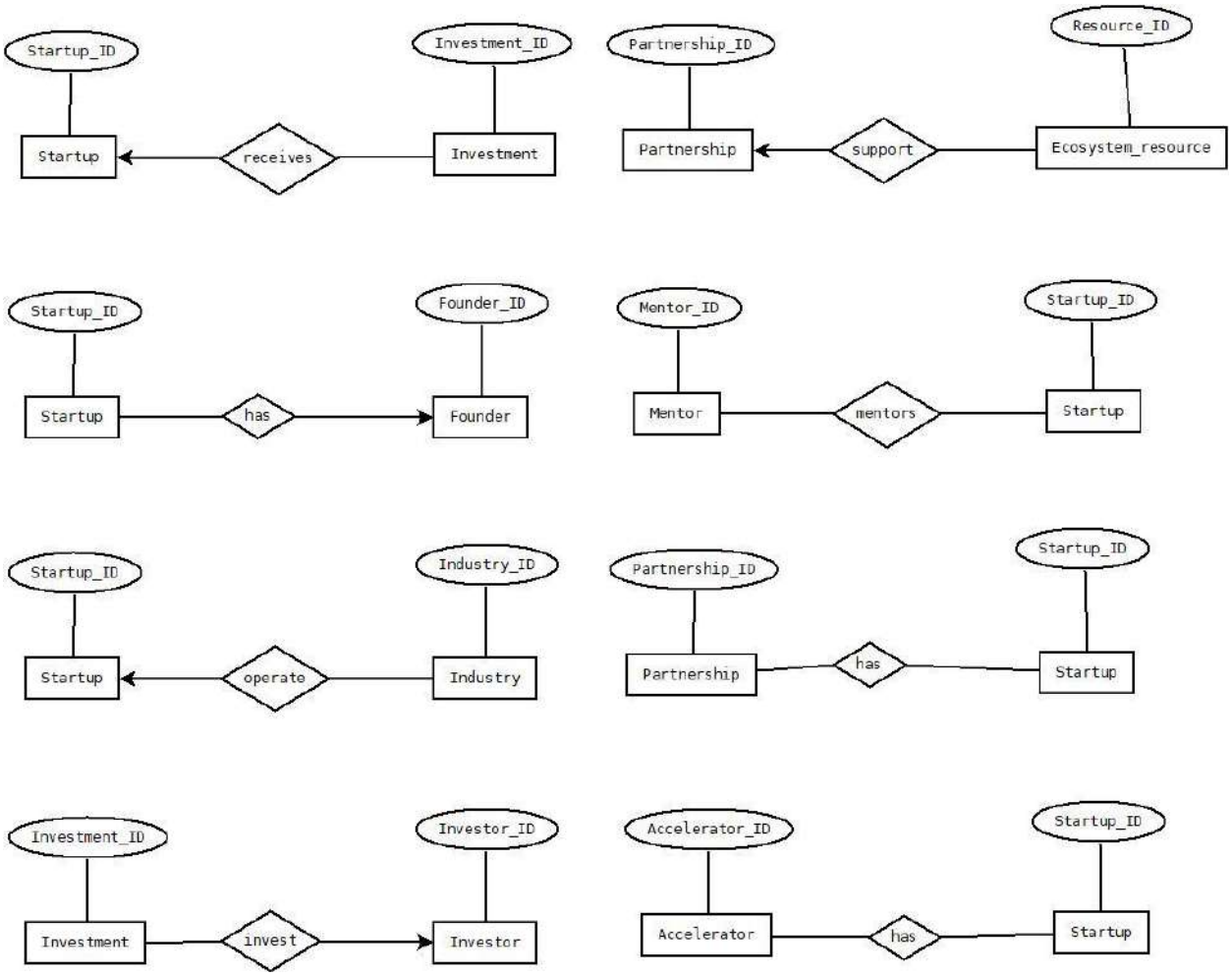
Founder_ID
fName

Schema Diagram



3. ER Diagram Improvement

Identify Entity Types

Entity	Type	Reason
Startup	Strong Entity	Has a primary key (Startup_ID) and exists independently.
Founder	Strong Entity	

		Has a primary key (Founder_ID) and is directly associated with Startup.
Investor	Strong Entity	Has a primary key (Investor_ID) and exists independently.
Investment	Weak Entity	Depends on both Investor and Startup entities for context, forming a many-to-many relationship.
Mentor	Strong Entity	Has a primary key (Mentor_ID) and exists independently.
Accelerator	Strong Entity	Has a primary key (Accelerator_ID) and exists independently.
Partnership	Weak Entity	Relies on the Startup and Ecosystem_Resource entities, forming a one-to-many relationship with Startup.
Ecosystem_Resource	Strong Entity	Has a primary key (Resource_ID) and exists independently.
Industry	Strong Entity	Has a primary key (Industry_ID) and exists independently.
Mentor_contact_info	Weak Entity	Dependent on Mentor, holding additional contact info, forming a one-to-many relationship.
Accelerator_contact_info	Weak Entity	

		Dependent on Accelerator, holding additional contact info, forming a one-to-many relationship.
Investor_contact_info	Weak Entity	Dependent on Investor, holding additional contact info, forming a one-to-many relationship.
Startup_Mentor	Associative Entity	Represents a many-to-many relationship between Startup and Mentor.
Startup_Accelerator	Associative Entity	Represents a many-to-many relationship between Startup and Accelerator.

Identify Relationship Types

Entity 1	Entity 2	Relationship Type	Details
`Startup`	`Founder`	One-to-Many	Each `Startup` can have multiple `Founders`, but each `Founder` is associated with only one `Startup`.
`Startup`	`Investor`	Many-to-Many	Represented by the `Investment` table, allowing multiple investors for a startup and multiple startups for an investor.
`Startup`	`Mentor`	Many-to-Many	Represented by `Startup_Mentor`, where a mentor can work with multiple startups, and startups can have multiple mentors.

Startup	Accelerator	Many-to-Many	Represented by Startup_Accelerator, where each startup can join multiple accelerators, and each accelerator can have multiple startups.
Startup	Partnership	One-to-Many	Each partnership involves one startup and one partner organization. A startup can have multiple partnerships.
Accelerator	Ecosystem_Resource	Implicit/Associative	Implicit relationship where accelerators are part of the ecosystem providing resources to startups.
Industry	Startup	One-to-Many	Each startup belongs to one industry, but an industry can have multiple startups.
Mentor	Mentor_contact_info	One-to-Many	Each mentor can have multiple contact entries.
Accelerator	Accelerator_contact_info	One-to-Many	Each accelerator can have multiple contact entries.
Investor	Investor_contact_info	One-to-Many	Each investor can have multiple contact entries.

ER Diagram Analysis

1. **Enhanced Relationships**: Associative tables (*Startup_Mentor*) track many-to-many relationships and can include additional details like mentor roles or timestamps.

2. **Attribute Refinement**: Entities like *Investment* and *Accelerator* could benefit from attributes like "Equity_Percentage" (for *Investment*) and "Success_Rate" (for *Accelerator*) to capture critical data insights.

3. **Optional Relationships**: Certain relationships, such as *Startup-Mentor*, are marked as optional to reflect varying startup stages, improving flexibility.

4. Mapping ER Model to Relational Model

Each entity and relationship mapped to a relational schema.

Startup

Attributes	DataTypes	Constraints
Startup_ID	int	PK
Industry	varchar	NOT NULL
Location	varchar	NOT NULL
Stage	varchar	NOT NULL
Funding_Amount	int	NOT NULL
Name	varchar	NOT NULL, UNIQUE
Founded_Date	date	NOT NULL, CHECK
Employee_Count	int	NOT NULL

Founder

Attributes	DataTypes	Constraints

Founder_ID	int	PK
fName	varchar	NOT NULL
lName	varchar	NOT NULL
Role	varchar	NOT NULL
Startup_ID	int	FK ref startup
LinkedIn_Profile	varchar	NOT NULL,UNIQUE

Investor

Attributes	DataTypes	Constraints
Investor_id	int	PK
Type	varchar	NOT NULL
Investment_Stage_ Preference	varchar	NOT NULL
Name	varchar	NOT NULL,UNIQUE
Location	int	NOT NULL

Investment

Attributes	DataTypes	Constraints
Investment_ID	int	PK
Investor_ID	int	FK ref investor
Amount	int	NOT NULL
Date	date	NOT NULL
Stage	varchar	NOT NULL

Mentor

Attributes	DataTypes	Constraints
Mentor_id	int	PK
Name	varchar	NOT NULL
Expertise	varchar	NOT NULL
Affiliation	varchar	NOT NULL
LinkedIn_Profile	varchar	NOT NULL, UNIQUE

Accelerator

Attributes	DataTypes	Constraints
Accelerator_ID	int	PK
Name	varchar	NOT NULL,UNIQUE
Location	varchar	NOT NULL
Industry_focus	varchar	NOT NULL
Batch_Size	int	NOT NULL
Program_Duration	int	NOT NULL

Partnership

Attributes	DataTypes	Constraints
Partnership_ID	int	PK
Startup_ID	varchar	FK ref startup

Partner_Organization_ID	INT	FK ref partnership_organization
Type	varchar	NOT NULL
Start_Date	date	NOT NULL
End_Date	date	NOT_NULL,check

Ecosystem Resource

Attributes	DataTypes	Constraints
Resource_ID	int	PK
Name	varchar	NOT NULL
Type	varchar	NOT NULL
Provider	varchar	NOT NULL
Contact_info	int	NOT NULL, UNIQUE

Industry

Attributes	DataTypes	Constraints
Industry_ID	int	PK
Name	varchar	NOT NULL
Sector	varchar	NULL
Description	text	NOT NULL

Mentor_Contact_Info

Attributes	DataTypes	Constraints
Mentor_ID	int	Composite PK
Phone_no	int	Composite PK
Join_date	date	NOT NULL

Accelerator_Contact_Info

Attributes	DataTypes	Constraints
Accelerator_ID	int	Composite PK
Phone_no	int	Composite PK
Join_date	date	NOT NULL

Investor_Contact_Info

Attributes	DataTypes	Constraints
Investor_ID	int	Composite PK
Phone_no	int	Composite PK
Join_date	date	NOT NULL

Startup_Mentor

Attribute	Data Type	Constraints
Startup_ID	INT	Composite PK, FK (References Startup.Startup_ID)
Mentor_ID	INT	Composite PK, FK (References Mentor.Mentor_ID)
Date_joined	DATE	NOT NULL

Startup_Accelerator

Schemas written in format R1(A1,A2,...,An)R1(A1, A2, ..., An)R1(A1,A2,...,An) with primary keys underlined.

- **R1: Startup** (Startup_ID, Name, Industry, Stage, Founded_Date, Location, Funding_Amount, Employee_Count)
- **R2: Founder** (Founder_ID, fName, lName, Role, LinkedIn_Profile, Startup_ID)
- **R3: Investor** (Investor_ID, Name, Type, Investment_Stage_Preference, Location)
- **R4: Investment** (Investment_ID, Investor_ID, Startup_ID, Amount, Date, Stage)
- **R5: Mentor** (Mentor_ID, Name, Expertise, Affiliation, LinkedIn_Profile)
- **R6: Accelerator** (Accelerator_ID, Name, Location, Industry_Focus, Batch_Size, Program_Duration)
- **R7: Partnership** (Partnership_ID, Startup_ID, Partner_Organization_ID, Type, Start_Date, End_Date)
- **R8: Ecosystem_Resource** (Resource_ID, Name, Type, Provider, Contact_Info)
- **R9: Industry** (Industry_ID, Name, Sector, Description)
- **R10: Mentor_contact_info** (Mentor_ID, phone_no)
- **R11: Accelerator_contact_info** (Accelerator_ID, phone_no)
- **R12: Investor_contact_info** (Investor_ID, phone_no)

- **R13: Startup_Mentor** (Startup_ID, Mentor_ID, Date_joined)
- **R14: Startup_Accelerator** (Startup_ID, Accelerator_ID, Date_joined)

5. Create DDL Scripts

1. Startup Table

```
CREATE TABLE Startup (
  Startup_ID INT PRIMARY KEY,
  Name VARCHAR(255) NOT NULL,
  Industry VARCHAR(100),
  Stage VARCHAR(50),
  Founded_Date DATE,
  Location VARCHAR(100),
  Funding_Amount DECIMAL(15, 2) CHECK (Funding_Amount >= 0),
  Employee_Count INT CHECK (Employee_Count >= 0)
);
```

2. Founder Table

```
CREATE TABLE Founder (
  Founder_ID INT PRIMARY KEY,
  fName VARCHAR(255) NOT NULL,
  lName VARCHAR(255) NOT NULL,
  Role VARCHAR(100),
  LinkedIn_Profile VARCHAR(255),
```

```
  Startup_ID INT,
  FOREIGN KEY (Startup_ID) REFERENCES Startup(Startup_ID)
);
```

3. Investor Table

```
CREATE TABLE Investor (
  Investor_ID INT PRIMARY KEY,
  Name VARCHAR(255) NOT NULL,
  Type VARCHAR(50) NOT NULL,
  Investment_Stage_Preference VARCHAR(50),
  Location VARCHAR(100)
);
```

4. Investment Table

```
CREATE TABLE Investment (
  Investment_ID INT PRIMARY KEY,
  Investor_ID INT,
  Startup_ID INT,
  Amount DECIMAL(15, 2) CHECK (Amount >= 0),
  Date DATE,
  Stage VARCHAR(50),
  FOREIGN KEY (Investor_ID) REFERENCES Investor(Investor_ID),
  FOREIGN KEY (Startup_ID) REFERENCES Startup(Startup_ID)
);
```

5. Mentor Table

```
CREATE TABLE Mentor (
```

```
    Mentor_ID INT PRIMARY KEY,
    Name VARCHAR(255) NOT NULL,
    Expertise VARCHAR(100),
    Affiliation VARCHAR(100),
    LinkedIn_Profile VARCHAR(255)
);
```

6. Accelerator Table

```
CREATE TABLE Accelerator (
    Accelerator_ID INT PRIMARY KEY,
    Name VARCHAR(255) NOT NULL,
    Location VARCHAR(100),
    Industry_Focus VARCHAR(100),
    Batch_Size INT CHECK (Batch_Size > 0),
    Program_Duration INT CHECK (Program_Duration > 0)
);
```

7. Partnership Table

```
CREATE TABLE Partnership (
    Partnership_ID INT PRIMARY KEY,
    Startup_ID INT,
    Partner_Organization_ID INT,
    Type VARCHAR(50),
    Start_Date DATE,
    End_Date DATE CHECK (End_Date >= Start_Date),
    FOREIGN KEY (Startup_ID) REFERENCES Startup(Startup_ID),
    FOREIGN KEY (Partner_Organization_ID) REFERENCES
        Ecosystem_Resource(Resource_ID)
```

```
);
```

8. Ecosystem_Resource Table

```
CREATE TABLE Ecosystem_Resource (
  Resource_ID INT PRIMARY KEY,
  Name VARCHAR(255) NOT NULL,
  Type VARCHAR(50),
  Provider VARCHAR(100),
  Contact_Info VARCHAR(255)
);
```

9. Industry Table

```
CREATE TABLE Industry (
  Industry_ID INT PRIMARY KEY,
  Name VARCHAR(100) NOT NULL,
  Sector VARCHAR(100),
  Description TEXT
);
```

10. Mentor_Contact_Info Table

```
CREATE TABLE Mentor_Contact_Info (
  Mentor_ID INT,
  Phone_No VARCHAR(15),
  PRIMARY KEY (Mentor_ID, Phone_No),
  FOREIGN KEY (Mentor_ID) REFERENCES Mentor(Mentor_ID)
);
```

11. Accelerator_Contact_Info Table

```
CREATE TABLE Accelerator_Contact_Info (
  Accelerator_ID INT,
  Phone_No VARCHAR(15),
  PRIMARY KEY (Accelerator_ID, Phone_No),
  FOREIGN KEY (Accelerator_ID) REFERENCES Accelerator(Accelerator_ID)
);
```

12. Investor_Contact_Info Table

```
CREATE TABLE Investor_Contact_Info (
  Investor_ID INT,
  Phone_No VARCHAR(15),
  PRIMARY KEY (Investor_ID, Phone_No),
  FOREIGN KEY (Investor_ID) REFERENCES Investor(Investor_ID)
);
```

13. Startup_Mentor Table

```
CREATE TABLE Startup_Mentor (
  Startup_ID INT,
  Mentor_ID INT,
  Date_Joined DATE,
  PRIMARY KEY (Startup_ID, Mentor_ID),
  FOREIGN KEY (Startup_ID) REFERENCES Startup(Startup_ID),
  FOREIGN KEY (Mentor_ID) REFERENCES Mentor(Mentor_ID)
);
```

14. Startup_Accelerator Table

```
CREATE TABLE Startup_Accelerator (
  Startup_ID INT,
  Accelerator_ID INT,
  Date_Joined DATE,
  PRIMARY KEY (Startup_ID, Accelerator_ID),
  FOREIGN KEY (Startup_ID) REFERENCES Startup(Startup_ID),
  FOREIGN KEY (Accelerator_ID) REFERENCES Accelerator(Accelerator_ID)
);
```

Chapter 3: Normalization of Database

1. Normalization and Schema Refinement

Original Design of Database

1. Startup

- **Schema**: Startup(Startup_ID, Name, Industry, Stage, Founded_Date, Location, Funding_Amount, Employee_Count)

- **Primary Key**: Startup_ID
- **Description**: The Startup table stores details about individual startups, including their industry, stage, funding, and location.

2. Founder

- **Schema**: Founder(Founder_ID, fName, lName, Role, LinkedIn_Profile, Startup_ID)
- **Primary Key**: Founder_ID
- **Foreign Key**: Startup_ID references Startup(Startup_ID)
- **Description**: The Founder table keeps records of founders associated with each startup, linking them to the Startup table.

3. Investor

- **Schema**: Investor(Investor_ID, Name, Type, Investment_Stage_Preference, Location)
- **Primary Key**: Investor_ID
- **Description**: The Investor table contains information on investors, their types (e.g., angel investor, venture capital), preferred investment stages, and location.

4. Investment

- **Schema**: Investment(Investment_ID, Investor_ID, Startup_ID, Amount, Date, Stage)
- **Primary Key**: Investment_ID
- **Foreign Keys**:
  - Investor_ID references Investor(Investor_ID)
  - Startup_ID references Startup(Startup_ID)
- **Description**: The Investment table records investment transactions between investors and startups, including the amount, date, and stage of investment.

5. Mentor

- **Schema**: Mentor(Mentor_ID, Name, Expertise, Affiliation, LinkedIn_Profile)
- **Primary Key**: Mentor_ID

- **Description**: This table holds information about mentors, their expertise, affiliations, and LinkedIn profiles.

6. Accelerator

- **Schema**: Accelerator(Accelerator_ID, Name, Location, Industry_Focus, Batch_Size, Program_Duration)
- **Primary Key**: Accelerator_ID
- **Description**: The Accelerator table contains details about accelerators and incubators, including their industry focus, batch size, and program duration.

7. Partnership

- **Schema**: Partnership(Partnership_ID, Startup_ID, Partner_Organization_ID, Type, Start_Date, End_Date)
- **Primary Key**: Partnership_ID
- **Foreign Keys**:
  - Startup_ID references Startup(Startup_ID)
  - Partner_Organization_ID references Ecosystem_Resource(Resource_ID)
- **Description**: The Partnership table documents partnerships between startups and external ecosystem resources, specifying the type of partnership, start and end dates.

8. Ecosystem_Resource

- **Schema**: Ecosystem_Resource(Resource_ID, Name, Type, Provider, Contact_Info)
- **Primary Key**: Resource_ID
- **Description**: This table stores information on various resources available in the ecosystem, such as funding, legal, or marketing support, with contact details for each provider.

9. Industry

- **Schema**: Industry(Industry_ID, Name, Sector, Description)
- **Primary Key**: Industry_ID

- **Description**: The Industry table categorizes industries, listing their names, sectors, and descriptions.

10. Mentor_Contact_Info

- **Schema**: Mentor_Contact_Info(Mentor_ID, Phone_No)
- **Primary Key**: (Mentor_ID, Phone_No)
- **Foreign Key**: Mentor_ID references Mentor(Mentor_ID)
- **Description**: This table records multiple contact numbers for each mentor.

11. Accelerator_Contact_Info

- **Schema**: Accelerator_Contact_Info(Accelerator_ID, Phone_No)
- **Primary Key**: (Accelerator_ID, Phone_No)
- **Foreign Key**: Accelerator_ID references Accelerator(Accelerator_ID)
- **Description**: This table allows for multiple contact numbers for each accelerator.

12. Investor_Contact_Info

- **Schema**: Investor_Contact_Info(Investor_ID, Phone_No)
- **Primary Key**: (Investor_ID, Phone_No)
- **Foreign Key**: Investor_ID references Investor(Investor_ID)
- **Description**: This table holds contact numbers for each investor, enabling multiple contacts per investor.

13. Startup_Mentor

- **Schema**: Startup_Mentor(Startup_ID, Mentor_ID, Date_Joined)
- **Primary Key**: (Startup_ID, Mentor_ID)
- **Foreign Keys**:
    - Startup_ID references Startup(Startup_ID)
    - Mentor_ID references Mentor(Mentor_ID)
- **Description**: This join table represents a many-to-many relationship between startups and mentors, with the date each mentor joined the startup.

14. Startup_Accelerator

- **Schema**: Startup_Accelerator(Startup_ID, Accelerator_ID, Date_Joined)
- **Primary Key**: (Startup_ID, Accelerator_ID)
- **Foreign Keys**:
  - Startup_ID references Startup(Startup_ID)
  - Accelerator_ID references Accelerator(Accelerator_ID)
- **Description**: This table represents a many-to-many relationship between startups and accelerators, tracking when each startup joined an accelerator program.

Dependency Analysis

■ Identification of primary keys, foreign keys, and functional dependencies.

1. Startup Table

- **Primary Key**: Startup_ID
- **Functional Dependencies**:
  - Startup_ID → (Name, Industry, Stage, Founded_Date, Location, Funding_Amount, Employee_Count)
  - Explanation: Each Startup_ID uniquely determines all other attributes in the Startup table, such as Name, Industry, and Funding_Amount.
- **Foreign Keys**: None

2. Founder Table

- **Primary Key**: Founder_ID
- **Foreign Key**: Startup_ID references Startup(Startup_ID)
- **Functional Dependencies**:
  - Founder_ID → (fName, lName, Role, LinkedIn_Profile, Startup_ID)
  - Explanation: Each founder is uniquely identified by Founder_ID, which determines their first name, last name, role, LinkedIn profile, and associated startup (Startup_ID).

3. Investor Table

- **Primary Key**: Investor_ID
- **Functional Dependencies**:
  - Investor_ID → (Name, Type, Investment_Stage_Preference, Location)
  - Explanation: Each Investor_ID uniquely determines attributes like Name, Type, and Location.
- **Foreign Keys**: None

4. Investment Table

- **Primary Key**: Investment_ID
- **Foreign Keys**:
  - Investor_ID references Investor(Investor_ID)
  - Startup_ID references Startup(Startup_ID)
- **Functional Dependencies**:
  - Investment_ID → (Investor_ID, Startup_ID, Amount, Date, Stage)
  - Explanation: Each investment is uniquely identified by Investment_ID, determining the associated Investor_ID, Startup_ID, investment Amount, date, and stage.

5. Mentor Table

- **Primary Key**: Mentor_ID
- **Functional Dependencies**:
  - Mentor_ID → (Name, Expertise, Affiliation, LinkedIn_Profile)
  - Explanation: Each mentor is uniquely identified by Mentor_ID, which determines all other mentor attributes.
- **Foreign Keys**: None

6. Accelerator Table

- **Primary Key**: Accelerator_ID

- **Functional Dependencies**:
    - Accelerator_ID → (Name, Location, Industry_Focus, Batch_Size, Program_Duration)
    - Explanation: Each Accelerator_ID uniquely determines attributes like Name, Location, Industry_Focus, etc.
- **Foreign Keys**: None

7. Partnership Table

- **Primary Key**: Partnership_ID
- **Foreign Keys**:
    - Startup_ID references Startup(Startup_ID)
    - Partner_Organization_ID references Ecosystem_Resource(Resource_ID)
- **Functional Dependencies**:
    - Partnership_ID → (Startup_ID, Partner_Organization_ID, Type, Start_Date, End_Date)
    - Explanation: Each partnership is uniquely identified by Partnership_ID, determining the associated startup and partner organization, as well as the type, start, and end dates.

8. Ecosystem_Resource Table

- **Primary Key**: Resource_ID
- **Functional Dependencies**:
    - Resource_ID → (Name, Type, Provider, Contact_Info)
    - Explanation: Each ecosystem resource is uniquely identified by Resource_ID, determining attributes like Name, Type, and Provider.
- **Foreign Keys**: None

9. Industry Table

- **Primary Key**: Industry_ID
- **Functional Dependencies**:

  - Industry_ID → (Name, Sector, Description)
  - Explanation: Each industry is uniquely identified by Industry_ID, which determines attributes such as Name, Sector, and Description.
- **Foreign Keys**: None

10. Mentor_Contact_Info Table

- **Primary Key**: (Mentor_ID, Phone_No)
- **Foreign Key**: Mentor_ID references Mentor(Mentor_ID)
- **Functional Dependencies**:
  - (Mentor_ID, Phone_No) → (Mentor_ID, Phone_No)
  - Explanation: Mentor_ID and Phone_No together form a composite primary key, identifying each unique phone number associated with a mentor.

11. Accelerator_Contact_Info Table

- **Primary Key**: (Accelerator_ID, Phone_No)
- **Foreign Key**: Accelerator_ID references Accelerator(Accelerator_ID)
- **Functional Dependencies**:
  - (Accelerator_ID, Phone_No) → (Accelerator_ID, Phone_No)
  - Explanation: Accelerator_ID and Phone_No together form a composite primary key, uniquely identifying each phone number associated with an accelerator.

12. Investor_Contact_Info Table

- **Primary Key**: (Investor_ID, Phone_No)
- **Foreign Key**: Investor_ID references Investor(Investor_ID)
- **Functional Dependencies**:
  - (Investor_ID, Phone_No) → (Investor_ID, Phone_No)
  - Explanation: Investor_ID and Phone_No together form a composite primary key, uniquely identifying each phone number associated with an investor.

13. Startup_Mentor Table

- **Primary Key**: (Startup_ID, Mentor_ID)

- **Foreign Keys**:
  - Startup_ID references Startup(Startup_ID)
  - Mentor_ID references Mentor(Mentor_ID)
- **Functional Dependencies**:
  - (Startup_ID, Mentor_ID) → (Startup_ID, Mentor_ID, Date_Joined)
  - Explanation: The combination of Startup_ID and Mentor_ID uniquely determines the mentor's joining date for each startup.

14. Startup_Accelerator Table

- **Primary Key**: (Startup_ID, Accelerator_ID)
- **Foreign Keys**:
  - Startup_ID references Startup(Startup_ID)
  - Accelerator_ID references Accelerator(Accelerator_ID)

2. Redundancy and Anomalies Documentation

Redundancies

Schema	Table	Columns with Redundancy	Type of Redundancy	Description
SE	Founder	Startup_ID	Repetition	Multiple founders can reference the same Startup_ID, repeating information about the startup.
SE	Investment	Investor_ID, Startup_ID	Partial Dependency	The Investor_ID and Startup_ID might be repeated for each investment transaction.
SE	Accelerator	Location	Transitive Dependency	Accelerators in the same location may

				repeatedly list the same location.
SE	Partnership	Startup_ID, Partner_Organization_ID	Repetition	Partnerships may involve multiple instances with the same Startup_ID or Partner_Organization_ID
SE	Ecosystem_Resource	Contact_Info	Repetition	Contact information is limited to one entry, potentially causing duplication if multiple contacts are required.
SE	Mentor_contact_info	Mentor_ID, phone_no	Repetition	A mentor may have multiple phone numbers, causing repetition of Mentor_ID
SE	Investor_contact_info	Investor_ID, phone_no	Repetition	Investors with multiple contacts will have repeating Investor_ID entries.
SE	Startup_Mentor	Startup_ID, Mentor_ID	Repetition	Mentors associated with multiple startups cause Mentor_ID And Startup_ID repetition.
SE	Startup_Accelerator	Startup_ID, Accelerator_ID	Repetition	The same startup may be linked to multiple accelerators, causing repetition of Startup_ID

Anomalies

Table	Type of Anomaly	Description
Founder	Insert	

		Adding a new founder requires associating them with an existing Startup_ID , even if the startup has not yet been added.
Investment	Delete	Deleting a single investment can cause the loss of historical funding data tied to Investor_ID And Startup_ID
Accelerator	Update	Updating Location for one accelerator does not automatically update similar locations for other accelerators in the same area
Partnership	Insert	A new partnership may be difficult to add if the Partner_Organization_ID does not exist in Ecosystem_Resource
Ecosystem_Resource	Delete	Removing a resource could delete key data needed by Partnership and cause loss of partnerships.
Mentor_contact_info	Insert	Adding multiple phone numbers for the same mentor requires duplicating Mentor_ID
Startup_Mentor	Delete	Removing a relationship between a mentor and startup

		could result in a loss of mentorship history.
Startup_Accelerator	Update	Changing Accelerator_ID for a startup's history would require updating all related entries manually.

3. Normalization Process

1NF – Enforcing scalar values.

1. Startup Table

The Startup table already meets 1NF requirements, as each attribute (e.g., Startup_ID, Name, Industry, etc.) holds only a single value per row. No adjustments needed.

2. Founder Table

This table also meets 1NF, as each attribute holds only one value per record (e.g., Founder_ID, fName, lName, etc.).

3. Investor Table

The Investor table is already in 1NF, with attributes like Investor_ID, Name, Type, and Location containing atomic values.

4. Investment Table

The Investment table adheres to 1NF, with attributes like Investment_ID, Investor_ID, Startup_ID, and Amount each containing scalar values.

5. Mentor Table

The Mentor table is in 1NF with single-valued attributes like Mentor_ID, Name, Expertise, and Affiliation.

6. Mentor_Contact_Info Table

Initially, Mentor could have had multiple phone numbers (a multi-valued attribute). By creating a separate Mentor_Contact_Info table, we achieve 1NF by storing each phone number as a separate row.

7. Accelerator_Contact_Info Table

Similar to Mentor, the Accelerator entity could have multiple contact numbers. This was addressed by separating contact information into the Accelerator_Contact_Info table, thus maintaining 1NF.

8. Investor_Contact_Info Table

To ensure 1NF, the Investor table's contact numbers were moved into a separate Investor_Contact_Info table, allowing each contact number to be recorded in a single-valued format.

All other tables (e.g., Accelerator, Partnership, Ecosystem_Resource, Startup_Mentor, and Startup_Accelerator) already adhere to 1NF, as each field holds atomic values.

2NF – Eliminating partial dependencies.

1. **Tables with Composite Primary Keys**:
    - **Startup_Mentor** and **Startup_Accelerator** tables both have composite primary keys, with (Startup_ID, Mentor_ID) and (Startup_ID, Accelerator_ID), respectively. In these tables, all non-key attributes should depend on the entire composite primary key.
    - **No Partial Dependencies Identified**: Each non-key attribute in these tables, such as Date_Joined, depends on the entire composite primary key, so they already meet 2NF requirements.
2. **Other Tables**:

- **Single-Attribute Primary Keys**: Tables with single-attribute primary keys (e.g., Startup, Founder, Investor, Mentor, etc.) automatically meet 2NF requirements because there are no composite primary keys, meaning no partial dependencies can exist.
- **Dependency Structure**: Each non-key attribute depends entirely on the primary key in tables like Startup, Investment, and Mentor, so no additional changes are necessary for 2NF compliance.

Redundancy Analysis for 2NF

Startup Table

- **Redundancy**: The Location attribute in the Startup table might be repeated for multiple startups situated in the same location.
- **Description**: Multiple startups may be located in the same city, which leads to repeated entries of the Location attribute. This redundancy does not violate 2NF, as each non-key attribute depends on the primary key (Startup_ID), but it can be further optimized in 3NF.

Accelerator Table

- **Redundancy**: The Location attribute might also be repeated for multiple accelerators in the same city or region.
- **Description**: Just as with the Startup table, having the Location field in the Accelerator table can lead to data duplication if multiple accelerators are located in the same place. This redundancy does not violate 2NF but will be addressed when moving to 3NF.

Investment Table

- **Redundancy**: The Stage attribute, which indicates the investment stage (e.g., Seed, Series A), might be repeated for each investment that falls under the same stage.

- **Description**: Investment stages are often shared across multiple investments, leading to redundancy in the Stage attribute. This does not violate 2NF but could be further normalized by creating a separate Investment_Stage table in 3NF to avoid repetition.

Mentor_Contact_Info, Accelerator_Contact_Info, and Investor_Contact_Info Tables

- **Redundancy**: In each of these tables, the entity IDs (Mentor_ID, Accelerator_ID, and Investor_ID) are repeated for every unique phone number.
- **Description**: Each mentor, accelerator, or investor may have multiple phone numbers, resulting in repeated entries for the entity ID in these contact information tables. While this structure adheres to 2NF, it could be further refined in 3NF by using unique identifiers for each contact entry.

Partnership Table

- **Redundancy**: The Type attribute, which specifies the partnership type (e.g., Strategic, R&D), may appear multiple times if similar partnerships are formed across different startups.
- **Description**: Repetition of the Type attribute can occur if multiple partnerships of the same type are recorded for different startups. This redundancy can be minimized by creating a Partnership_Type table in 3NF to store unique partnership types.

Investor Table

- **Redundancy**: The Location attribute of investors may be repeated if multiple investors are from the same location.
- **Description**: The Location attribute, while not violating 2NF, could lead to data duplication if multiple investors reside in the same city or region. This redundancy could be removed by creating a Location table and referencing it in the Investor table in 3NF.

3NF/BCNF – Removing transitive dependencies.

Startup Table

- **Transitive Dependency**: Location could be a transitive dependency if multiple startups share the same location.
- **Solution**: Create a separate Location table to store unique locations and reference it in the Startup table.

- **New Structure**:
  - **Location Table**: Location(Location_ID, City, State, Country)
  - **Startup Table** (updated): Startup(Startup_ID, Name, Industry, Stage, Founded_Date, Location_ID, Funding_Amount, Employee_Count)
  - **Dependencies**:
    - Location_ID → (City, State, Country) in the Location table
    - Startup_ID → (Name, Industry, Stage, Founded_Date, Location_ID, Funding_Amount, Employee_Count) in the updated Startup table

Accelerator Table

- **Transitive Dependency**: Location is a transitive dependency here as well, potentially duplicated across multiple records.
- **Solution**: Use the new Location table and reference Location_ID in the Accelerator table.
- **New Structure**:
  - **Accelerator Table** (updated): Accelerator(Accelerator_ID, Name, Location_ID, Industry_Focus, Batch_Size, Program_Duration)

Investor Table

- **Transitive Dependency**: The Location attribute can also be duplicated in the Investor table.
- **Solution**: Use Location_ID in Investor to reference the Location table.
- **New Structure**:
  - **Investor Table** (updated): Investor(Investor_ID, Name, Type, Investment_Stage_Preference, Location_ID)

Investment Table

- **Transitive Dependency**: Stage is a transitive dependency if multiple investments share the same stage (e.g., Seed, Series A).
- **Solution**: Create an Investment_Stage table and reference it in the Investment table.
- **New Structure**:
  - **Investment_Stage Table**: Investment_Stage(Stage_ID, Stage_Name)
  - **Investment Table** (updated): Investment(Investment_ID, Investor_ID, Startup_ID, Amount, Date, Stage_ID)
- **Dependencies**:
  - Stage_ID → Stage_Name in the Investment_Stage table
  - Investment_ID → (Investor_ID, Startup_ID, Amount, Date, Stage_ID) in the updated Investment table

Partnership Table

- **Transitive Dependency**: Type is a transitive dependency if multiple partnerships share the same type (e.g., Strategic, R&D).
- **Solution**: Create a Partnership_Type table and reference it in the Partnership table.
- **New Structure**:
  - **Partnership_Type Table**: Partnership_Type(Type_ID, Type_Name)
  - **Partnership Table** (updated): Partnership(Partnership_ID, Startup_ID, Partner_Organization_ID, Type_ID, Start_Date, End_Date)
- **Dependencies**:
  - Type_ID → Type_Name in the Partnership_Type table
  - Partnership_ID → (Startup_ID, Partner_Organization_ID, Type_ID, Start_Date, End_Date) in the updated Partnership table

Chapter 4: Implementation of Database

1. Revised DDL Scripts

1. Startup Table

```
CREATE TABLE Startup (
  Startup_ID INT PRIMARY KEY,
  Name VARCHAR(255) NOT NULL,
  Industry VARCHAR(100),
  Stage VARCHAR(50),
  Founded_Date DATE,
  Location VARCHAR(100),
  Funding_Amount DECIMAL(15, 2) CHECK (Funding_Amount >= 0),
  Employee_Count INT CHECK (Employee_Count >= 0)
);
```

2. Founder Table

```
CREATE TABLE Founder (
  Founder_ID INT PRIMARY KEY,
  fName VARCHAR(255) NOT NULL,
  lName VARCHAR(255) NOT NULL,
  Role VARCHAR(100),
  LinkedIn_Profile VARCHAR(255),
  Startup_ID INT,
  FOREIGN KEY (Startup_ID) REFERENCES Startup(Startup_ID)
);
```

3. Investor Table

```
CREATE TABLE Investor (
  Investor_ID INT PRIMARY KEY,
  Name VARCHAR(255) NOT NULL,
  Type VARCHAR(50) NOT NULL,
  Investment_Stage_Preference VARCHAR(50),
  Location VARCHAR(100)
);
```

4. Investment Table

```
CREATE TABLE Investment (
  Investment_ID INT PRIMARY KEY,
  Investor_ID INT,
  Startup_ID INT,
  Amount DECIMAL(15, 2) CHECK (Amount >= 0),
```

```
  Date DATE,
  Stage VARCHAR(50),
  FOREIGN KEY (Investor_ID) REFERENCES Investor(Investor_ID),
  FOREIGN KEY (Startup_ID) REFERENCES Startup(Startup_ID)
);
```

5. Mentor Table

```
CREATE TABLE Mentor (
  Mentor_ID INT PRIMARY KEY,
  Name VARCHAR(255) NOT NULL,
  Expertise VARCHAR(100),
  Affiliation VARCHAR(100),
  LinkedIn_Profile VARCHAR(255)
);
```

6. Accelerator Table

```
CREATE TABLE Accelerator (
  Accelerator_ID INT PRIMARY KEY,
  Name VARCHAR(255) NOT NULL,
  Location VARCHAR(100),
  Industry_Focus VARCHAR(100),
  Batch_Size INT CHECK (Batch_Size > 0),
  Program_Duration INT CHECK (Program_Duration > 0)
);
```

7. Partnership Table

```
CREATE TABLE Partnership (
```

```
  Partnership_ID INT PRIMARY KEY,
  Startup_ID INT,
  Partner_Organization_ID INT,
  Type VARCHAR(50),
  Start_Date DATE,
  End_Date DATE CHECK (End_Date >= Start_Date),
  FOREIGN KEY (Startup_ID) REFERENCES Startup(Startup_ID),
  FOREIGN KEY (Partner_Organization_ID) REFERENCES
      Ecosystem_Resource(Resource_ID)
);
```

8. Ecosystem_Resource Table

```
CREATE TABLE Ecosystem_Resource (
  Resource_ID INT PRIMARY KEY,
  Name VARCHAR(255) NOT NULL,
  Type VARCHAR(50),
  Provider VARCHAR(100),
  Contact_Info VARCHAR(255)
);
```

9. Industry Table

```
CREATE TABLE Industry (
  Industry_ID INT PRIMARY KEY,
  Name VARCHAR(100) NOT NULL,
  Sector VARCHAR(100),
  Description TEXT
);
```

10. Mentor_Contact_Info Table

```
CREATE TABLE Mentor_Contact_Info (
  Mentor_ID INT,
  Phone_No VARCHAR(15),
  PRIMARY KEY (Mentor_ID, Phone_No),
  FOREIGN KEY (Mentor_ID) REFERENCES Mentor(Mentor_ID)
);
```

11. Accelerator_Contact_Info Table

```
CREATE TABLE Accelerator_Contact_Info (
  Accelerator_ID INT,
  Phone_No VARCHAR(15),
  PRIMARY KEY (Accelerator_ID, Phone_No),
  FOREIGN KEY (Accelerator_ID) REFERENCES Accelerator(Accelerator_ID)
);
```

12. Investor_Contact_Info Table

```
CREATE TABLE Investor_Contact_Info (
  Investor_ID INT,
  Phone_No VARCHAR(15),
  PRIMARY KEY (Investor_ID, Phone_No),
  FOREIGN KEY (Investor_ID) REFERENCES Investor(Investor_ID)
);
```

13. Startup_Mentor Table

```
CREATE TABLE Startup_Mentor (
  Startup_ID INT,
```

```
    Mentor_ID INT,
    Date_Joined DATE,
    PRIMARY KEY (Startup_ID, Mentor_ID),
    FOREIGN KEY (Startup_ID) REFERENCES Startup(Startup_ID),
    FOREIGN KEY (Mentor_ID) REFERENCES Mentor(Mentor_ID)
);
```

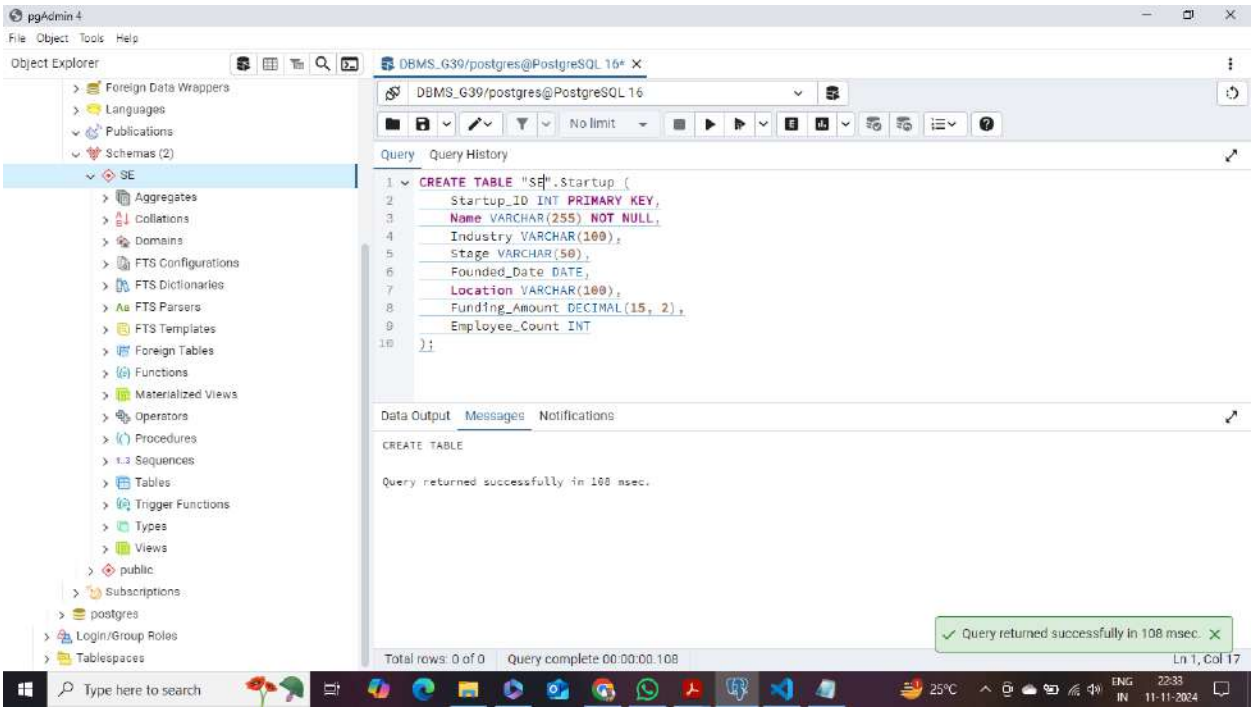
14. Startup_Accelerator Table

```
CREATE TABLE Startup_Accelerator (
    Startup_ID INT,
    Accelerator_ID INT,
    Date_Joined DATE,
    PRIMARY KEY (Startup_ID, Accelerator_ID),
    FOREIGN KEY (Startup_ID) REFERENCES Startup(Startup_ID),
    FOREIGN KEY (Accelerator_ID) REFERENCES Accelerator(Accelerator_ID)
);
```

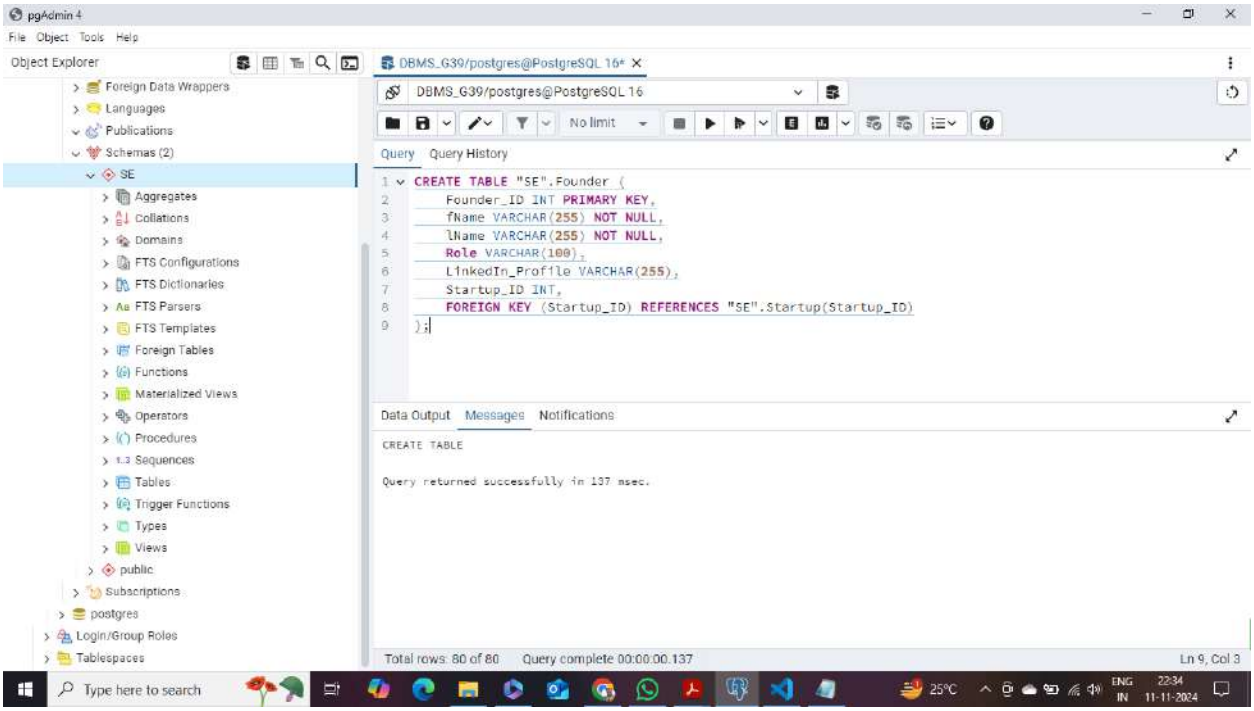
2. Database Population

CREATE Table

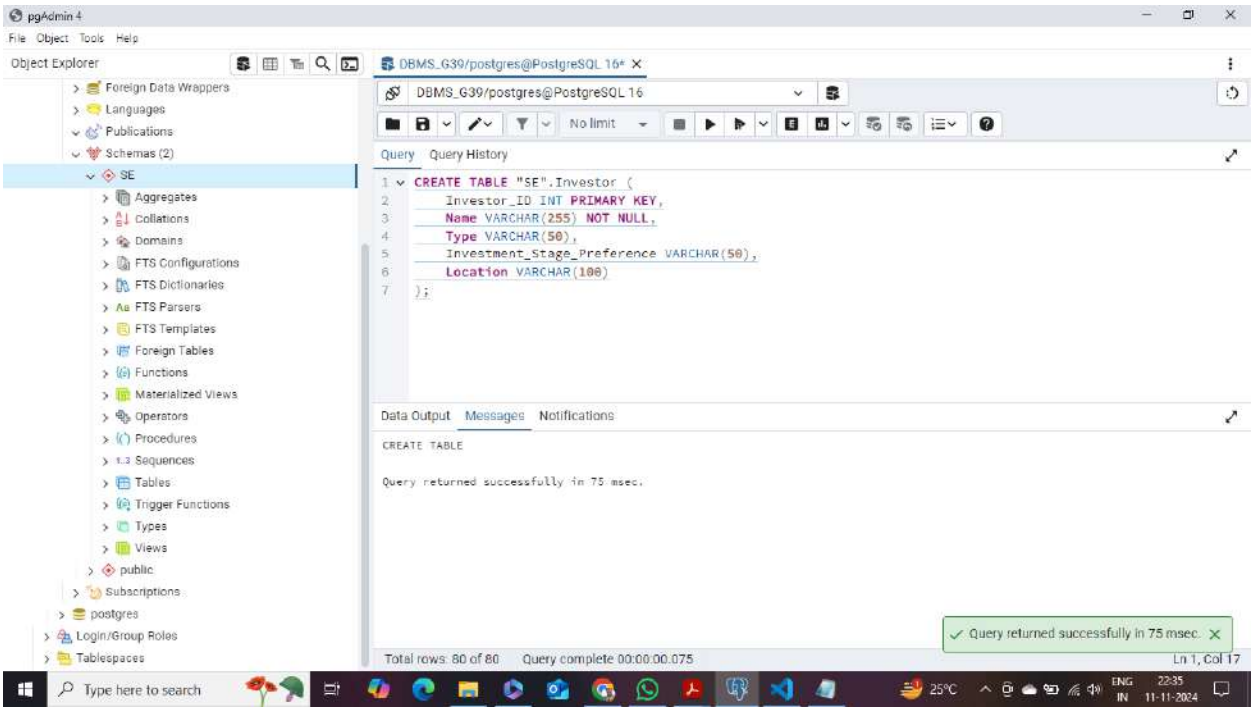
Startup Table



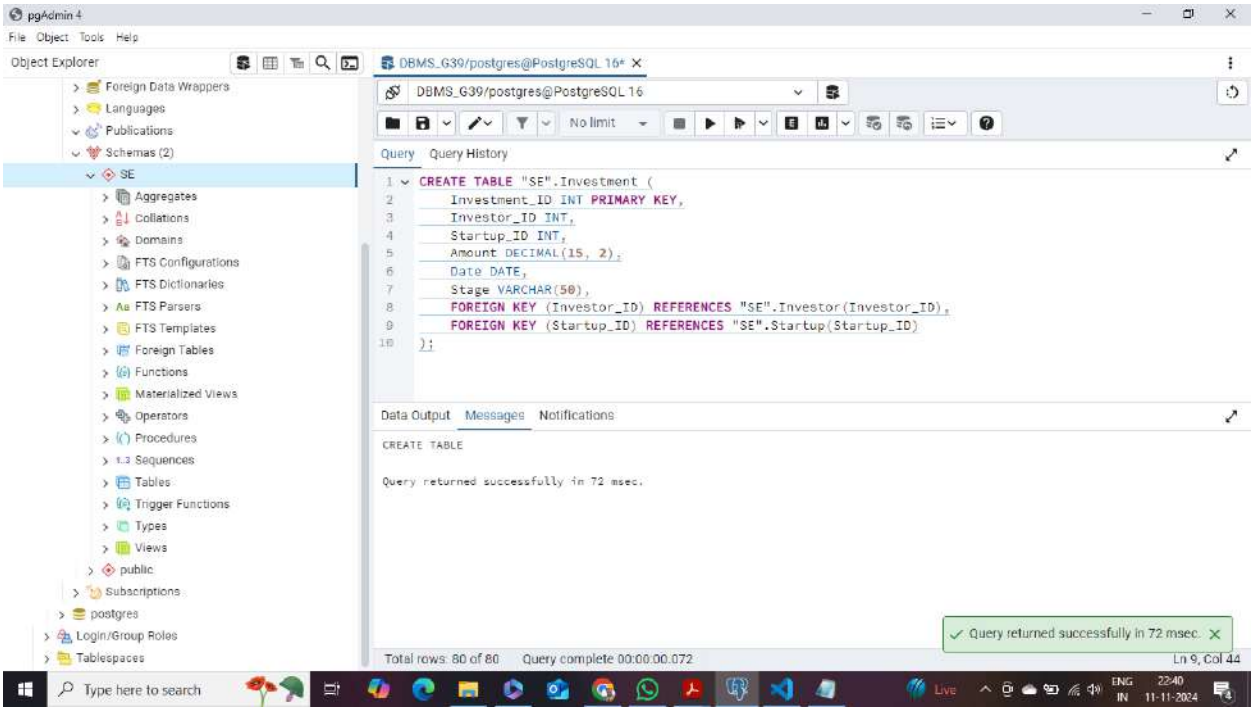
Founder Table



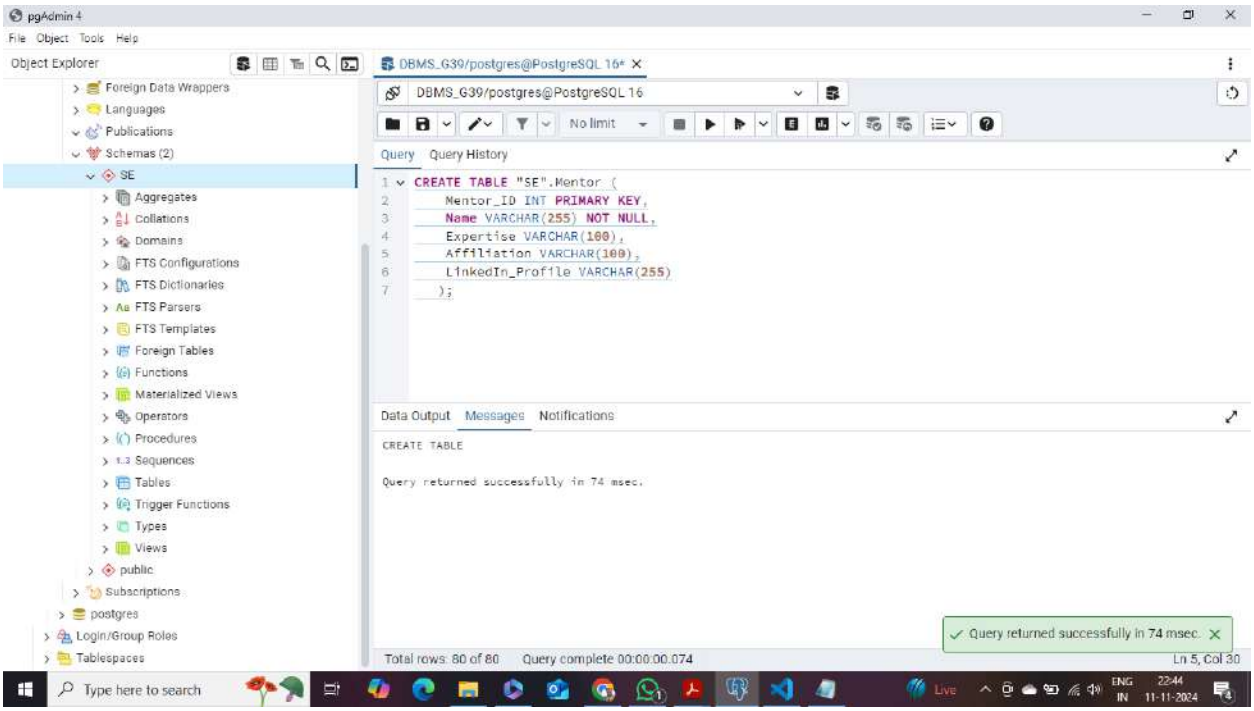
Investor Table



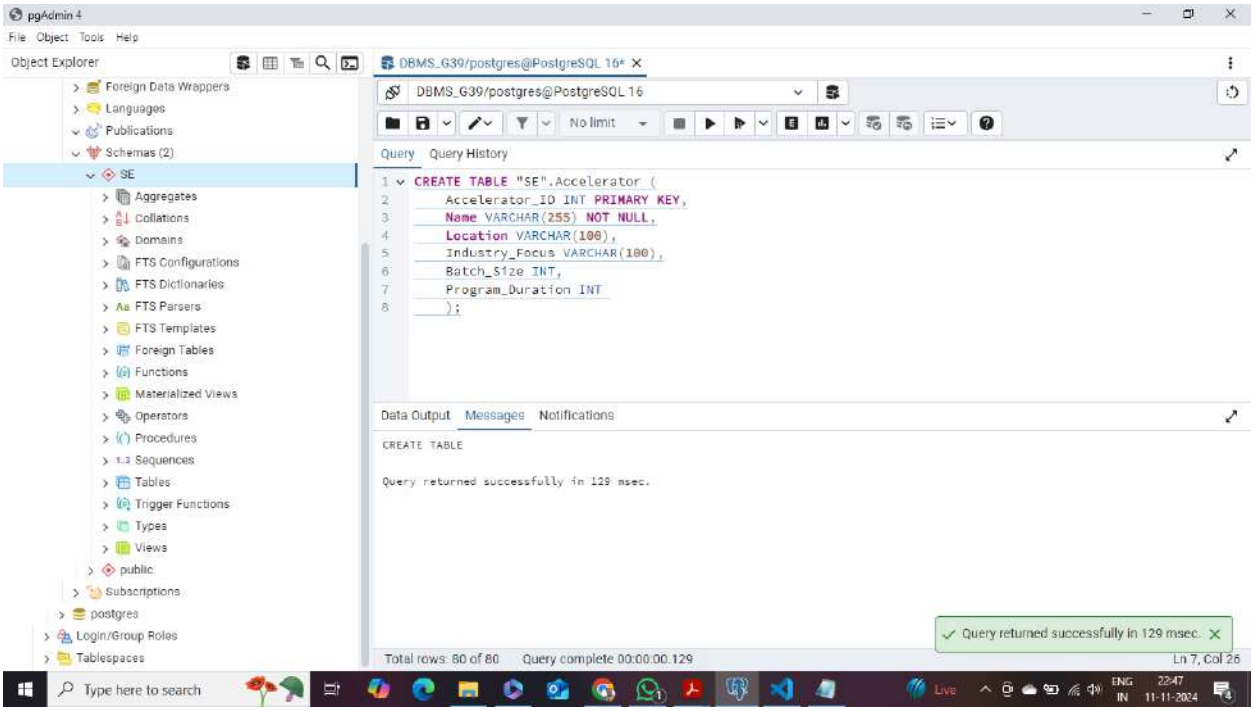
Investment Table



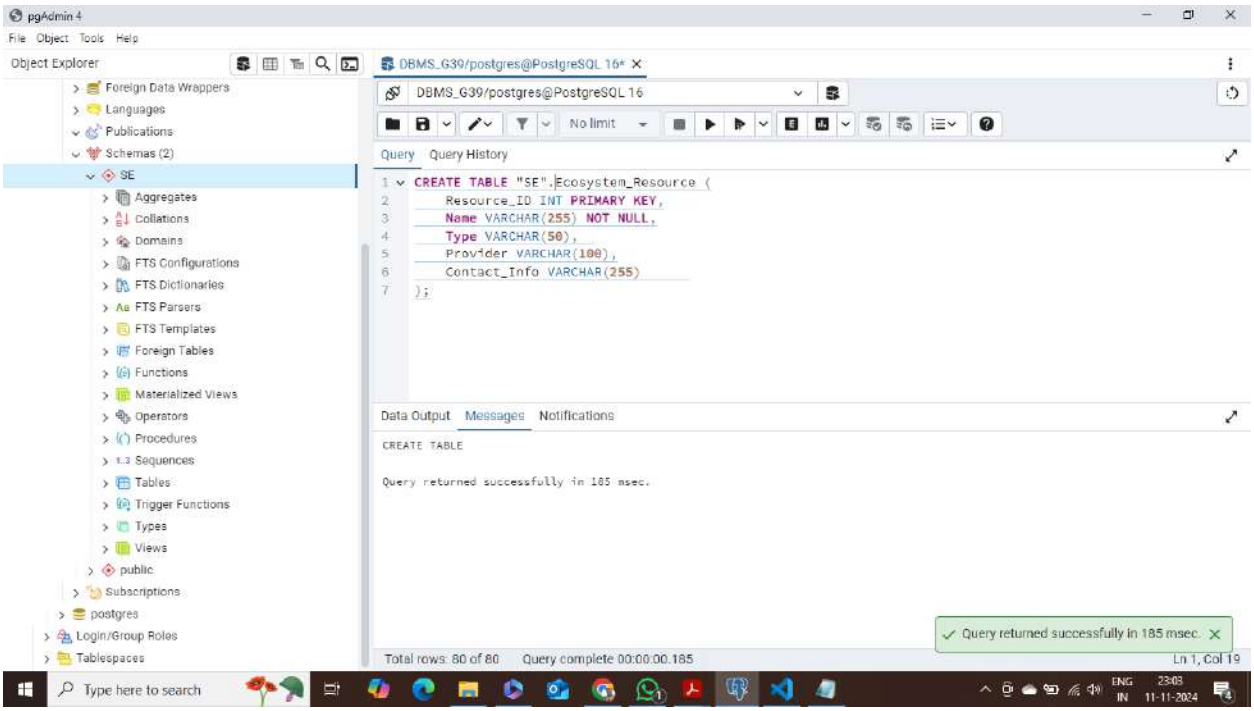
Mentor Table



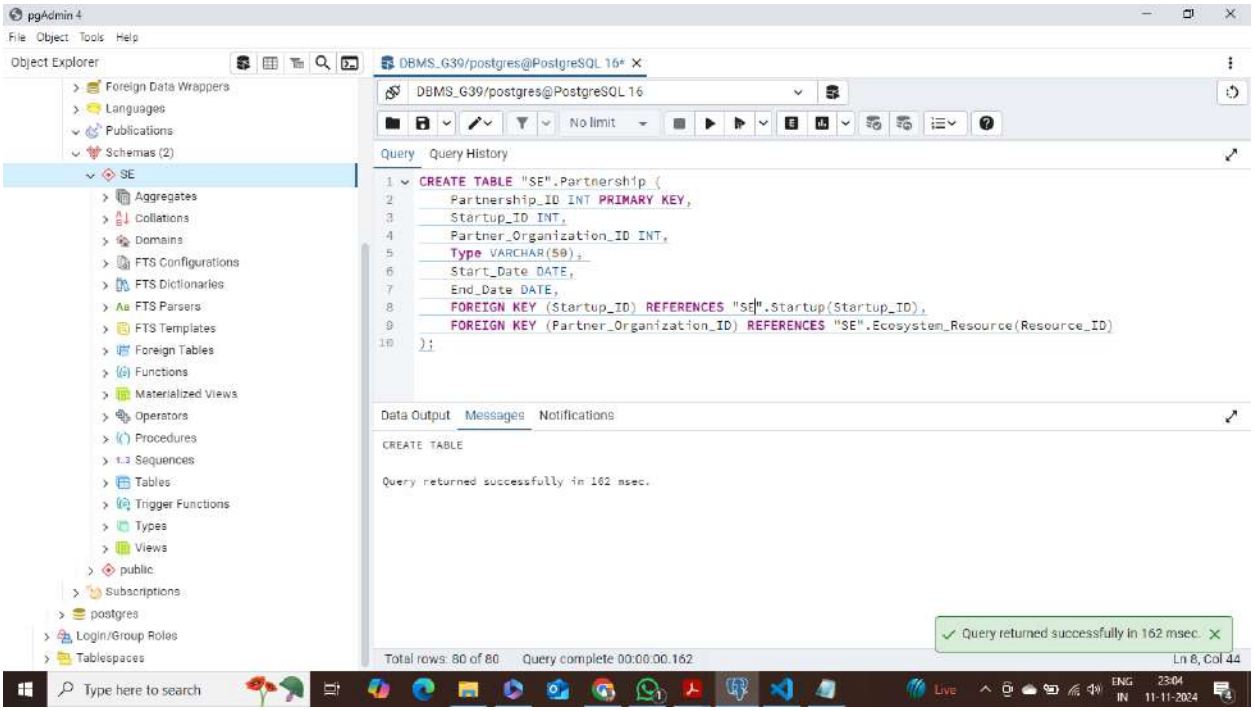
Accelerator Table



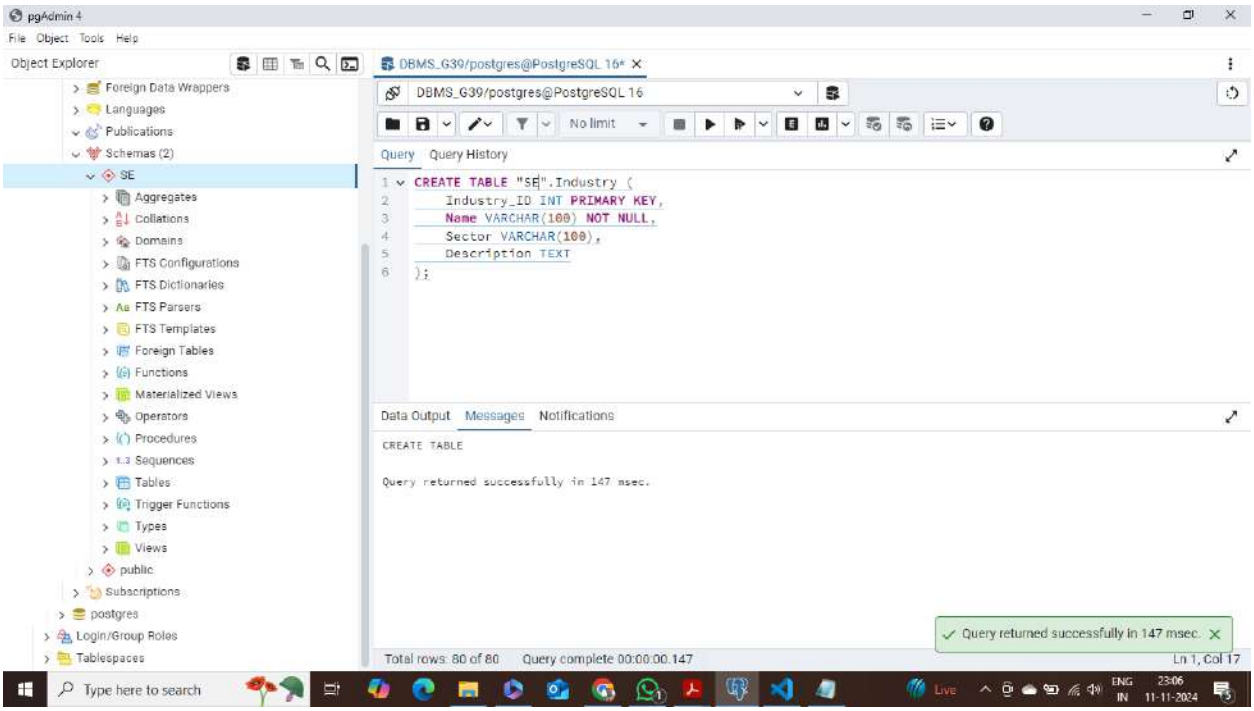
Ecosystem_Resource Table



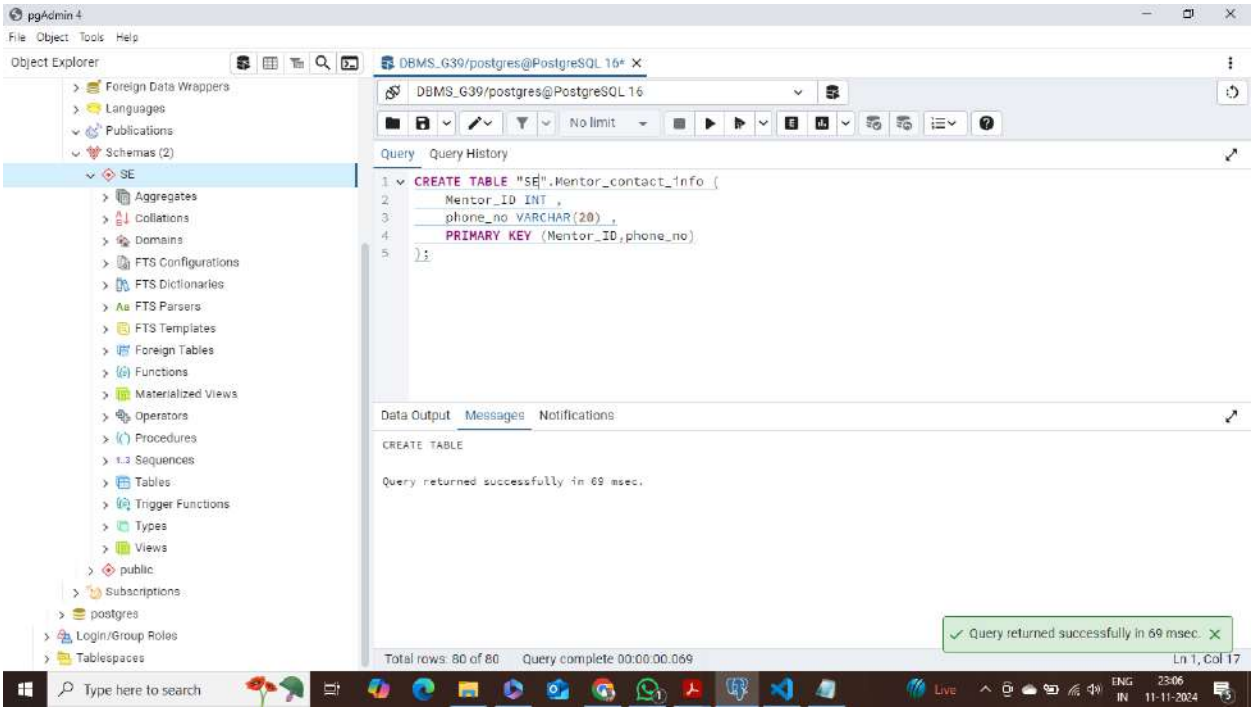
Partnership Table



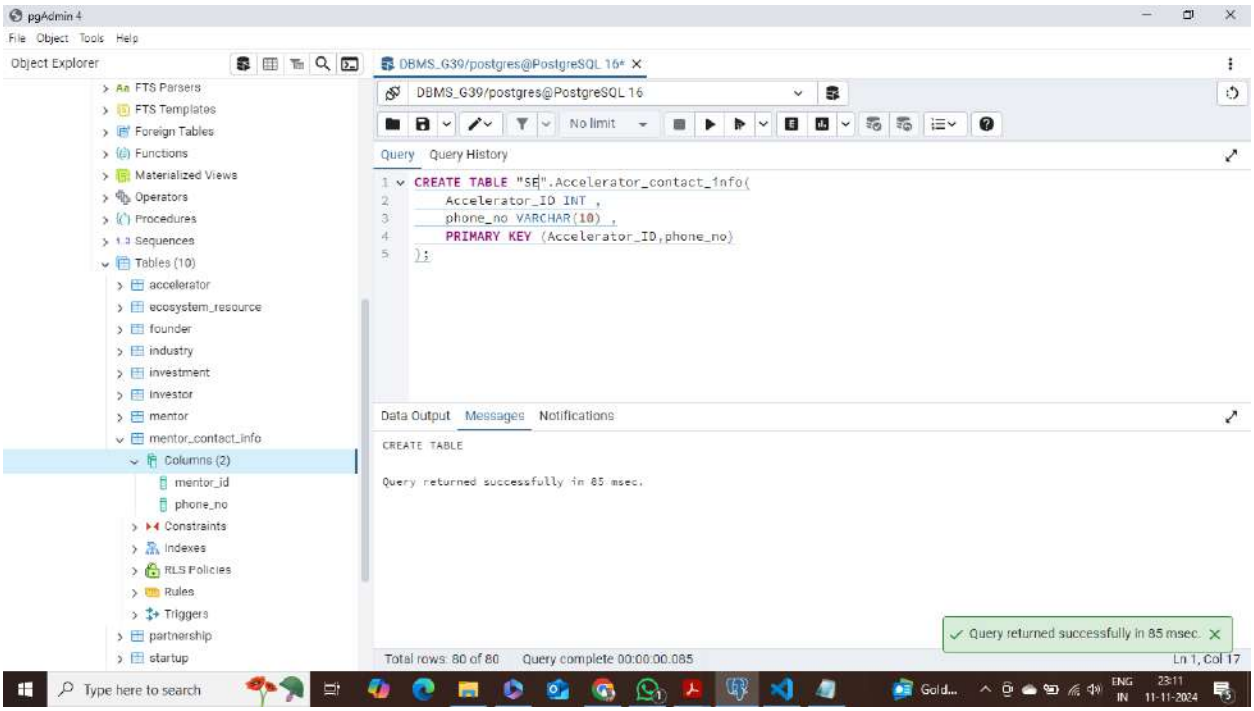
Industry Table



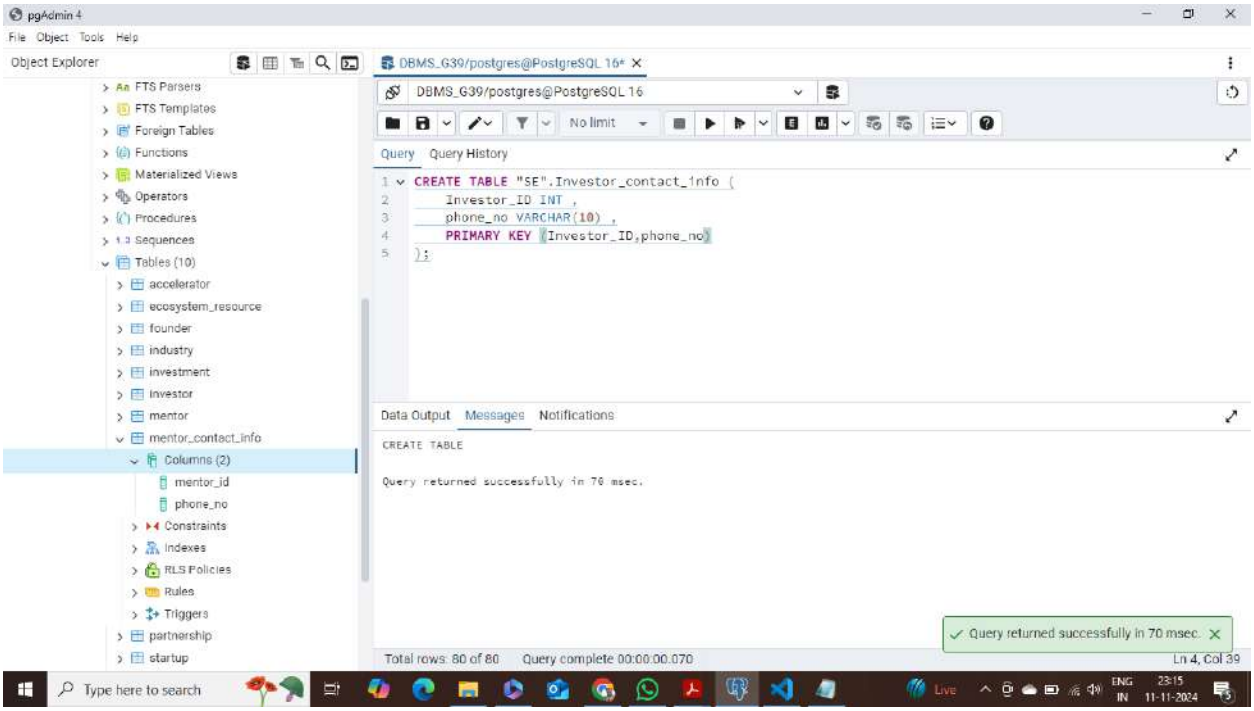
Mentor_Contact_Info Table



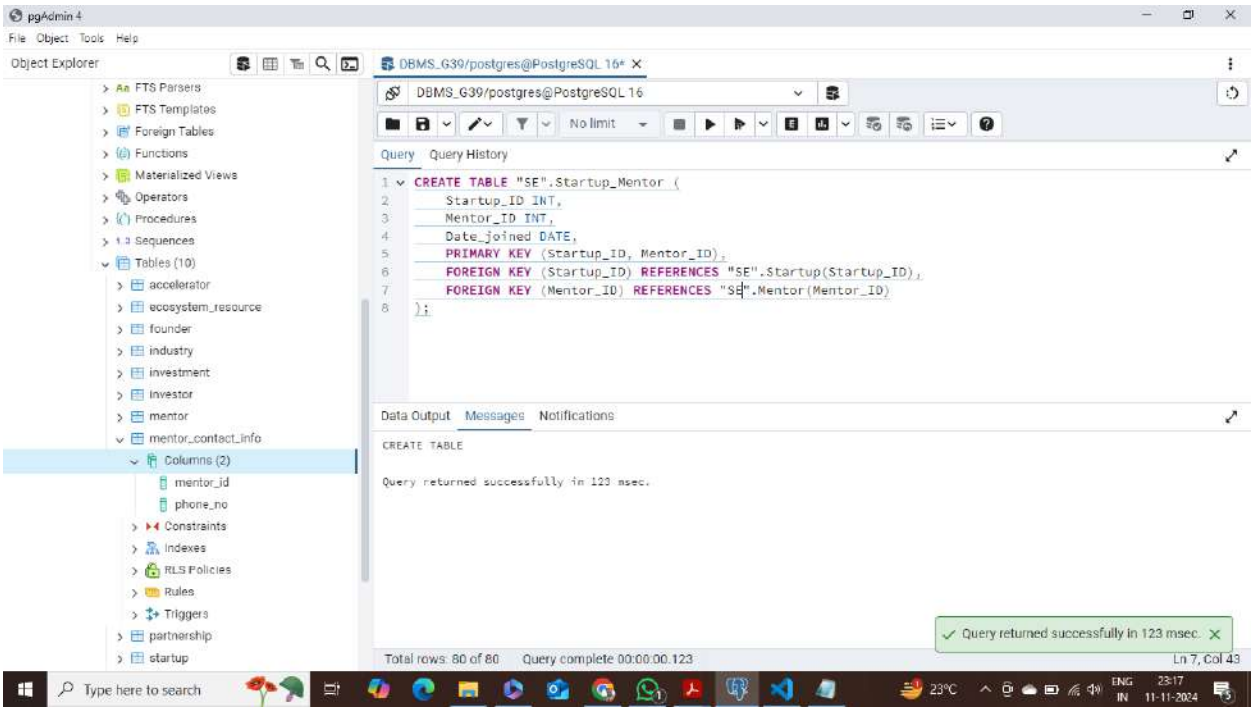
Accelerator_Contact_Info Table



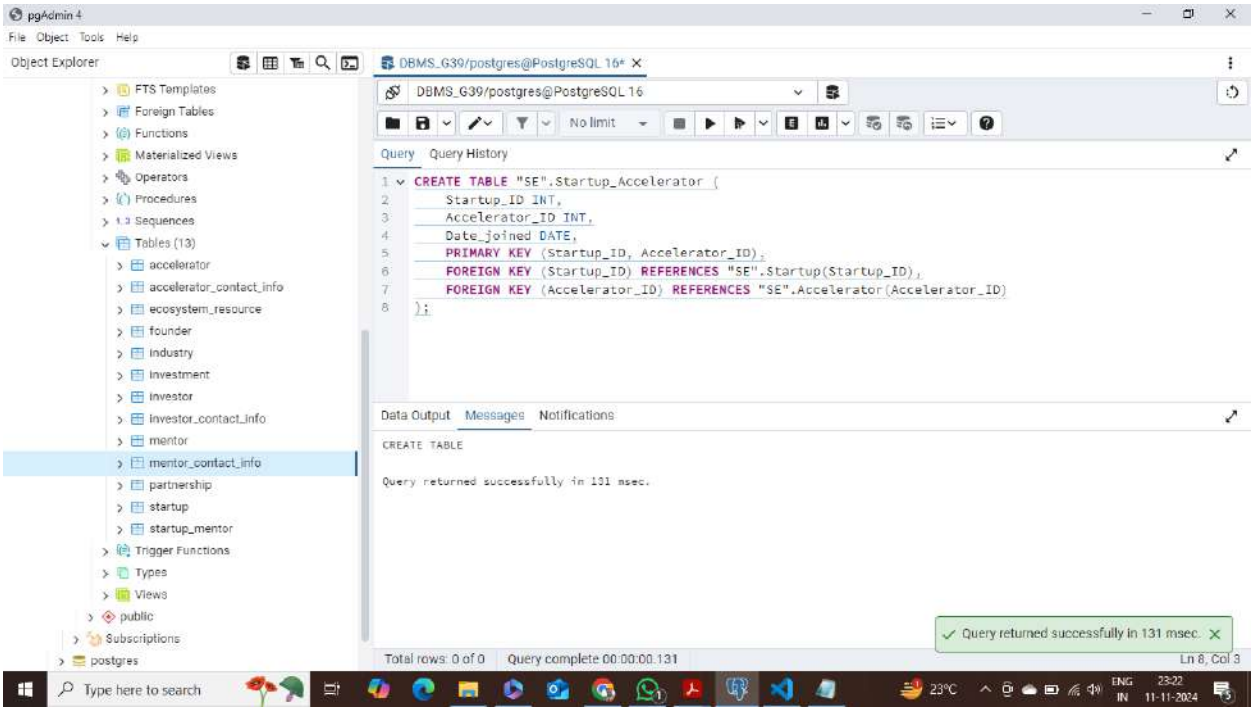
Investor_Contact_Info Table



Startup_Mentor Table

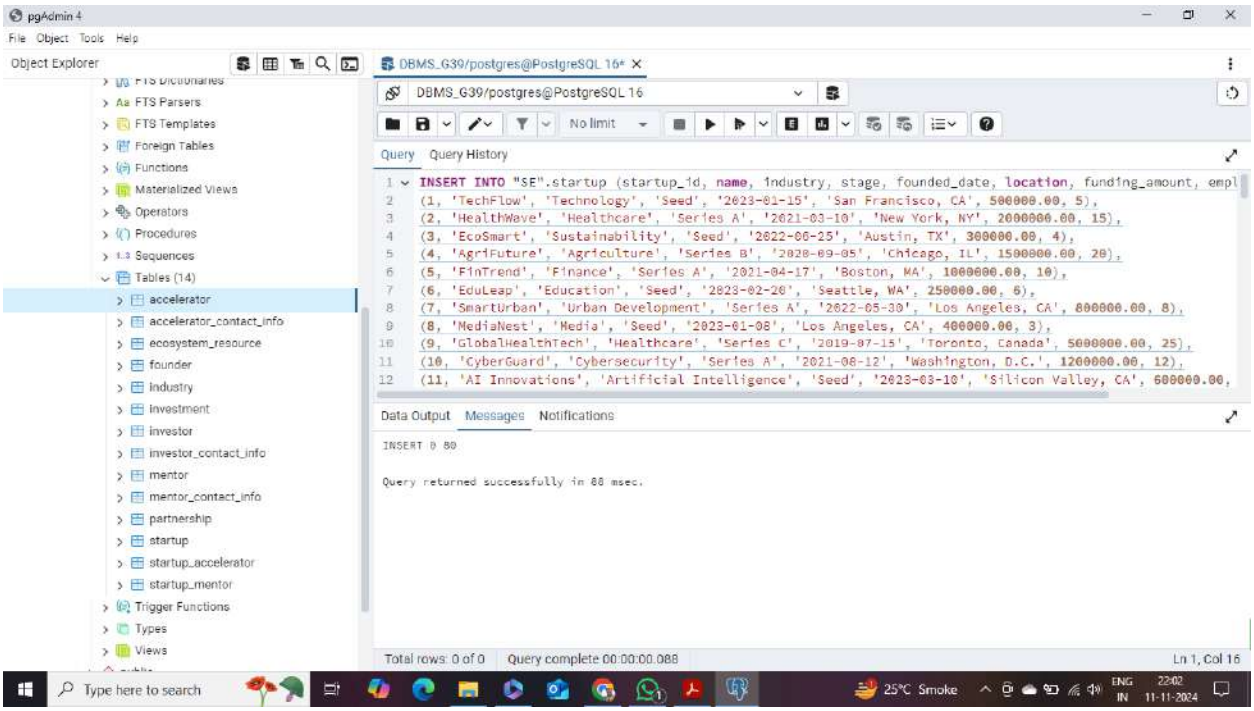


Startup_Accelerator Table



INSERT Statements

Startup Table



INSERT INTO startup (startup_id, name, industry, stage, founded_date, location, funding_amount, employee_count) VALUES

(1, 'TechFlow', 'Technology', 'Seed', '2023-01-15', 'San Francisco, CA', 500000.00, 5),

(2, 'HealthWave', 'Healthcare', 'Series A', '2021-03-10', 'New York, NY', 2000000.00, 15),

(3, 'EcoSmart', 'Sustainability', 'Seed', '2022-06-25', 'Austin, TX', 300000.00, 4),

(4, 'AgriFuture', 'Agriculture', 'Series B', '2020-09-05', 'Chicago, IL', 1500000.00, 20),

(5, 'FinTrend', 'Finance', 'Series A', '2021-04-17', 'Boston, MA', 1000000.00, 10),

(6, 'EduLeap', 'Education', 'Seed', '2023-02-20', 'Seattle, WA', 250000.00, 6),

(7, 'SmartUrban', 'Urban Development', 'Series A', '2022-05-30', 'Los Angeles, CA', 800000.00, 8),

(8, 'MediaNest', 'Media', 'Seed', '2023-01-08', 'Los Angeles, CA', 400000.00, 3),

(9, 'GlobalHealthTech', 'Healthcare', 'Series C', '2019-07-15', 'Toronto, Canada', 5000000.00, 25),

(10, 'CyberGuard', 'Cybersecurity', 'Series A', '2021-08-12', 'Washington, D.C.', 1200000.00, 12),

(11, 'AI Innovations', 'Artificial Intelligence', 'Seed', '2023-03-10', 'Silicon Valley, CA', 600000.00, 7),

(12, 'FoodieTech', 'Food Technology', 'Series A', '2020-11-21', 'San Diego, CA', 900000.00, 9),

(13, 'IoT Connect', 'Internet of Things', 'Seed', '2023-04-05', 'New York, NY', 350000.00, 5),

(14, 'Space Ventures', 'Aerospace', 'Series B', '2019-10-30', 'Houston, TX', 2500000.00, 15),

(15, 'EcomMagic', 'E-commerce', 'Series A', '2021-05-02', 'Miami, FL', 850000.00, 10),

(16, 'CreativeMinds', 'Media & Entertainment', 'Seed', '2023-02-15', 'Los Angeles, CA', 200000.00, 4),

(17, 'Blockchain Experts', 'Blockchain', 'Series A', '2022-06-17', 'Singapore', 3000000.00, 20),

(18, 'VR Experiences', 'Virtual Reality', 'Seed', '2023-03-28', 'Los Angeles, CA', 500000.00, 6),

(19, 'Digital Health Solutions', 'Healthcare', 'Series B', '2020-08-14', 'Berlin, Germany', 1800000.00, 14),

(20, 'Impact Ventures', 'Social Impact', 'Seed', '2023-05-01', 'London, UK', 400000.00, 5),

(21, 'TravelGenie', 'Travel & Tourism', 'Series A', '2021-07-22', 'Barcelona, Spain', 700000.00, 8),

(22, 'FinBuddy', 'Finance', 'Seed', '2022-12-05', 'Dublin, Ireland', 250000.00, 3),

(23, 'CleanEnergy Solutions', 'Clean Technology', 'Series A', '2020-09-10', 'Vancouver, Canada', 1300000.00, 11),

(24, 'Startup Hub', 'Various', 'Seed', '2023-01-20', 'Austin, TX', 300000.00, 6),

(25, 'FashionTech', 'Fashion', 'Series A', '2021-04-12', 'Paris, France', 600000.00, 5),

(26, 'TechNest', 'Technology', 'Seed', '2023-02-22', 'Tokyo, Japan', 750000.00, 9),

(27, 'EduTech Innovations', 'Education', 'Series B', '2021-05-30', 'Melbourne, Australia', 1200000.00, 12),

(28, 'Wearable Innovations', 'Wearables', 'Seed', '2023-04-15', 'Los Angeles, CA', 400000.00, 4),

(29, 'SportsConnect', 'Sports', 'Series A', '2022-11-02', 'New York, NY', 900000.00, 10),

(30, 'Mobility Solutions', 'Transportation', 'Seed', '2023-03-12', 'San Francisco, CA', 600000.00, 7),

(31, 'Robotics Innovations', 'Robotics', 'Series A', '2021-07-18', 'Bangalore, India', 1500000.00, 15),

(32, 'Telecom Innovations', 'Telecommunications', 'Seed', '2022-10-05', 'Chicago, IL', 800000.00, 8),

(33, 'GameTech', 'Gaming', 'Series A', '2021-09-30', 'Seattle, WA', 1100000.00, 9),

(34, 'SustainableLiving', 'Sustainability', 'Seed', '2023-01-11', 'Toronto, Canada', 450000.00, 6),

(35, 'MediaSpark', 'Media', 'Series B', '2020-12-01', 'San Diego, CA', 2000000.00, 15),

(36, 'BioInnovations', 'Biotechnology', 'Seed', '2023-05-10', 'Boston, MA', 300000.00, 4),

(37, 'SmartHome Solutions', 'Home Automation', 'Series A', '2021-08-20', 'San Francisco, CA', 950000.00, 10),

(38, 'AgriTech Hub', 'Agriculture', 'Seed', '2023-04-30', 'Atlanta, GA', 500000.00, 5),

(39, 'Impact Accelerator', 'Social Entrepreneurship', 'Series B', '2019-05-15', 'Amsterdam, Netherlands', 2200000.00, 20),

(40, 'VR/AR Innovations', 'Virtual/Augmented Reality', 'Seed', '2023-03-07', 'Los Angeles, CA', 350000.00, 7),

(41, 'Investment Network', 'Finance', 'Series A', '2021-11-12', 'New York, NY', 1400000.00, 12),

(42, 'HealthTech Innovators', 'Healthcare', 'Seed', '2022-10-22', 'Dublin, Ireland', 300000.00, 8),

(43, 'TechGlobal', 'Technology', 'Series A', '2020-06-19', 'Singapore', 1800000.00, 14),

(44, 'ElderCare Innovations', 'Healthcare', 'Seed', '2023-02-28', 'Sydney, Australia', 400000.00, 5),

(45, 'SmartFashion', 'Fashion', 'Series B', '2021-03-05', 'Paris, France', 1000000.00, 10),

(46, 'EnergyHub', 'Energy', 'Seed', '2022-09-17', 'Berlin, Germany', 600000.00, 6),

(47, 'PetCare Innovations', 'Pets', 'Series A', '2021-08-30', 'Austin, TX', 800000.00, 9),

(48, 'Youth Ventures', 'Social Impact', 'Seed', '2023-01-25', 'Mumbai, India', 500000.00, 3),

(49, 'AI Accelerator', 'Artificial Intelligence', 'Series B', '2021-06-14', 'Los Angeles, CA', 3000000.00, 20),

(50, 'FinTech Pioneers', 'Finance', 'Seed', '2023-04-12', 'New York, NY', 350000.00, 11),

(51, 'InnovateTech', 'Technology', 'Series A', '2022-11-21', 'San Francisco, CA', 1300000.00, 12),

(52, 'HealthTech Solutions', 'Healthcare', 'Seed', '2023-05-15', 'Toronto, Canada', 700000.00, 9),

(53, 'SmartEnergy', 'Energy', 'Seed', '2023-02-18', 'Los Angeles, CA', 400000.00, 5),

(54, 'GreenFuture', 'Clean Technology', 'Series A', '2021-10-04', 'New York, NY', 1200000.00, 10),

(55, 'EducationPlus', 'Education', 'Seed', '2022-12-25', 'Sydney, Australia', 600000.00, 7),

(56, 'Health4All', 'Healthcare', 'Series C', '2018-05-12', 'Toronto, Canada', 8000000.00, 60),

(57, 'GoGreen', 'Sustainability', 'Series A', '2019-07-25', 'Paris, France', 2000000.00, 25),

(58, 'FinGen', 'Finance', 'Seed', '2022-02-18', 'Dublin, Ireland', 300000.00, 5),

(59, 'CleanAir Tech', 'Clean Technology', 'Series B', '2020-10-05', 'San Francisco, CA', 2000000.00, 40),

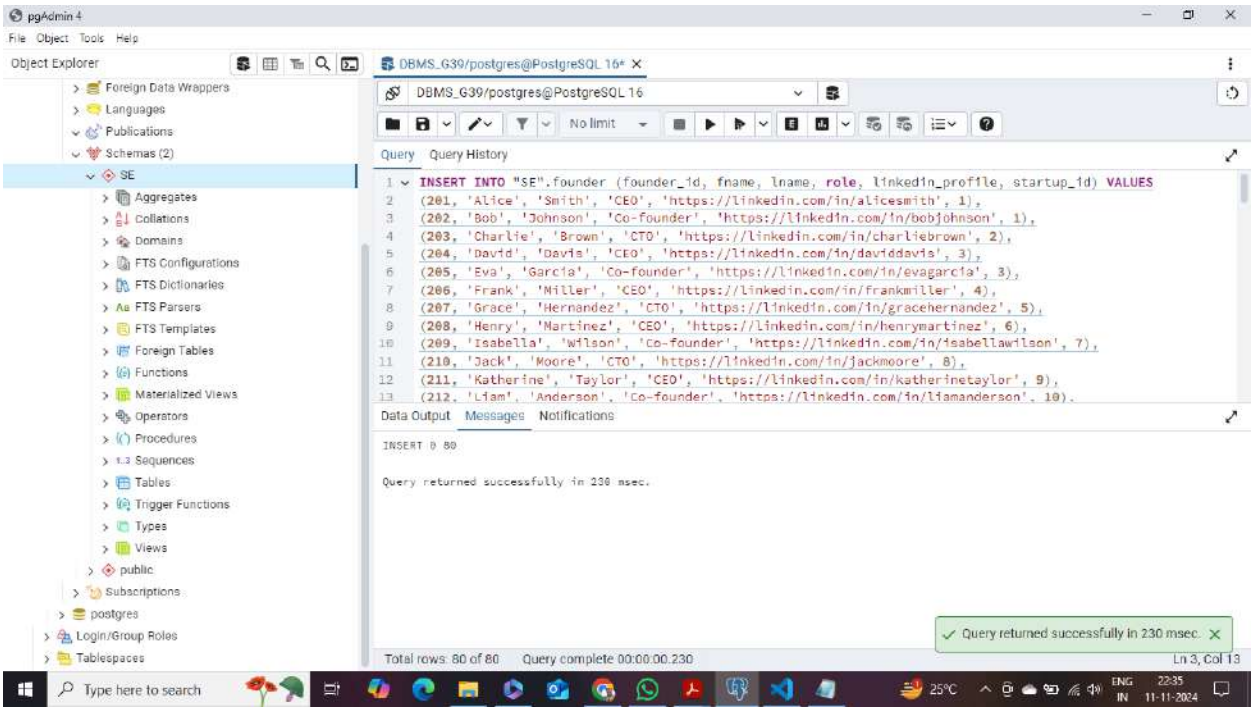
(60, 'EduQuest', 'Education', 'Seed', '2023-03-15', 'New York, NY', 450000.00, 10),

(61, 'WellnessSpace', 'Healthcare', 'Series A', '2021-09-30', 'Chicago, IL', 1000000.00, 30),

(62, 'RetailX', 'Retail', 'Seed', '2023-01-22', 'Miami, FL', 600000.00, 15),

```
(63, 'SpaceXplore', 'Aerospace', 'Series C', '2018-11-30', 'Austin, TX', 7000000.00, 100),
(64, 'FoodInnovate', 'Food Technology', 'Seed', '2023-05-25', 'Los Angeles, CA', 550000.00, 8),
(65, 'RoboAutomate', 'Robotics', 'Series A', '2020-07-22', 'San Francisco, CA', 1200000.00, 20),
(66, 'EduInnovate', 'Education', 'Seed', '2023-03-02', 'New York, NY', 350000.00, 5),
(67, 'TravelAssist', 'Travel & Tourism', 'Series B', '2019-09-10', 'Barcelona, Spain', 2500000.00, 45),
(68, 'CyberDefend', 'Cybersecurity', 'Seed', '2023-02-01', 'Los Angeles, CA', 700000.00, 8),
(69, 'SmartFinance', 'Finance', 'Series A', '2020-08-15', 'New York, NY', 1500000.00, 35),
(70, 'GreenTech Solutions', 'Clean Technology', 'Seed', '2022-01-25', 'Berlin, Germany', 800000.00,
12),
(71, 'FitWell', 'Wellness', 'Series B', '2019-11-01', 'Chicago, IL', 1300000.00, 30),
(72, 'AIAssist', 'Artificial Intelligence', 'Seed', '2023-04-08', 'San Francisco, CA', 550000.00, 15),
(73, 'SmartGrid', 'Energy', 'Series C', '2018-07-10', 'Los Angeles, CA', 6000000.00, 50),
(74, 'EcoUrban', 'Urban Development', 'Seed', '2022-09-14', 'New York, NY', 500000.00, 10),
(75, 'AgroImpact', 'Agriculture', 'Series B', '2020-06-25', 'Austin, TX', 2100000.00, 40),
(76, 'MediaConnect', 'Media', 'Seed', '2023-02-16', 'San Diego, CA', 300000.00, 5),
(77, 'TechBridge', 'Technology', 'Series A', '2021-10-05', 'Silicon Valley, CA', 1000000.00, 18),
(78, 'GreenFinance', 'Finance', 'Seed', '2023-01-15', 'London, UK', 550000.00, 7),
(79, 'Biotech Innovate', 'Biotechnology', 'Series A', '2021-03-10', 'Boston, MA', 1250000.00, 12),
(80, 'TravelTech', 'Travel & Tourism', 'Seed', '2023-05-18', 'San Francisco, CA', 600000.00, 10);
```

Founder Table



INSERT INTO founder (founder_id, fname, lname, role, linkedin_profile, startup_id) VALUES

(201, 'Alice', 'Smith', 'CEO', 'https://linkedin.com/in/alicesmith', 1),

(202, 'Bob', 'Johnson', 'Co-founder', 'https://linkedin.com/in/bobjohnson', 1),

(203, 'Charlie', 'Brown', 'CTO', 'https://linkedin.com/in/charliebrown', 2),

(204, 'David', 'Davis', 'CEO', 'https://linkedin.com/in/daviddavis', 3),

(205, 'Eva', 'Garcia', 'Co-founder', 'https://linkedin.com/in/evagarcia', 3),

(206, 'Frank', 'Miller', 'CEO', 'https://linkedin.com/in/frankmiller', 4),

(207, 'Grace', 'Hernandez', 'CTO', 'https://linkedin.com/in/gracehernandez', 5),

(208, 'Henry', 'Martinez', 'CEO', 'https://linkedin.com/in/henrymartinez', 6),

(209, 'Isabella', 'Wilson', 'Co-founder', 'https://linkedin.com/in/isabellawilson', 7),

(210, 'Jack', 'Moore', 'CTO', 'https://linkedin.com/in/jackmoore', 8),

(211, 'Katherine', 'Taylor', 'CEO', 'https://linkedin.com/in/katherinetaylor', 9),

(212, 'Liam', 'Anderson', 'Co-founder', 'https://linkedin.com/in/liamanderson', 10),

(213, 'Mia', 'Thomas', 'CTO', 'https://linkedin.com/in/miathomas', 11),

(214, 'Noah', 'Jackson', 'CEO', 'https://linkedin.com/in/noahjackson', 12),

(215, 'Olivia', 'White', 'Co-founder', 'https://linkedin.com/in/oliviawhite', 13),

(216, 'Peter', 'Harris', 'CTO', 'https://linkedin.com/in/peterharris', 14),

(217, 'Quinn', 'Clark', 'CEO', 'https://linkedin.com/in/quinnclark', 15),

(218, 'Rita', 'Lewis', 'Co-founder', 'https://linkedin.com/in/ritalewis', 16),

(219, 'Sam', 'Robinson', 'CTO', 'https://linkedin.com/in/samrobinson', 17),

(220, 'Tina', 'Walker', 'CEO', 'https://linkedin.com/in/tinawalker', 18),

(221, 'Ulysses', 'Hall', 'Co-founder', 'https://linkedin.com/in/ulysseshall', 19),

(222, 'Vera', 'Young', 'CTO', 'https://linkedin.com/in/verayoung', 20),

(223, 'Will', 'King', 'CEO', 'https://linkedin.com/in/willking', 21),

(224, 'Xena', 'Scott', 'Co-founder', 'https://linkedin.com/in/xenascott', 22),

(225, 'Yara', 'Green', 'CTO', 'https://linkedin.com/in/yaragreen', 23),

(226, 'Zane', 'Adams', 'CEO', 'https://linkedin.com/in/zaneadams', 24),

(227, 'Anita', 'Nelson', 'Co-founder', 'https://linkedin.com/in/anitanelson', 25),

(228, 'Brian', 'Carter', 'CTO', 'https://linkedin.com/in/briancarter', 26),

(229, 'Cindy', 'Mitchell', 'CEO', 'https://linkedin.com/in/cindymitchell', 27),

(230, 'Daniel', 'Perez', 'Co-founder', 'https://linkedin.com/in/danielperez', 28),

(231, 'Elena', 'Roberts', 'CTO', 'https://linkedin.com/in/elenaroberts', 29),

(232, 'Felix', 'Turner', 'CEO', 'https://linkedin.com/in/felixturner', 30),

(233, 'Gina', 'Phillips', 'Co-founder', 'https://linkedin.com/in/ginaphillips', 31),

(234, 'Henry', 'Campbell', 'CTO', 'https://linkedin.com/in/henrycampbell', 32),

(235, 'Ivy', 'Parker', 'CEO', 'https://linkedin.com/in/ivymparker', 33),

(236, 'James', 'Evans', 'Co-founder', 'https://linkedin.com/in/jamesevans', 34),

(237, 'Kara', 'Edwards', 'CTO', 'https://linkedin.com/in/karaedwards', 35),

(238, 'Leo', 'Stewart', 'CEO', 'https://linkedin.com/in/leostewart', 36),

(239, 'Maya', 'Morris', 'Co-founder', 'https://linkedin.com/in/mayamorris', 37),

(240, 'Nina', 'Murphy', 'CTO', 'https://linkedin.com/in/ninamurphy', 38),

(241, 'Oscar', 'Cook', 'CEO', 'https://linkedin.com/in/oscarcook', 39),

(242, 'Paula', 'Rogers', 'Co-founder', 'https://linkedin.com/in/paularogers', 40),

(243, 'Quentin', 'Reed', 'CTO', 'https://linkedin.com/in/quentinreed', 41),

(244, 'Rosa', 'Bell', 'CEO', 'https://linkedin.com/in/rosabell', 42),

(245, 'Steve', 'Garcia', 'Co-founder', 'https://linkedin.com/in/stevegarcia', 43),

(246, 'Tara', 'Long', 'CTO', 'https://linkedin.com/in/taralong', 44),

(247, 'Uma', 'Ward', 'CEO', 'https://linkedin.com/in/umaward', 45),

(248, 'Victor', 'Russell', 'Co-founder', 'https://linkedin.com/in/victorrussell', 46),

(249, 'Wendy', 'Foster', 'CTO', 'https://linkedin.com/in/wendyfoster', 47),

(250, 'Xander', 'Sanders', 'CEO', 'https://linkedin.com/in/xandersanders', 48),

(251, 'Yasmine', 'Fleming', 'Co-founder', 'https://linkedin.com/in/yasminefleming', 49),

(252, 'Zach', 'Stone', 'CTO', 'https://linkedin.com/in/zachstone', 50),

(253, 'Alan', 'Bennett', 'CEO', 'https://linkedin.com/in/alanbennett', 51),

(254, 'Brenda', 'Hodges', 'Co-founder', 'https://linkedin.com/in/brendahodges', 51),

(255, 'Carl', 'Stevens', 'CTO', 'https://linkedin.com/in/carlstevens', 52),

(256, 'Diana', 'Cook', 'CEO', 'https://linkedin.com/in/dianacook', 53),

(257, 'Edward', 'Ford', 'Co-founder', 'https://linkedin.com/in/edwardford', 53),

(258, 'Fiona', 'Bishop', 'CTO', 'https://linkedin.com/in/fionabishop', 54),

(259, 'George', 'Fisher', 'CEO', 'https://linkedin.com/in/georgefisher', 55),

(260, 'Holly', 'Cross', 'Co-founder', 'https://linkedin.com/in/hollycross', 55),

(261, 'Ian', 'Ellison', 'CTO', 'https://linkedin.com/in/ianellison', 56),

(262, 'Jessica', 'Brock', 'CEO', 'https://linkedin.com/in/jessicabrock', 57),

(263, 'Kevin', 'Chavez', 'Co-founder', 'https://linkedin.com/in/kevincchavez', 57),

(264, 'Laura', 'Owens', 'CTO', 'https://linkedin.com/in/lauraowens', 58),

(265, 'Mark', 'Larson', 'CEO', 'https://linkedin.com/in/marklarson', 59),

(266, 'Nadia', 'Kelley', 'Co-founder', 'https://linkedin.com/in/nadiakelley', 59),

(267, 'Oscar', 'Wagner', 'CTO', 'https://linkedin.com/in/oscarwagner', 60),

(268, 'Paige', 'Dixon', 'CEO', 'https://linkedin.com/in/paigedixon', 61),

(269, 'Quinn', 'Snyder', 'Co-founder', 'https://linkedin.com/in/quinnsnyder', 61),

(270, 'Ryan', 'Peters', 'CTO', 'https://linkedin.com/in/ryanpeters', 62),

(271, 'Sophie', 'George', 'CEO', 'https://linkedin.com/in/sophiegeorge', 63),

(272, 'Tom', 'Mason', 'Co-founder', 'https://linkedin.com/in/tommason', 63),

(273, 'Uma', 'George', 'CTO', 'https://linkedin.com/in/umageorge', 64),

(274, 'Violet', 'Lowe', 'CEO', 'https://linkedin.com/in/violetlowe', 65),

(275, 'Will', 'Ray', 'Co-founder', 'https://linkedin.com/in/willray', 66),

(276, 'Xena', 'Bryant', 'CTO', 'https://linkedin.com/in/xenabryant', 67),

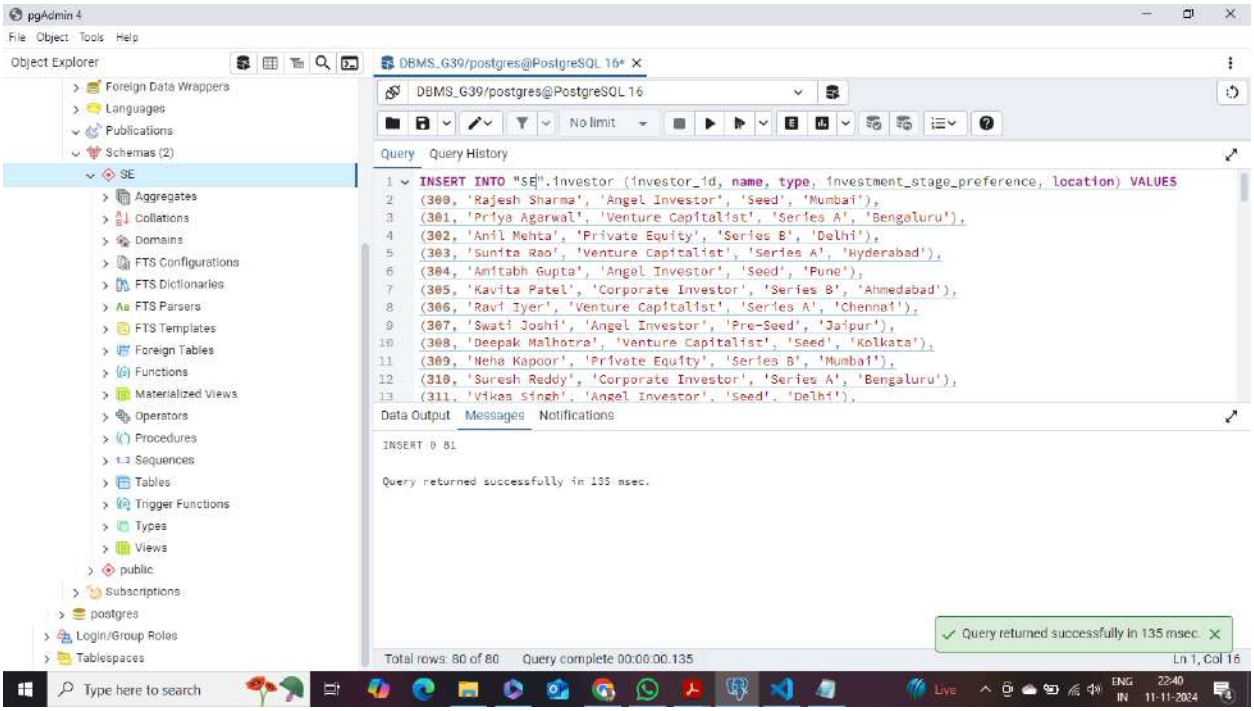
(277, 'Yara', 'Fernandez', 'CEO', 'https://linkedin.com/in/yarafrnandez', 68),

(278, 'Zoe', 'Bradley', 'Co-founder', 'https://linkedin.com/in/zoebradley', 68),

(279, 'Aaron', 'Fitzgerald', 'CTO', 'https://linkedin.com/in/aaronfitzgerald', 69),

(280, 'Beth', 'Leonard', 'CEO', 'https://linkedin.com/in/bethleonard', 70);

Investor Table



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(300, 'Rajesh Sharma', 'Angel Investor', 'Seed', 'Mumbai'),

(301, 'Priya Agarwal', 'Venture Capitalist', 'Series A', 'Bengaluru'),

(302, 'Anil Mehta', 'Private Equity', 'Series B', 'Delhi'),

(303, 'Sunita Rao', 'Venture Capitalist', 'Series A', 'Hyderabad'),

(304, 'Amitabh Gupta', 'Angel Investor', 'Seed', 'Pune'),

(305, 'Kavita Patel', 'Corporate Investor', 'Series B', 'Ahmedabad'),

(306, 'Ravi Iyer', 'Venture Capitalist', 'Series A', 'Chennai'),

(307, 'Swati Joshi', 'Angel Investor', 'Pre-Seed', 'Jaipur'),

(308, 'Deepak Malhotra', 'Venture Capitalist', 'Seed', 'Kolkata'),

(309, 'Neha Kapoor', 'Private Equity', 'Series B', 'Mumbai'),

(310, 'Suresh Reddy', 'Corporate Investor', 'Series A', 'Bengaluru'),

(311, 'Vikas Singh', 'Angel Investor', 'Seed', 'Delhi'),

(312, 'Manisha Desai', 'Venture Capitalist', 'Series A', 'Hyderabad'),

(313, 'Pankaj Chawla', 'Private Equity', 'Series B', 'Chandigarh'),

(314, 'Anita Ghosh', 'Angel Investor', 'Seed', 'Pune'),

(315, 'Rohit Menon', 'Corporate Investor', 'Series B', 'Ahmedabad'),

(316, 'Meera Khanna', 'Venture Capitalist', 'Series A', 'Chennai'),

(317, 'Siddharth Kulkarni', 'Angel Investor', 'Seed', 'Mumbai'),

(318, 'Preeti Sethi', 'Private Equity', 'Series B', 'Delhi'),

(319, 'Abhinav Das', 'Corporate Investor', 'Series A', 'Hyderabad'),

(320, 'Lakshmi Pillai', 'Angel Investor', 'Seed', 'Jaipur'),

(321, 'Nitin Kapoor', 'Venture Capitalist', 'Series A', 'Pune'),

(322, 'Jyoti Bhat', 'Private Equity', 'Series B', 'Ahmedabad'),

(323, 'Rohan Naik', 'Angel Investor', 'Pre-Seed', 'Kolkata'),

(324, 'Sarika Nair', 'Venture Capitalist', 'Series A', 'Chennai'),

(325, 'Mohit Goel', 'Private Equity', 'Series B', 'Bengaluru'),

(326, 'Sneha Shetty', 'Corporate Investor', 'Seed', 'Hyderabad'),

(327, 'Rajiv Sinha', 'Venture Capitalist', 'Series A', 'Mumbai'),

(328, 'Rina Verma', 'Angel Investor', 'Pre-Seed', 'Delhi'),

(329, 'Kunal Roy', 'Corporate Investor', 'Series B', 'Pune'),

(330, 'Shivani Rathi', 'Private Equity', 'Series A', 'Bengaluru'),

(331, 'Arjun Malik', 'Angel Investor', 'Seed', 'Ahmedabad'),

(332, 'Megha Purohit', 'Venture Capitalist', 'Series A', 'Kolkata'),

(333, 'Vikram Pandey', 'Corporate Investor', 'Series B', 'Hyderabad'),

(334, 'Rashmi Tiwari', 'Private Equity', 'Seed', 'Delhi'),

(335, 'Ashish Patil', 'Angel Investor', 'Seed', 'Chennai'),

(336, 'Komal Thakur', 'Corporate Investor', 'Series A', 'Mumbai'),

(337, 'Harish Choudhary', 'Venture Capitalist', 'Series B', 'Jaipur'),

(338, 'Tina Kaur', 'Angel Investor', 'Seed', 'Pune'),

(339, 'Naveen Bansal', 'Private Equity', 'Series B', 'Ahmedabad'),

(340, 'Suman Khatri', 'Venture Capitalist', 'Series A', 'Bengaluru'),

(341, 'Aakash Nanda', 'Angel Investor', 'Pre-Seed', 'Hyderabad'),

(342, 'Pooja Lamba', 'Corporate Investor', 'Series A', 'Delhi'),

(343, 'Ajay Rao', 'Venture Capitalist', 'Seed', 'Mumbai'),

(344, 'Chitra Saxena', 'Private Equity', 'Series B', 'Kolkata'),

(345, 'Gaurav Meena', 'Corporate Investor', 'Seed', 'Bengaluru'),

(346, 'Anuja Pathak', 'Angel Investor', 'Series A', 'Hyderabad'),

(347, 'Ramesh Kale', 'Venture Capitalist', 'Seed', 'Chennai'),

(348, 'Divya Chopra', 'Private Equity', 'Series B', 'Delhi'),

(349, 'Sahil Ahuja', 'Corporate Investor', 'Series A', 'Ahmedabad'),

(350, 'Nidhi Bhatia', 'Angel Investor', 'Pre-Seed', 'Mumbai'),

(351, 'Rajat Bhardwaj', 'Venture Capitalist', 'Seed', 'Pune'),

(352, 'Kriti Mohan', 'Private Equity', 'Series B', 'Chennai'),

(353, 'Tejaswini R', 'Corporate Investor', 'Series A', 'Kolkata'),

(354, 'Shreyas D', 'Angel Investor', 'Seed', 'Bengaluru'),

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(357, 'Rahul Jain', 'Angel Investor', 'Pre-Seed', 'Pune'),
(358, 'Tanvi Arora', 'Venture Capitalist', 'Seed', 'Hyderabad'),
(359, 'Sameer Bhatt', 'Private Equity', 'Series B', 'Jaipur'),
(360, 'Kiran Rao', 'Corporate Investor', 'Series A', 'Bengaluru'),
(361, 'Mona Nanda', 'Angel Investor', 'Seed', 'Mumbai'),
(362, 'Rajat Sharma', 'Venture Capitalist', 'Series B', 'Delhi'),
(363, 'Nikita Singhania', 'Private Equity', 'Series A', 'Pune'),
(364, 'Gautam Shekhar', 'Corporate Investor', 'Seed', 'Hyderabad'),
(365, 'Arpita B', 'Angel Investor', 'Seed', 'Ahmedabad'),
(366, 'Ravi D', 'Venture Capitalist', 'Series B', 'Kolkata'),
(367, 'Ishaan M', 'Private Equity', 'Seed', 'Mumbai'),
(368, 'Ritika Y', 'Corporate Investor', 'Series A', 'Delhi'),
(369, 'Kabir T', 'Angel Investor', 'Pre-Seed', 'Chennai'),
(370, 'Simran N', 'Venture Capitalist', 'Series B', 'Hyderabad'),
(371, 'Aditya P', 'Private Equity', 'Seed', 'Bengaluru'),
(372, 'Preeti V', 'Corporate Investor', 'Series A', 'Pune'),
(373, 'Taranjeet C', 'Angel Investor', 'Seed', 'Jaipur'),
(374, 'Megha J', 'Venture Capitalist', 'Series A', 'Mumbai'),
(375, 'Nikhil L', 'Private Equity', 'Series B', 'Ahmedabad'),
(376, 'Alok G', 'Corporate Investor', 'Seed', 'Delhi'),
(377, 'Anuja K', 'Angel Investor', 'Seed', 'Bengaluru'),
(378, 'Divya R', 'Venture Capitalist', 'Series A', 'Hyderabad'),
(379, 'Ajay T', 'Private Equity', 'Series B', 'Pune'),
(380, 'Sonam M', 'Corporate Investor', 'Seed', 'Kolkata');
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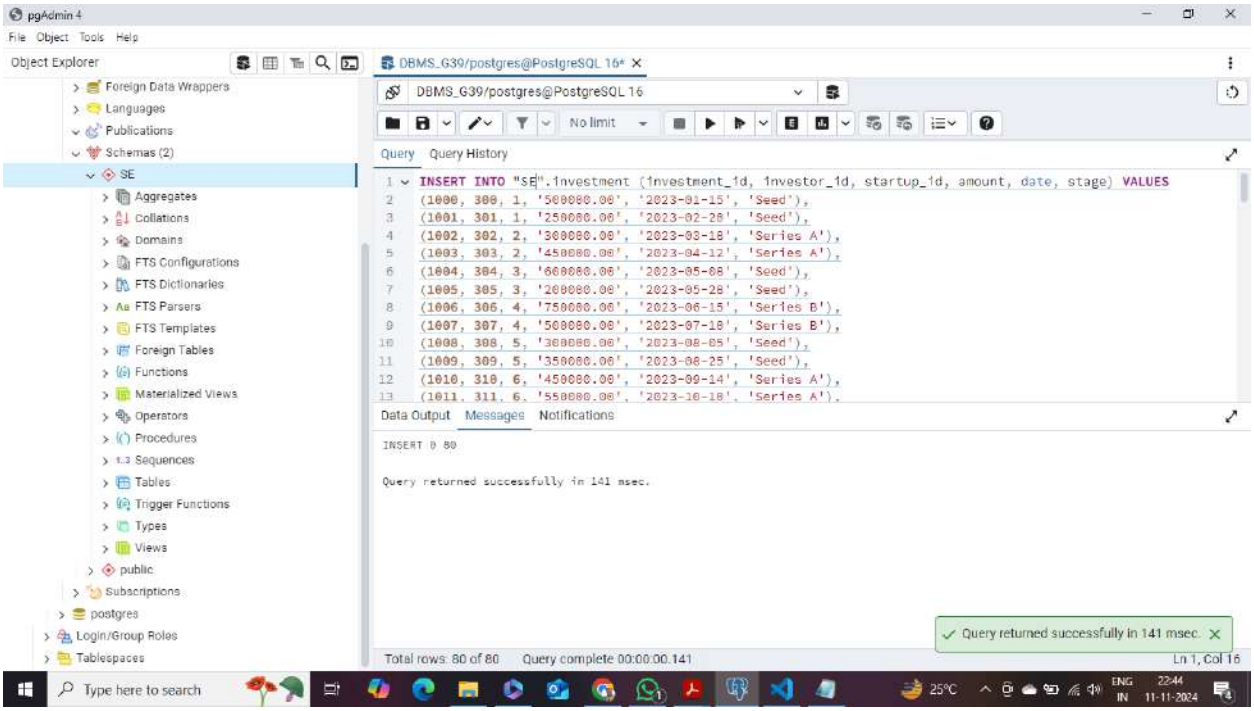
Investment Table

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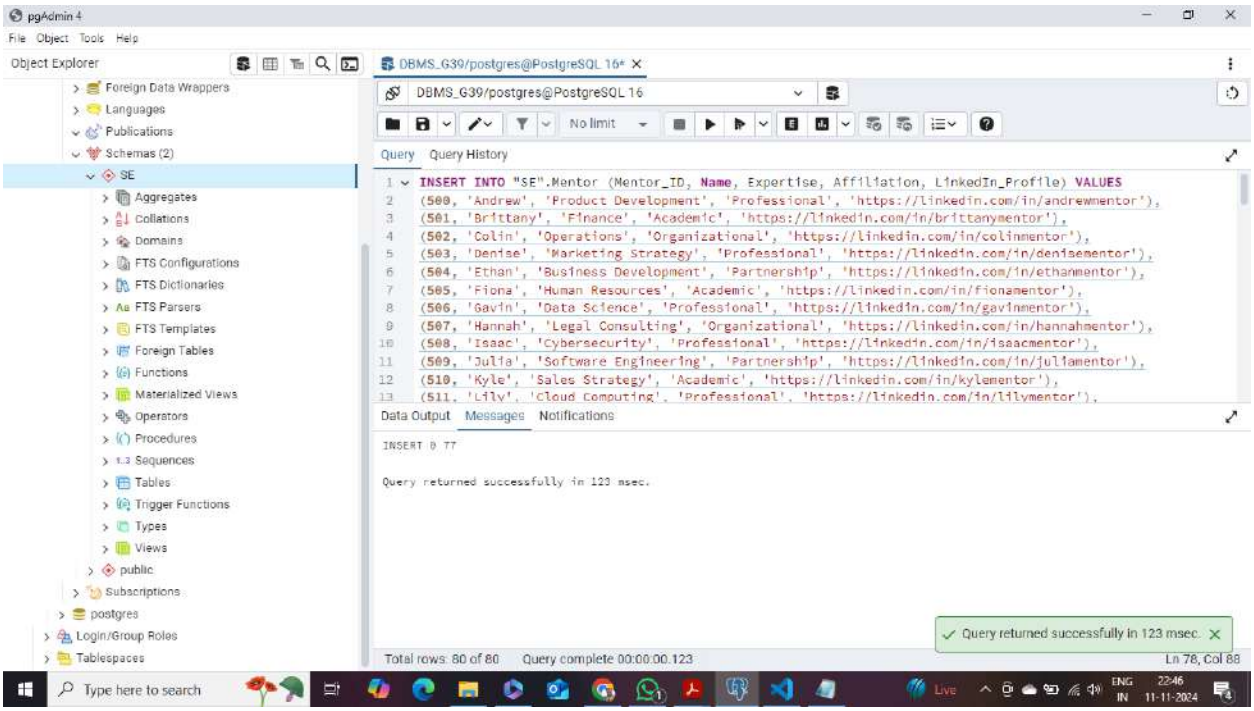
Mentor Table

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(500, 'Andrew', 'Product Development', 'Professional', 'https://linkedin.com/in/andrewmentor'),
(501, 'Brittany', 'Finance', 'Academic', 'https://linkedin.com/in/brittanymentor'),
(502, 'Colin', 'Operations', 'Organizational', 'https://linkedin.com/in/colinmentor'),
(503, 'Denise', 'Marketing Strategy', 'Professional', 'https://linkedin.com/in/denisementor'),
(504, 'Ethan', 'Business Development', 'Partnership', 'https://linkedin.com/in/ethanmentor'),
(505, 'Fiona', 'Human Resources', 'Academic', 'https://linkedin.com/in/fionamentor'),
(506, 'Gavin', 'Data Science', 'Professional', 'https://linkedin.com/in/gavinmentor'),
(507, 'Hannah', 'Legal Consulting', 'Organizational', 'https://linkedin.com/in/hannahmentor'),
(508, 'Isaac', 'Cybersecurity', 'Professional', 'https://linkedin.com/in/isaacmentor'),
(509, 'Julia', 'Software Engineering', 'Partnership', 'https://linkedin.com/in/juliamentor'),
(510, 'Kyle', 'Sales Strategy', 'Academic', 'https://linkedin.com/in/kylementor'),
(511, 'Lily', 'Cloud Computing', 'Professional', 'https://linkedin.com/in/lilymentor'),
(512, 'Marcus', 'Artificial Intelligence', 'Organizational', 'https://linkedin.com/in/marcusmentor'),
(513, 'Nora', 'Investment Strategy', 'Professional', 'https://linkedin.com/in/noramentor'),
(514, 'Oscar', 'Supply Chain Management', 'Academic', 'https://linkedin.com/in/oscarmentor'),
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(515, 'Paula', 'Machine Learning', 'Partnership', 'https://linkedin.com/in/paulamentor'),

(516, 'Quentin', 'Product Design', 'Organizational', 'https://linkedin.com/in/quentinmentor'),

(517, 'Rachel', 'Corporate Strategy', 'Professional', 'https://linkedin.com/in/rachelmentor'),

(518, 'Steve', 'Healthcare', 'Academic', 'https://linkedin.com/in/stevementor'),

(519, 'Tina', 'Renewable Energy', 'Partnership', 'https://linkedin.com/in/tinamentor'),

(520, 'Umar', 'E-commerce', 'Organizational', 'https://linkedin.com/in/umarmentor'),

(521, 'Violet', 'Marketing Research', 'Professional', 'https://linkedin.com/in/violetmentor'),

(522, 'Wesley', 'User Experience', 'Academic', 'https://linkedin.com/in/wesleymentor'),

(523, 'Xander', 'Blockchain', 'Partnership', 'https://linkedin.com/in/xandermentor'),

(524, 'Yvonne', 'Real Estate', 'Organizational', 'https://linkedin.com/in/yvonnementor'),

(525, 'Zachary', 'Ethics', 'Professional', 'https://linkedin.com/in/zacharymentor'),

(526, 'Alicea', 'Telecommunications', 'Academic', 'https://linkedin.com/in/aliceamentor'),

(527, 'Ben', 'Retail Strategy', 'Organizational', 'https://linkedin.com/in/benmentor'),

(528, 'Cathy', 'Content Strategy', 'Professional', 'https://linkedin.com/in/cathymentor'),

(529, 'Darius', 'Biotechnology', 'Academic', 'https://linkedin.com/in/dariusmentor'),

(530, 'Elena', 'Fashion', 'Partnership', 'https://linkedin.com/in/elenamentor'),

(531, 'Fred', 'Public Relations', 'Organizational', 'https://linkedin.com/in/fredmentor'),

(532, 'Gretchen', 'Venture Capital', 'Professional', 'https://linkedin.com/in/gretchenmentor'),

(533, 'Henry', 'Legal Affairs', 'Academic', 'https://linkedin.com/in/henrymentor'),

(534, 'Isabel', 'Accounting', 'Partnership', 'https://linkedin.com/in/isabelmentor'),

(535, 'Jon', 'Product Innovation', 'Organizational', 'https://linkedin.com/in/jonmentor'),

(536, 'Karen', 'Risk Management', 'Professional', 'https://linkedin.com/in/karenmentor'),

(537, 'Lance', 'Health Technology', 'Academic', 'https://linkedin.com/in/lancementor'),

(538, 'Marilyn', 'Agriculture', 'Partnership', 'https://linkedin.com/in/marilynmentor'),

(539, 'Nathan', 'Market Analysis', 'Organizational', 'https://linkedin.com/in/nathanmentor'),

(540, 'Olivia', 'Software Development', 'Professional', 'https://linkedin.com/in/oliviamentor'),

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(550, 'Yasmine', 'Education', 'Partnership', 'https://linkedin.com/in/yasminementor'),

(551, 'Zara', 'Medical Devices', 'Organizational', 'https://linkedin.com/in/zaramentor'),

(552, 'Arthur', 'Hospitality', 'Professional', 'https://linkedin.com/in/arthurmentor'),

(553, 'Bella', 'Customer Service', 'Academic', 'https://linkedin.com/in/bellamentor'),

(554, 'Caleb', 'Sports Management', 'Partnership', 'https://linkedin.com/in/calebmentor'),

(555, 'Diana', 'Creative Direction', 'Organizational', 'https://linkedin.com/in/dianamentor'),

(556, 'Eli', 'Cybersecurity', 'Professional', 'https://linkedin.com/in/elimentor'),

(557, 'Frida', 'Food & Beverage', 'Academic', 'https://linkedin.com/in/fridamentor'),

(558, 'Gabriel', 'Logistics', 'Partnership', 'https://linkedin.com/in/gabrielmentor'),

(559, 'Hugo', 'Mobile Technology', 'Organizational', 'https://linkedin.com/in/hugomentor'),

(560, 'Irene', 'Pharmaceuticals', 'Professional', 'https://linkedin.com/in/irenmentor'),

(561, 'Jack', 'Insurance', 'Academic', 'https://linkedin.com/in/jackmentor'),

(562, 'Kylie', 'Consumer Goods', 'Partnership', 'https://linkedin.com/in/kyliementor'),

(563, 'Leo', 'Telemedicine', 'Organizational', 'https://linkedin.com/in/leomentor'),

(564, 'Mona', 'Blockchain Strategy', 'Professional', 'https://linkedin.com/in/monamentor'),

(565, 'Nate', 'Mobile Applications', 'Academic', 'https://linkedin.com/in/natementor'),

(566, 'Olga', 'Event Management', 'Partnership', 'https://linkedin.com/in/olgamentor'),

(567, 'Paul', 'Climate Solutions', 'Organizational', 'https://linkedin.com/in/paulmentor'),

(568, 'Renee', 'AI Ethics', 'Professional', 'https://linkedin.com/in/renee_mentor'),

(569, 'Simon', 'Aerospace', 'Academic', 'https://linkedin.com/in/simonmentor'),

(570, 'Tara', 'FinTech', 'Partnership', 'https://linkedin.com/in/taramentor'),

(571, 'Ulrich', 'Cloud Solutions', 'Organizational', 'https://linkedin.com/in/ulrichmentor'),

(572, 'Vera', 'Quantum Computing', 'Professional', 'https://linkedin.com/in/veramentor'),

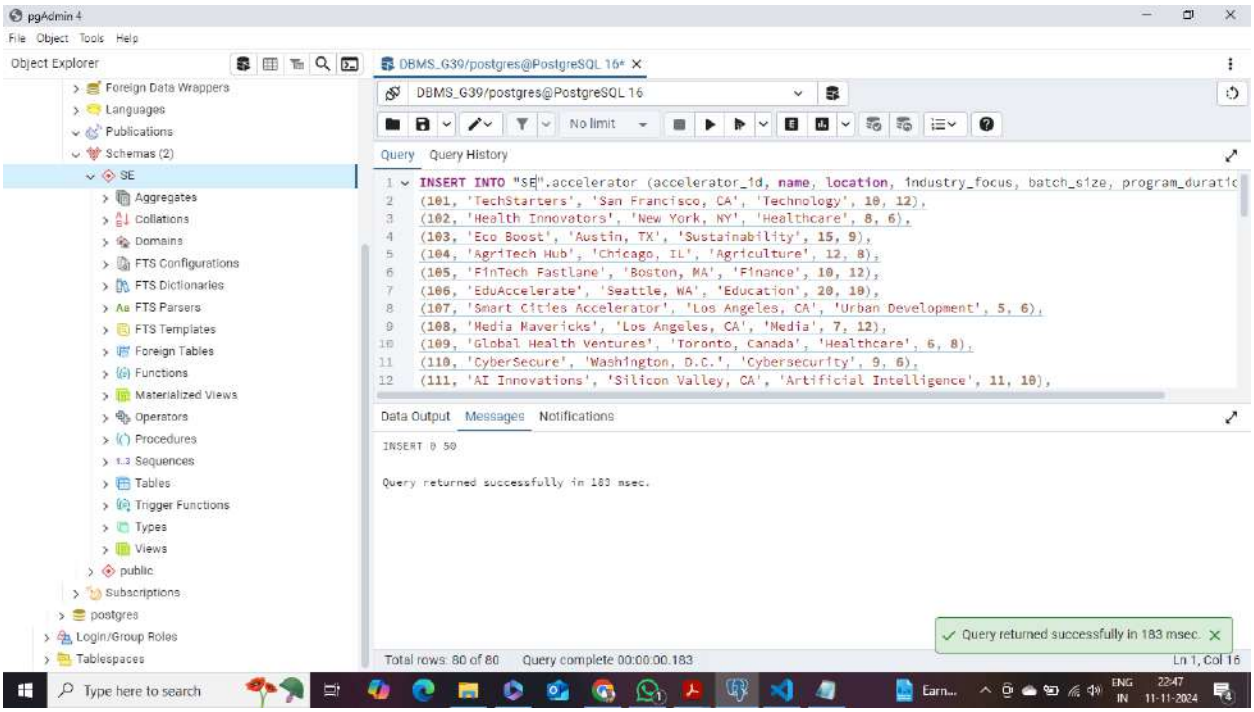
(573, 'Wayne', 'Policy Development', 'Academic', 'https://linkedin.com/in/waynementor'),

(574, 'Ximena', 'User Research', 'Partnership', 'https://linkedin.com/in/ximenamentor'),

(575, 'Yolanda', 'Smart City Planning', 'Organizational', 'https://linkedin.com/in/yolandamentor'),

(576, 'Zane', 'Ethical Hacking', 'Professional', 'https://linkedin.com/in/zanementor');

Accelerator Table



INSERT INTO accelerator (accelerator_id, name, location, industry_focus, batch_size, program_duration) VALUES

(101, 'TechStarters', 'San Francisco, CA', 'Technology', 10, 12),

(102, 'Health Innovators', 'New York, NY', 'Healthcare', 8, 6),

(103, 'Eco Boost', 'Austin, TX', 'Sustainability', 15, 9),

(104, 'AgriTech Hub', 'Chicago, IL', 'Agriculture', 12, 8),

(105, 'FinTech Fastlane', 'Boston, MA', 'Finance', 10, 12),

(106, 'EduAccelerate', 'Seattle, WA', 'Education', 20, 10),

(107, 'Smart Cities Accelerator', 'Los Angeles, CA', 'Urban Development', 5, 6),

(108, 'Media Mavericks', 'Los Angeles, CA', 'Media', 7, 12),

(109, 'Global Health Ventures', 'Toronto, Canada', 'Healthcare', 6, 8),

(110, 'CyberSecure', 'Washington, D.C.', 'Cybersecurity', 9, 6),

(111, 'AI Innovations', 'Silicon Valley, CA', 'Artificial Intelligence', 11, 10),

(112, 'FoodTech Labs', 'San Diego, CA', 'Food Technology', 8, 8),

(113, 'IoT Incubator', 'New York, NY', 'Internet of Things', 10, 10),

(114, 'Space Startups', 'Houston, TX', 'Aerospace', 4, 12),

(115, 'E-commerce Launchpad', 'Miami, FL', 'E-commerce', 12, 8),

(116, 'Creative Labs', 'Los Angeles, CA', 'Media & Entertainment', 15, 9),

(117, 'Blockchain Foundry', 'Singapore', 'Blockchain', 5, 6),

(118, 'VR Incubator', 'San Francisco, CA', 'Virtual Reality', 7, 10),

(119, 'Digital Health Accelerator', 'Berlin, Germany', 'Healthcare', 6, 6),

(120, 'Impact Innovators', 'London, UK', 'Social Impact', 10, 12),

(121, 'TravelTech Hub', 'Barcelona, Spain', 'Travel & Tourism', 8, 10),

(122, 'Fintech Factory', 'Dublin, Ireland', 'Finance', 9, 8),

(123, 'CleanTech Accelerator', 'Vancouver, Canada', 'Clean Technology', 12, 9),

(124, 'Startup Garage', 'Austin, TX', 'Various', 15, 10),

(125, 'Fashion Forward', 'Paris, France', 'Fashion', 10, 6),

(126, 'Tech Quest', 'Tokyo, Japan', 'Technology', 11, 12),

(127, 'EduLab', 'Melbourne, Australia', 'Education', 20, 10),

(128, 'Wearable Tech Incubator', 'Los Angeles, CA', 'Wearables', 6, 8),

(129, 'Sports Tech Accelerator', 'New York, NY', 'Sports', 8, 10),

(130, 'Smart Mobility Hub', 'San Francisco, CA', 'Transportation', 7, 9),

(131, 'Robotics Lab', 'Bangalore, India', 'Robotics', 10, 6),

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(132, 'Telecom Innovators', 'Chicago, IL', 'Telecommunications', 12, 12),
(133, 'Gaming Accelerator', 'Seattle, WA', 'Gaming', 10, 8),
(134, 'Sustainable Living Accelerator', 'Toronto, Canada', 'Sustainability', 9, 10),
(135, 'Digital Media Hub', 'San Diego, CA', 'Media', 11, 8),
(136, 'BioTech Innovators', 'Boston, MA', 'Biotechnology', 5, 12),
(137, 'Smart Home Incubator', 'San Francisco, CA', 'Home Automation', 8, 6),
(138, 'AgriFood Accelerator', 'Atlanta, GA', 'Food Technology', 10, 10),
(139, 'Global Impact Accelerator', 'Amsterdam, Netherlands', 'Social Entrepreneurship', 15, 8),
(140, 'VR/AR Hub', 'Los Angeles, CA', 'Virtual/Augmented Reality', 7, 6),
(141, 'Investment Accelerator', 'New York, NY', 'Finance', 10, 10),
(142, 'Healthcare Innovations', 'Dublin, Ireland', 'Healthcare', 6, 12),
(143, 'Tech Frontier', 'Singapore', 'Technology', 12, 10),
(144, 'Elder Tech Hub', 'Sydney, Australia', 'Healthcare', 9, 8),
(145, 'Smart Fashion Accelerator', 'Paris, France', 'Fashion', 5, 6),
(146, 'Energy Innovators', 'Berlin, Germany', 'Energy', 10, 9),
(147, 'Pet Tech Incubator', 'Austin, TX', 'Pets', 8, 10),
(148, 'Youth Empowerment Hub', 'Mumbai, India', 'Social Impact', 20, 12),
(149, 'Artificial Intelligence Accelerator', 'Los Angeles, CA', 'AI', 15, 10),
(150, 'FinTech 101', 'New York, NY', 'Finance', 12, 8);
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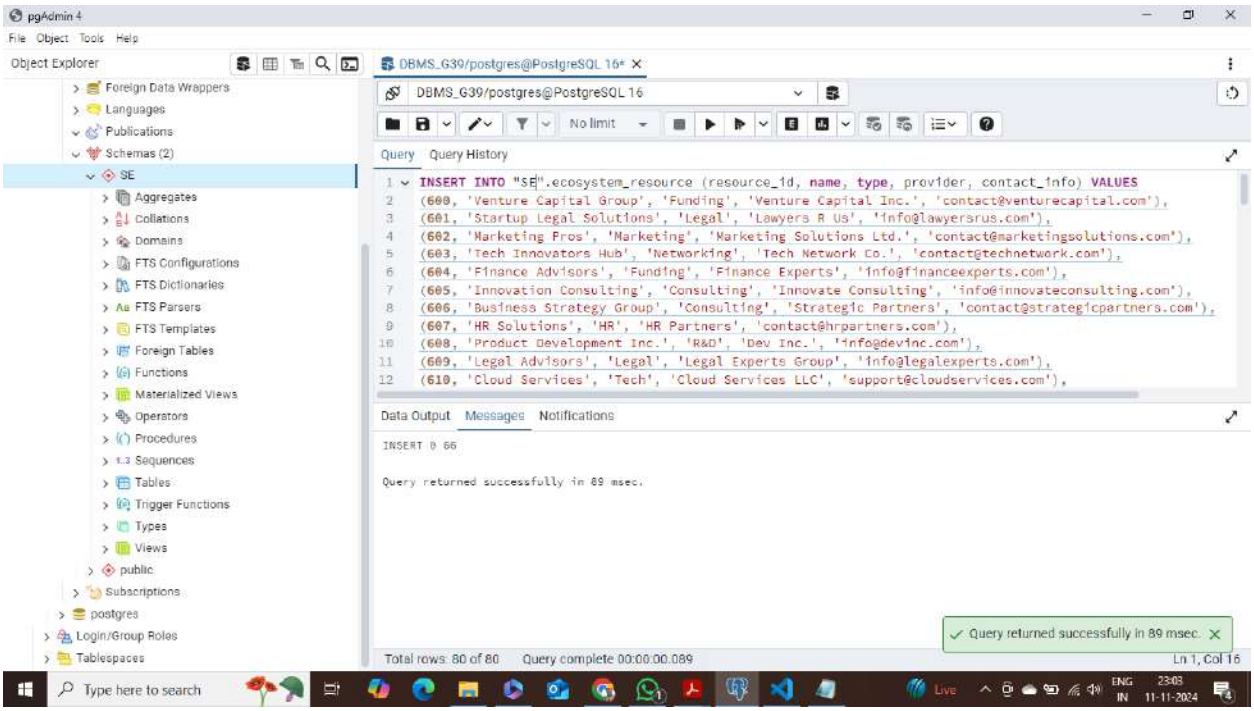
Ecosystem_Resource Table



INSERT INTO ecosystem_resource (resource_id, name, type, provider, contact_info) VALUES

(600, 'Venture Capital Group', 'Funding', 'Venture Capital Inc.', 'contact@venturecapital.com'),

(601, 'Startup Legal Solutions', 'Legal', 'Lawyers R Us', 'info@lawyersrus.com'),

(602, 'Marketing Pros', 'Marketing', 'Marketing Solutions Ltd.', 'contact@marketingsolutions.com'),

(603, 'Tech Innovators Hub', 'Networking', 'Tech Network Co.', 'contact@technetwork.com'),

(604, 'Finance Advisors', 'Funding', 'Finance Experts', 'info@financeexperts.com'),

(605, 'Innovation Consulting', 'Consulting', 'Innovate Consulting', 'info@innovateconsulting.com'),

(606, 'Business Strategy Group', 'Consulting', 'Strategic Partners', 'contact@strategicpartners.com'),

(607, 'HR Solutions', 'HR', 'HR Partners', 'contact@hrpartners.com'),

(608, 'Product Development Inc.', 'R&D', 'Dev Inc.', 'info@devinc.com'),

(609, 'Legal Advisors', 'Legal', 'Legal Experts Group', 'info@legalexperts.com'),

(610, 'Cloud Services', 'Tech', 'Cloud Services LLC', 'support@cloudservices.com'),

(611, 'Sales Accelerator', 'Sales', 'Sales Experts', 'contact@salesexperts.com'),

(612, 'Market Research Institute', 'Research', 'Research Group', 'info@researchgroup.com'),

(613, 'Funding Solutions', 'Funding', 'Funding Network', 'info@fundingnetwork.com'),

(614, 'Startup Advisors', 'Consulting', 'Startup Consultancy', 'contact@startupconsultancy.com'),

(615, 'Marketing Analytics Co.', 'Marketing', 'Analytics Group', 'info@analyticsgroup.com'),

(616, 'Design Studio', 'Design', 'Creative Design Co.', 'contact@creativedesign.com'),

(617, 'Investor Relations Group', 'Funding', 'Investor Connect', 'contact@investorconnect.com'),

(618, 'Tech Support Group', 'Tech', 'Support Services', 'support@supportservices.com'),

(619, 'Cybersecurity Solutions', 'Tech', 'Cyber Defense Co.', 'info@cyberdefense.com'),

(620, 'Intellectual Property Advisors', 'Legal', 'IP Experts', 'info@ipexperts.com'),

(621, 'Event Management Group', 'Marketing', 'Events Co.', 'info@eventsco.com'),

(622, 'Logistics Partners', 'Logistics', 'Logistics Group', 'info@logisticsgroup.com'),

(623, 'Corporate Training Group', 'Training', 'Training Solutions', 'contact@trainingsolutions.com'),

(624, 'Funding Network', 'Funding', 'Network Ventures', 'contact@networkventures.com'),

(625, 'Digital Marketing Agency', 'Marketing', 'Digital Agency', 'info@digitalagency.com'),

(626, 'Startup Growth Partners', 'Consulting', 'Growth Partners', 'info@growthpartners.com'),

(627, 'E-commerce Solutions', 'Tech', 'E-commerce Inc.', 'contact@ecommerce.com'),

(628, 'Social Media Agency', 'Marketing', 'Social Media Experts', 'info@socialmediaexperts.com'),

(629, 'Blockchain Innovations', 'Tech', 'Blockchain Co.', 'info@blockchainco.com'),

(630, 'Sustainability Consultants', 'Consulting', 'Sustainability Group',
'contact@sustainabilitygroup.com'),

(631, 'Data Analytics Firm', 'Research', 'Data Solutions', 'info@datasolutions.com'),

(632, 'Software Development Hub', 'Tech', 'Software Solutions', 'support@softwaresolutions.com'),

(633, 'Entrepreneurship Program', 'Education', 'Entrepreneur Group',
'info@entrepreneurgroup.com'),

(634, 'HealthTech Solutions', 'Health', 'Health Innovations', 'contact@healthinnovations.com'),

(635, 'Finance & Accounting Group', 'Finance', 'Finance Group', 'info@financegroup.com'),

(636, 'Crowdfunding Platform', 'Funding', 'Crowd Funders', 'contact@crowdfunders.com'),

(637, 'HR Consulting Firm', 'HR', 'HR Consulting Co.', 'info@hrconsultingco.com'),

(638, 'Product Management Group', 'Management', 'Product Experts',
'contact@productexperts.com'),

(639, 'Strategic Planning Firm', 'Consulting', 'Strategic Planners', 'info@strategicplanners.com'),

(640, 'Tech Support Solutions', 'Tech', 'Tech Support Co.', 'support@techsupportco.com'),

(641, 'Startup Community', 'Networking', 'Community Co.', 'contact@communityco.com'),

(642, 'Virtual Assistant Services', 'Support', 'Virtual Assistants', 'info@virtualassistants.com'),

(643, 'Startup Health Program', 'Health', 'Health Group', 'contact@healthgroup.com'),

(644, 'Investor Networking Group', 'Networking', 'Investor Network', 'info@investornetwork.com'),

(645, 'Online Learning Platform', 'Education', 'Learning Co.', 'support@learningco.com'),

(646, 'Advertising Agency', 'Marketing', 'Ad Solutions', 'info@adsolutions.com'),

(647, 'Social Impact Partners', 'Consulting', 'Impact Partners', 'contact@impactpartners.com'),

(648, 'App Development Studio', 'Tech', 'App Developers', 'info@appdevelopers.com'),

(649, 'Tech Innovations Inc.', 'Tech', 'Tech Innovators', 'contact@techinnovators.com'),

(650, 'E-commerce Growth Agency', 'Marketing', 'E-commerce Experts', 'info@ecommerceexperts.com'),

(651, 'Productivity Tools Company', 'Tech', 'Productivity Inc.', 'contact@productivityinc.com'),

(652, 'Investment Banking Group', 'Finance', 'Investment Bankers', 'info@investmentbankers.com'),

(653, 'Remote Work Solutions', 'Tech', 'Remote Work Co.', 'info@remoteworkco.com'),

(654, 'AI Consulting Firm', 'Consulting', 'AI Solutions', 'contact@aisolutions.com'),

(655, 'Non-profit Consulting Group', 'Consulting', 'Non-profit Experts', 'info@nonprofitexperts.com'),

(656, 'SaaS Development Company', 'Tech', 'SaaS Solutions', 'info@saassolutions.com'),

(657, 'Digital Transformation Agency', 'Consulting', 'Digital Transformations', 'contact@digitaltransformations.com'),

(658, 'Crisis Management Group', 'Consulting', 'Crisis Advisors', 'info@crisisadvisors.com'),

(659, 'Cybersecurity Consulting Firm', 'Tech', 'Cyber Solutions', 'info@cybersolutions.com'),

(660, 'FinTech Innovations', 'Tech', 'FinTech Co.', 'info@fintechco.com'),

(661, 'Content Marketing Group', 'Marketing', 'Content Experts', 'contact@contentexperts.com'),

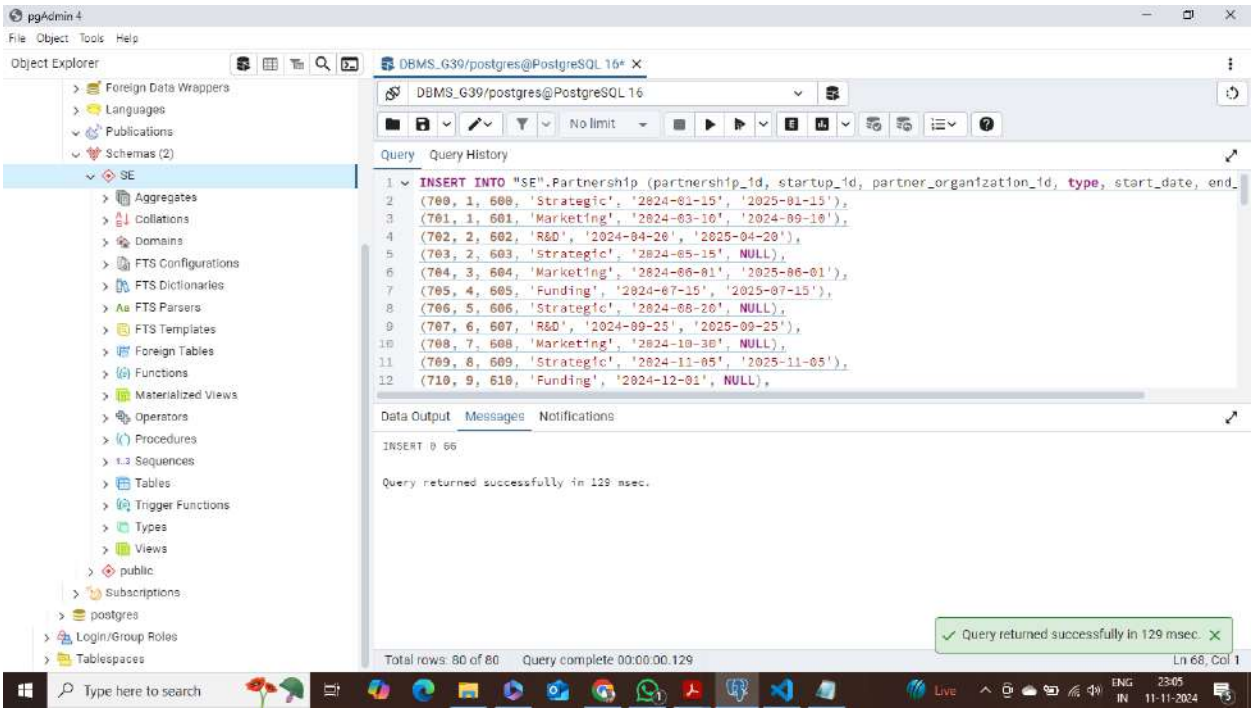
(662, 'Global Trade Solutions', 'Logistics', 'Global Trade Group', 'info@globaltradegroup.com'),

(663, 'HR Management Solutions', 'HR', 'HR Management Co.', 'contact@hrmanagementco.com'),

(664, 'International Business Advisors', 'Consulting', 'International Advisors', 'info@internationaladvisors.com'),

(665, 'Cloud Storage Solutions', 'Tech', 'Cloud Storage Co.', 'info@cloudstorageco.com');

Partnership Table



INSERT INTO "SE".Partnership (partnership_id, startup_id, partner_organization_id, type, start_date, end_date) VALUES

(700, 1, 600, 'Strategic', '2024-01-15', '2025-01-15'),

(701, 1, 601, 'Marketing', '2024-03-10', '2024-09-10'),

(702, 2, 602, 'R&D', '2024-04-20', '2025-04-20'),

(703, 2, 603, 'Strategic', '2024-05-15', NULL),

(704, 3, 604, 'Marketing', '2024-06-01', '2025-06-01'),

(705, 4, 605, 'Funding', '2024-07-15', '2025-07-15'),

(706, 5, 606, 'Strategic', '2024-08-20', NULL),

(707, 6, 607, 'R&D', '2024-09-25', '2025-09-25'),

(708, 7, 608, 'Marketing', '2024-10-30', NULL),

(709, 8, 609, 'Strategic', '2024-11-05', '2025-11-05'),

(710, 9, 610, 'Funding', '2024-12-01', NULL),

(711, 10, 611, 'R&D', '2024-01-10', '2025-01-10'),

(712, 11, 612, 'Marketing', '2024-02-15', NULL),

(713, 12, 613, 'Strategic', '2024-03-20', '2025-03-20'),

(714, 13, 614, 'Funding', '2024-04-25', NULL),

(715, 14, 615, 'R&D', '2024-05-30', '2025-05-30'),

(716, 15, 616, 'Marketing', '2024-06-05', NULL),

(717, 16, 617, 'Strategic', '2024-07-10', '2025-07-10'),

(718, 17, 618, 'Funding', '2024-08-15', NULL),

(719, 18, 619, 'R&D', '2024-09-20', '2025-09-20'),

(720, 19, 620, 'Marketing', '2024-10-25', NULL),

(721, 20, 621, 'Strategic', '2024-11-30', '2025-11-30'),

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(723, 22, 623, 'R&D', '2024-01-15', '2025-01-15'),

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(732, 31, 632, 'Marketing', '2024-10-30', NULL),

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(736, 35, 636, 'Marketing', '2024-02-15', NULL),

(737, 36, 637, 'Strategic', '2024-03-20', '2025-03-20'),

(738, 37, 638, 'Funding', '2024-04-25', NULL),

(739, 38, 639, 'R&D', '2024-05-30', '2025-05-30'),

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(742, 41, 642, 'Funding', '2024-08-15', NULL),

(743, 42, 643, 'R&D', '2024-09-20', '2025-09-20'),

(744, 43, 644, 'Marketing', '2024-10-25', NULL),

(745, 44, 645, 'Strategic', '2024-11-30', '2025-11-30'),

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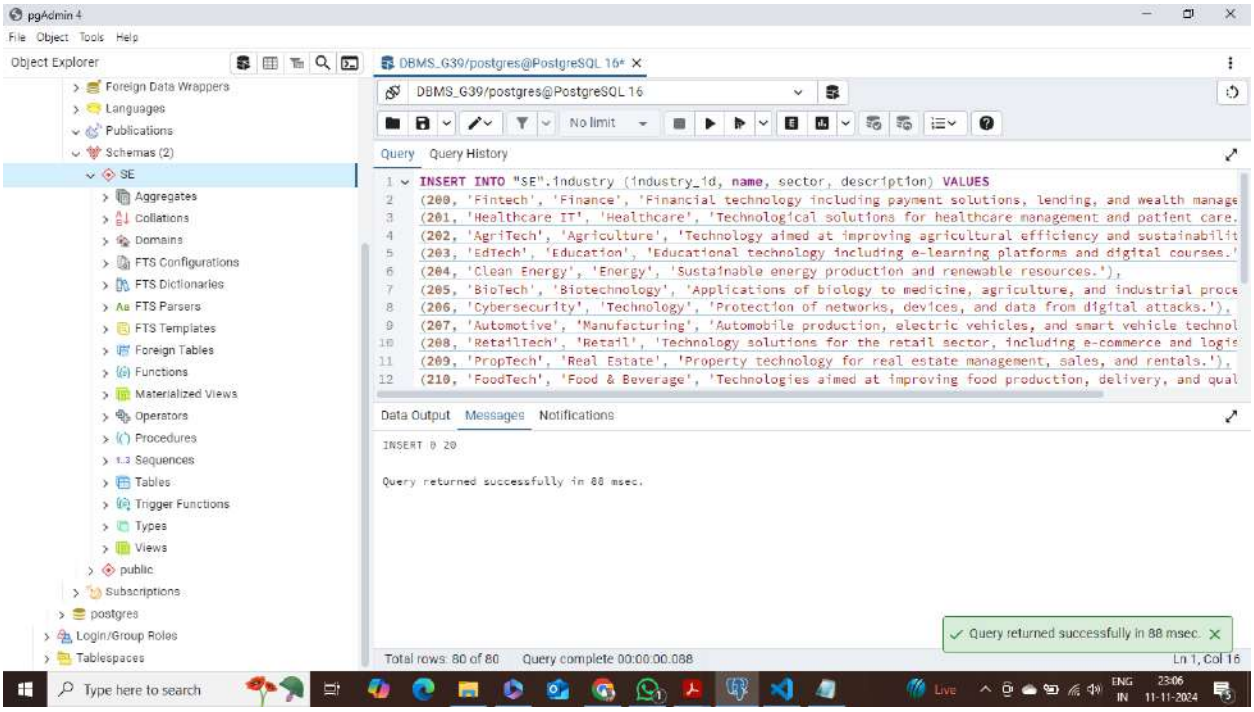
Industry Table



INSERT INTO industry (industry_id, name, sector, description) VALUES

(200, 'Fintech', 'Finance', 'Financial technology including payment solutions, lending, and wealth management.'),

(201, 'Healthcare IT', 'Healthcare', 'Technological solutions for healthcare management and patient care.'),

(202, 'AgriTech', 'Agriculture', 'Technology aimed at improving agricultural efficiency and sustainability.'),

(203, 'EdTech', 'Education', 'Educational technology including e-learning platforms and digital courses.'),

(204, 'Clean Energy', 'Energy', 'Sustainable energy production and renewable resources.'),

(205, 'BioTech', 'Biotechnology', 'Applications of biology to medicine, agriculture, and industrial processes.'),

(206, 'Cybersecurity', 'Technology', 'Protection of networks, devices, and data from digital attacks.'),

(207, 'Automotive', 'Manufacturing', 'Automobile production, electric vehicles, and smart vehicle technology.'),

(208, 'RetailTech', 'Retail', 'Technology solutions for the retail sector, including e-commerce and logistics.'),

(209, 'PropTech', 'Real Estate', 'Property technology for real estate management, sales, and rentals.'),

(210, 'FoodTech', 'Food & Beverage', 'Technologies aimed at improving food production, delivery, and quality.'),

(211, 'Gaming', 'Entertainment', 'Development and distribution of video games and interactive entertainment.'),

(212, 'Logistics', 'Supply Chain', 'Technology and services for transportation and supply chain optimization.'),

(213, 'Telecommunications', 'Communication', 'Communication technologies including mobile networks and internet services.'),

(214, 'FashionTech', 'Fashion', 'Technological innovations in fashion design, production, and retail.'),

(215, 'InsurTech', 'Insurance', 'Digital transformation in the insurance industry for products and services.'),

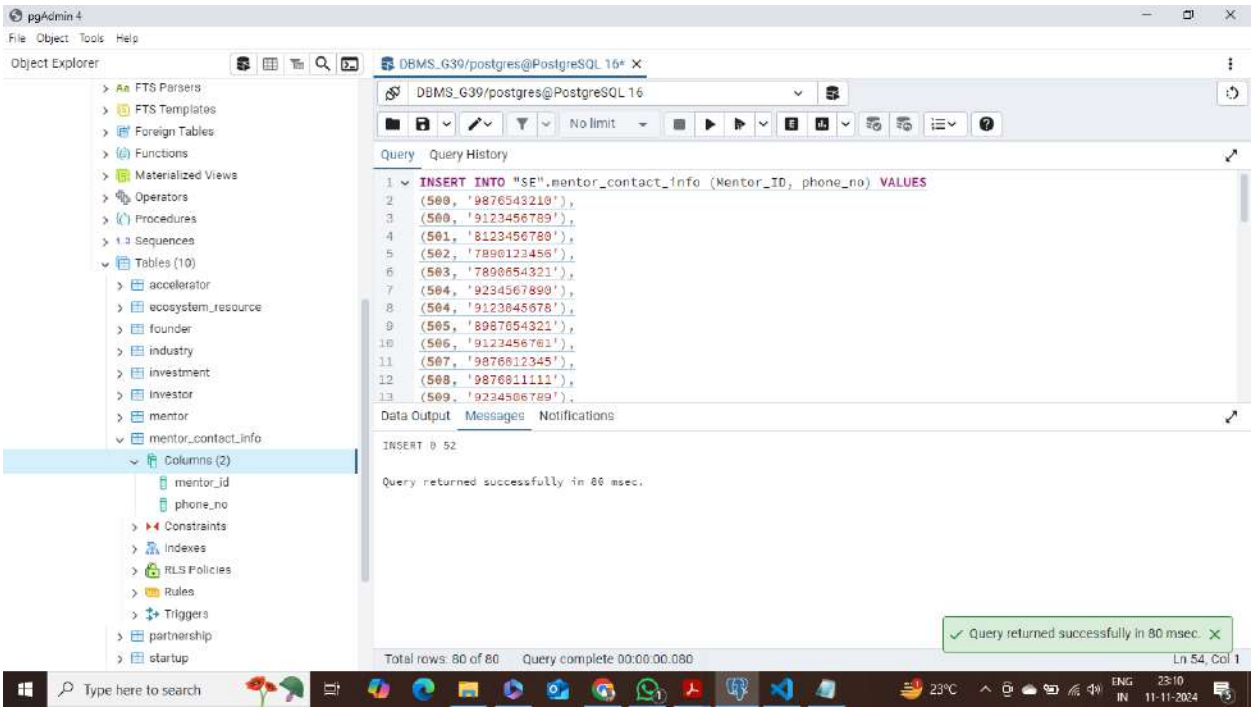
(216, 'SpaceTech', 'Aerospace', 'Technologies and advancements in space exploration and satellite technology.'),

(217, 'ConstructionTech', 'Construction', 'Innovations in construction processes, materials, and project management.'),

(218, 'LegalTech', 'Legal', 'Technology solutions for legal processes, compliance, and case management.'),

(219, 'MedTech', 'Medical Devices', 'Development of medical devices and diagnostic equipment.');

Mentor_Contact_Info Table

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(502, '7890123456'),

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(504, '9234567890'),

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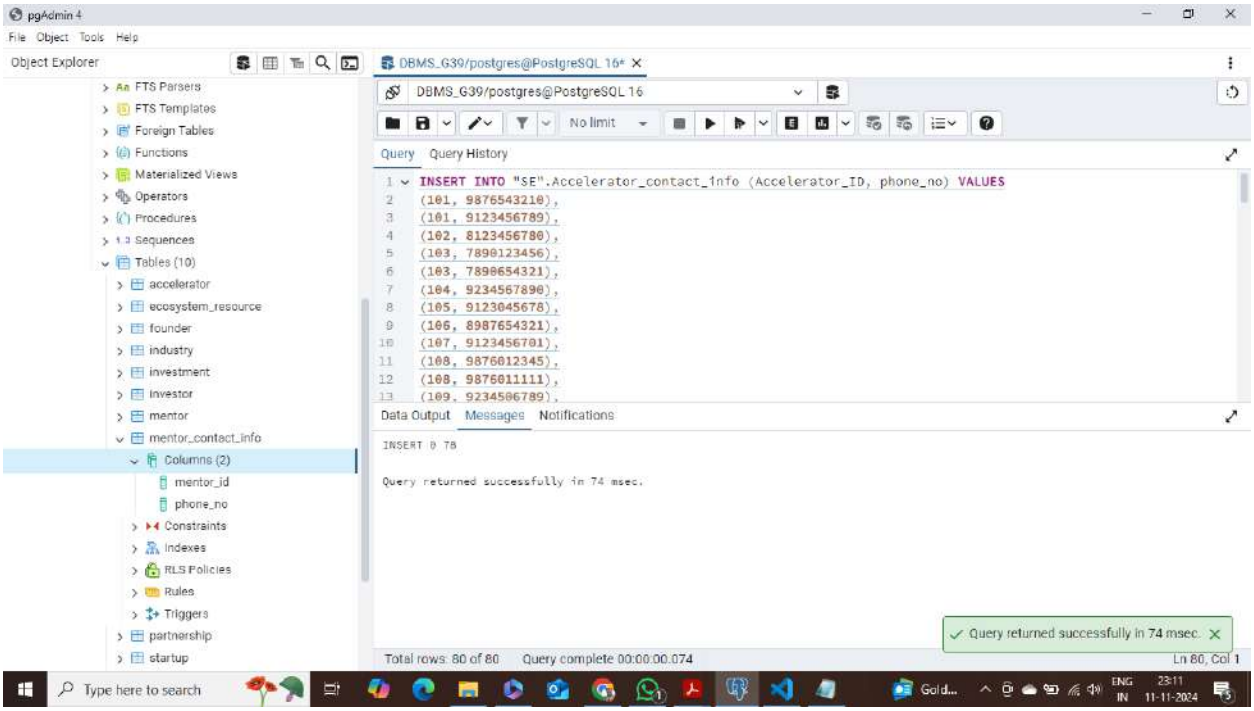
Accelerator_Contact_Info Table

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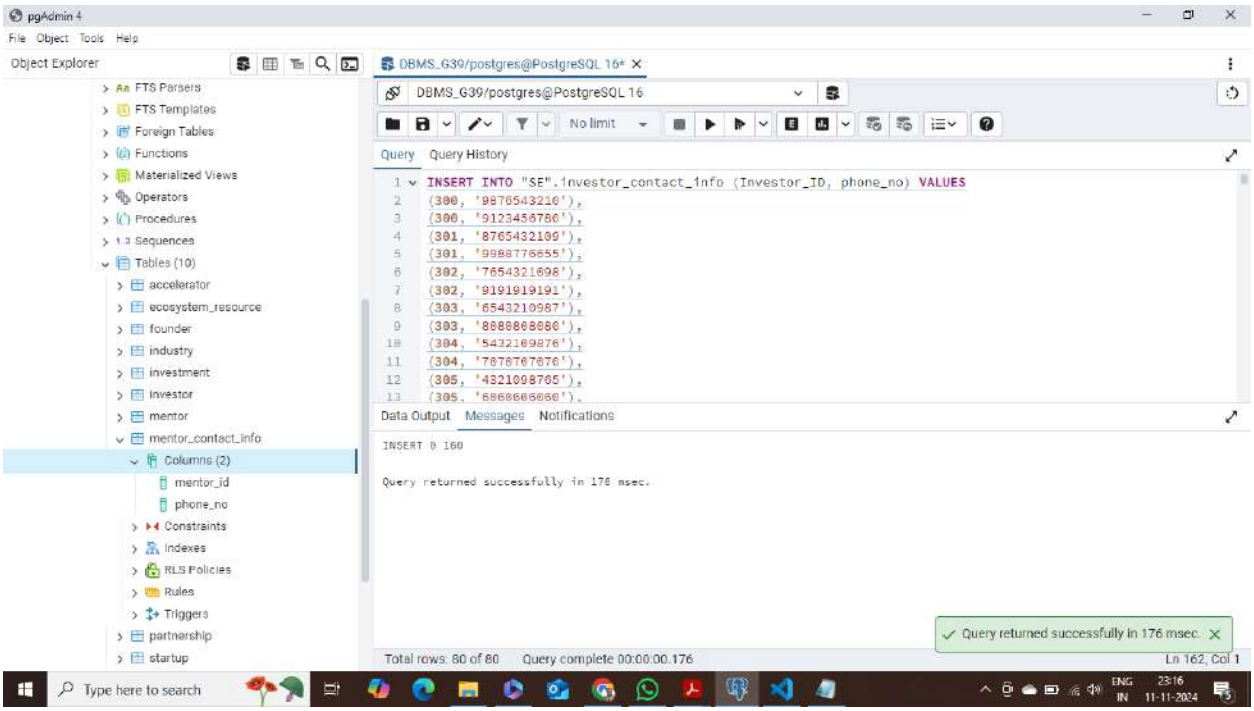
Investor_Contact_Info Table

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INSERT INTO "SE".investor_contact_info (Investor_ID, phone_no) VALUES
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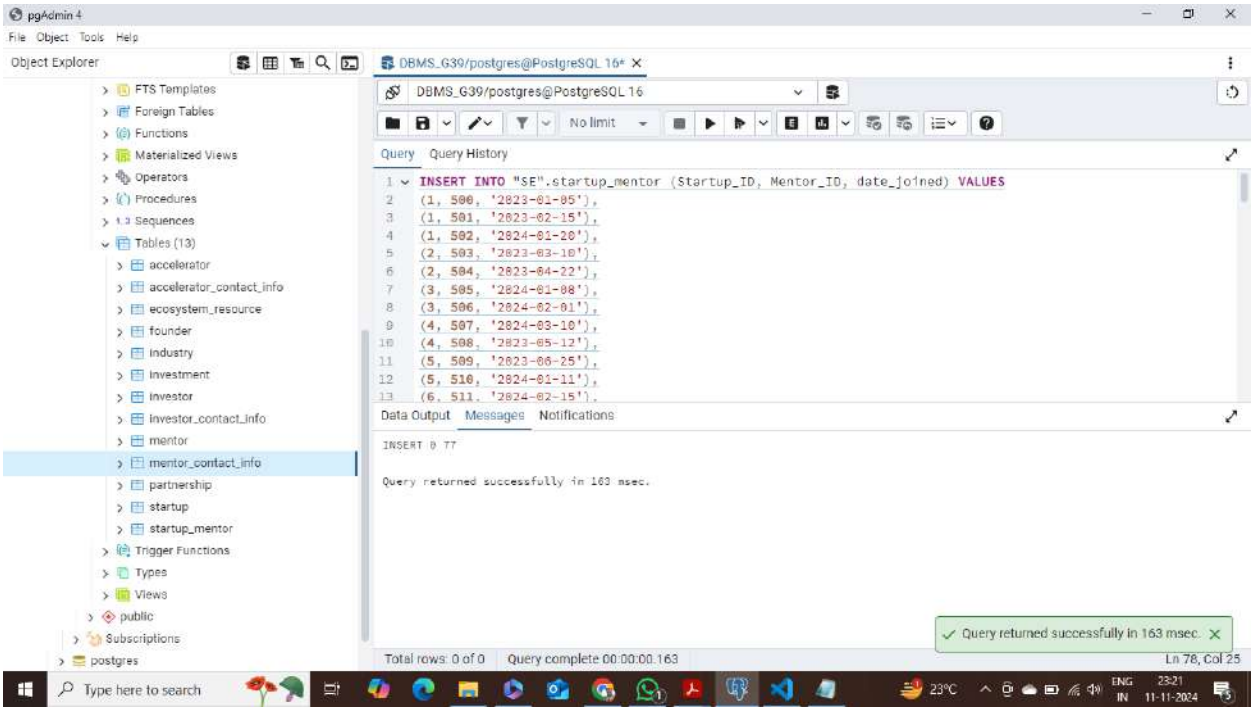
Startup_Mentor Table

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INSERT INTO "SE".startup_mentor (Startup_ID, Mentor_ID, Start_Date) VALUES
(1, 500, '2023-01-05'),
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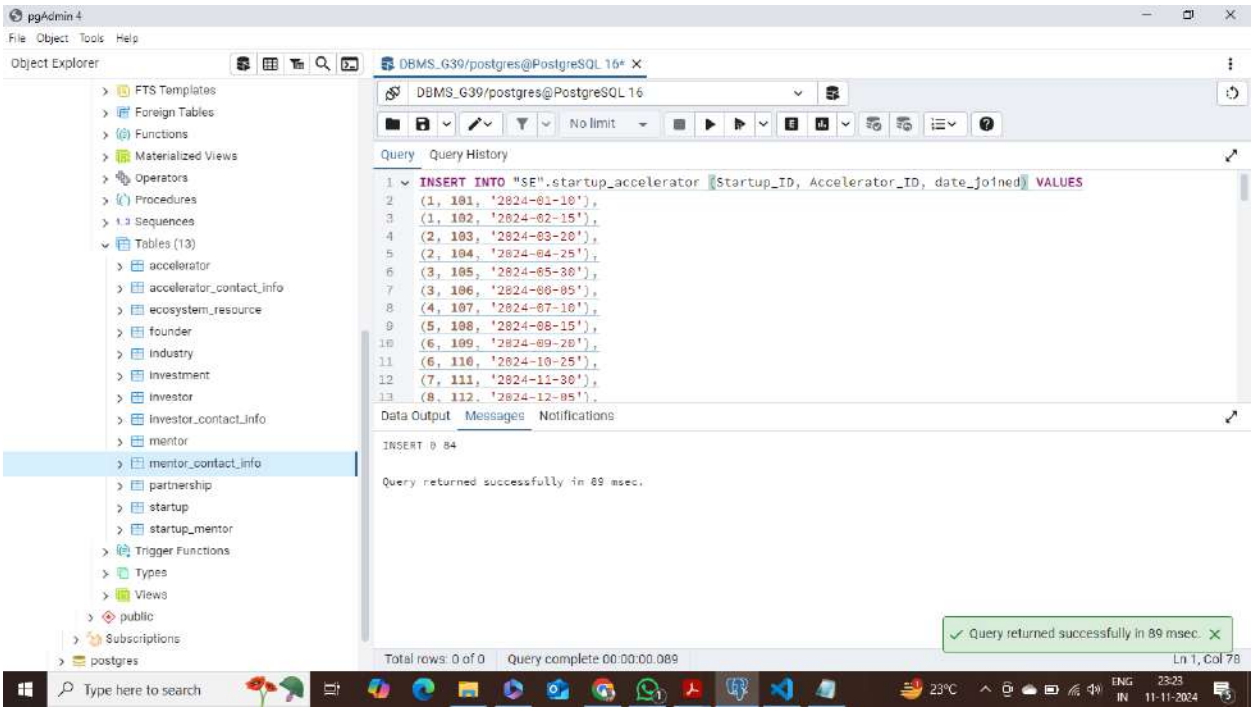
Startup_Accelerator Table



INSERT INTO "SE".startup_accelerator (Startup_ID, Accelerator_ID, Start_Date) VALUES

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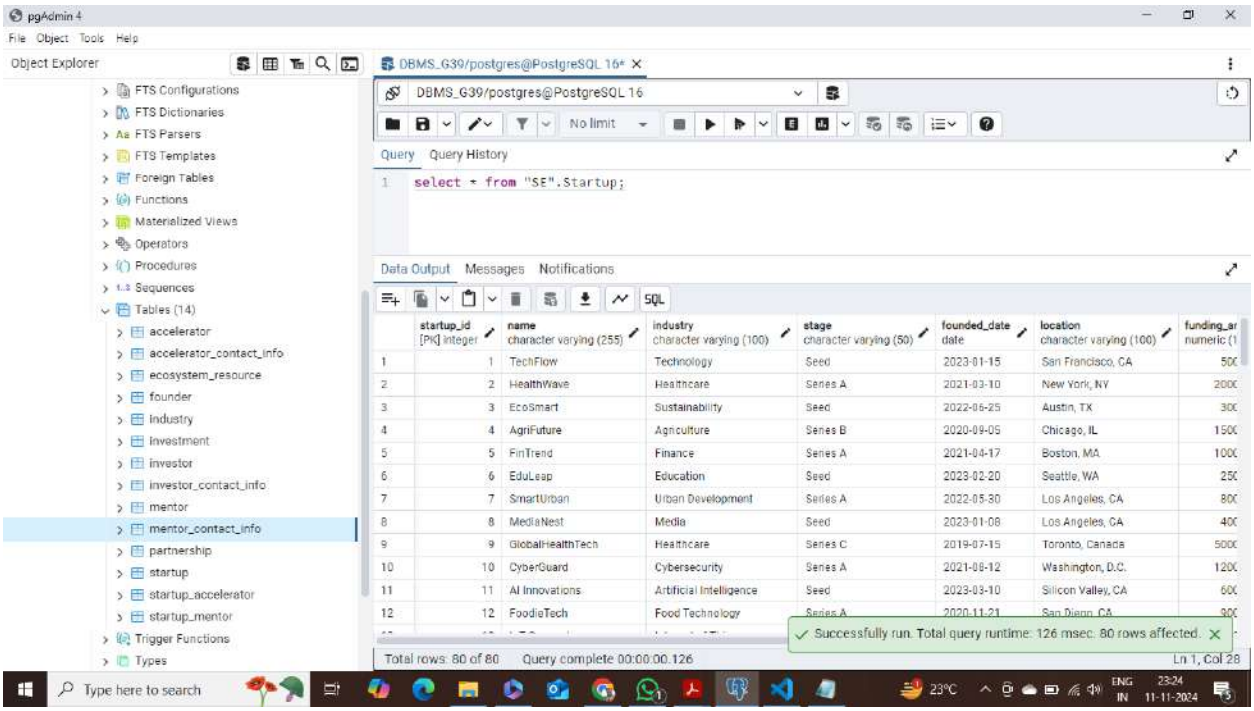
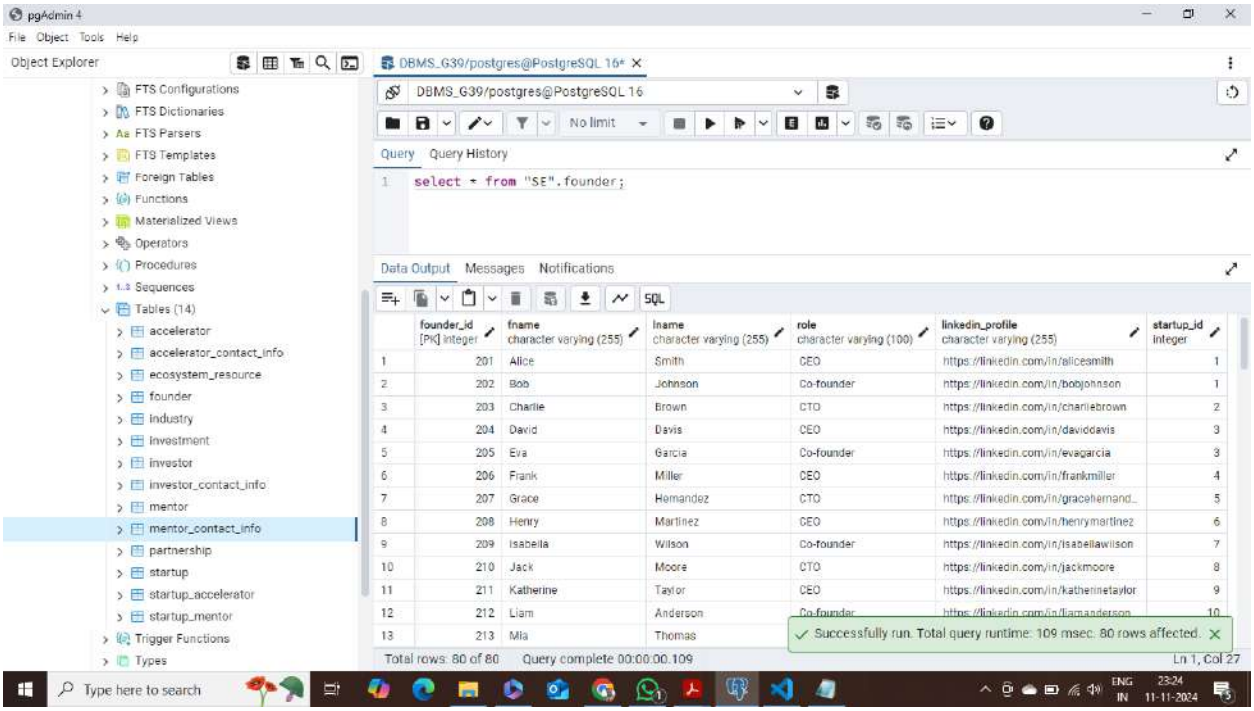
Data Snapshots

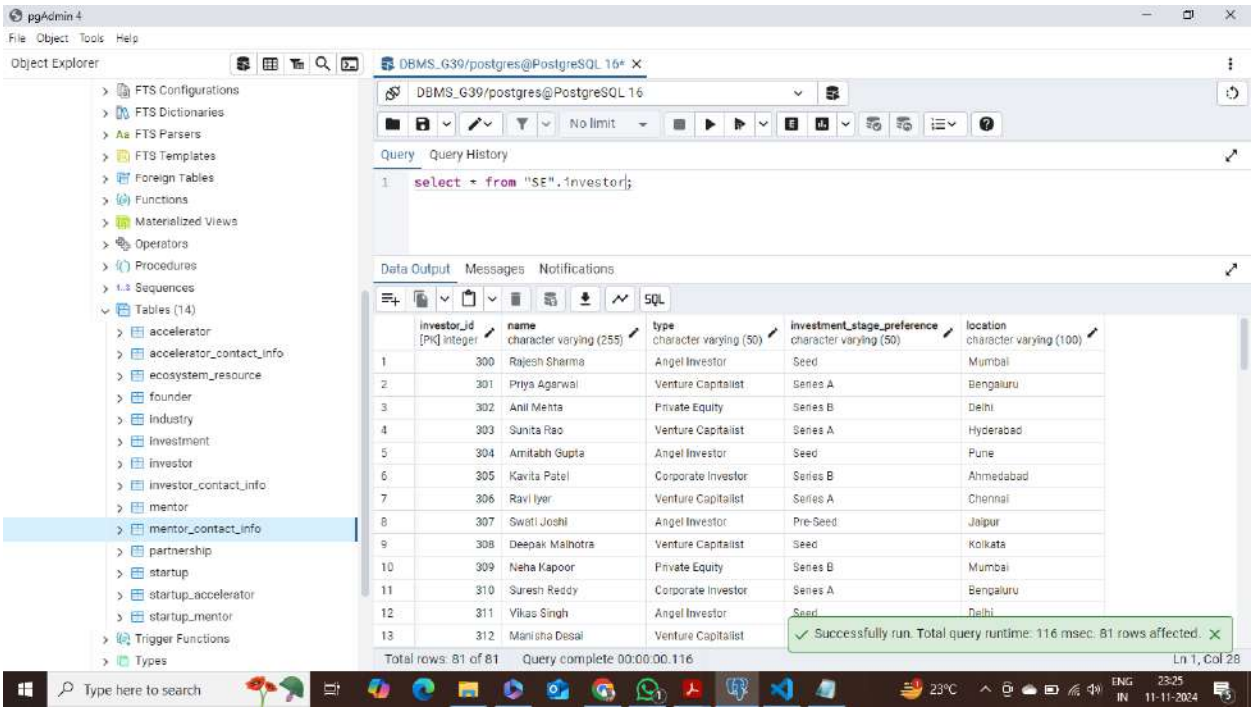
Startup Table



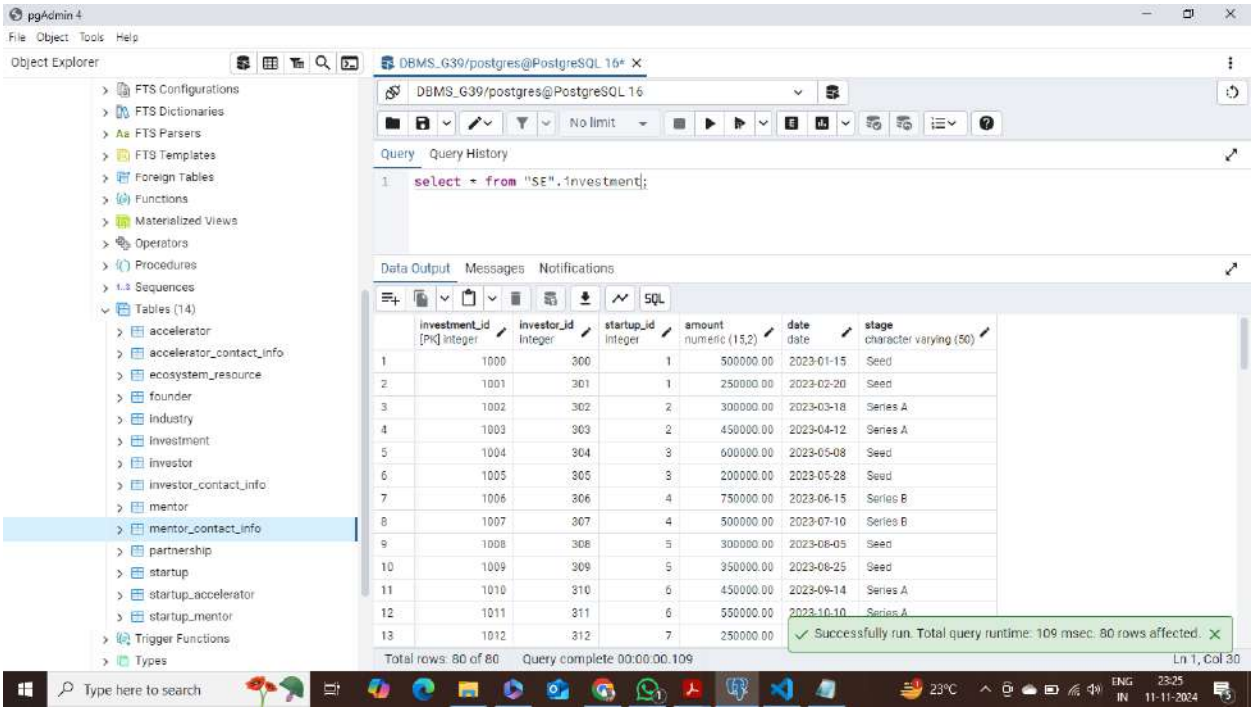
Founder Table



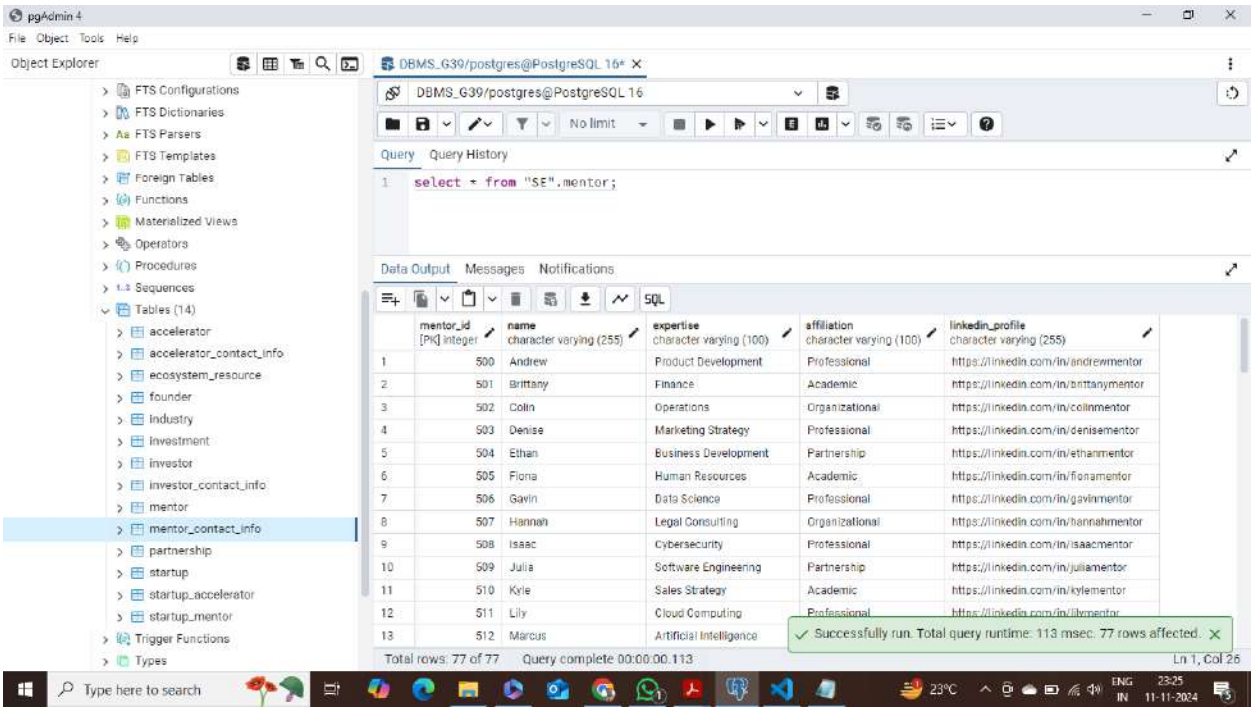
Investor Table



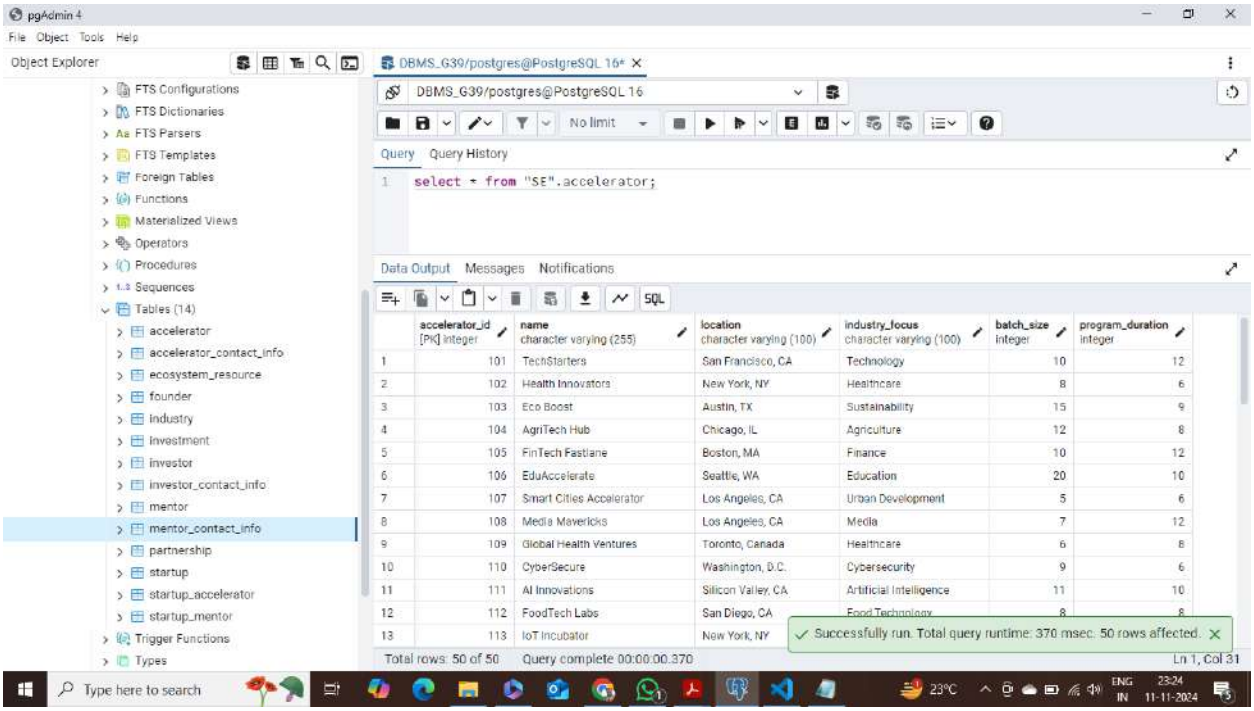
Investment Table



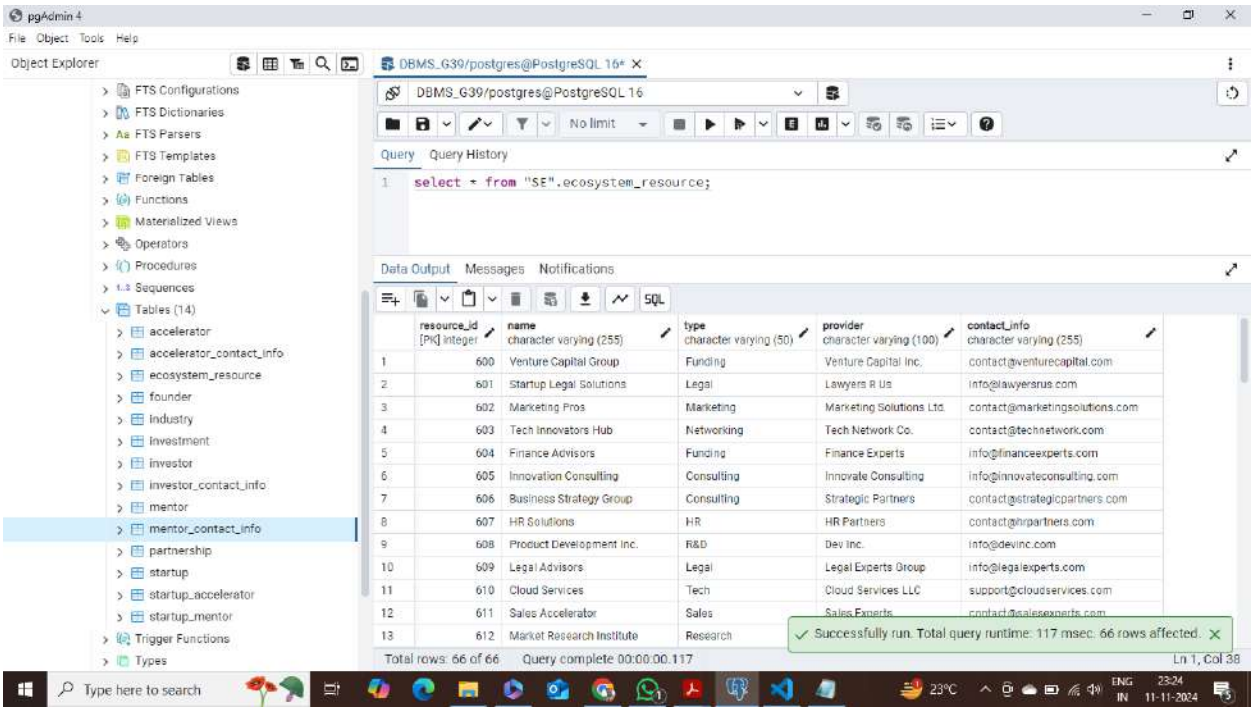
Mentor Table



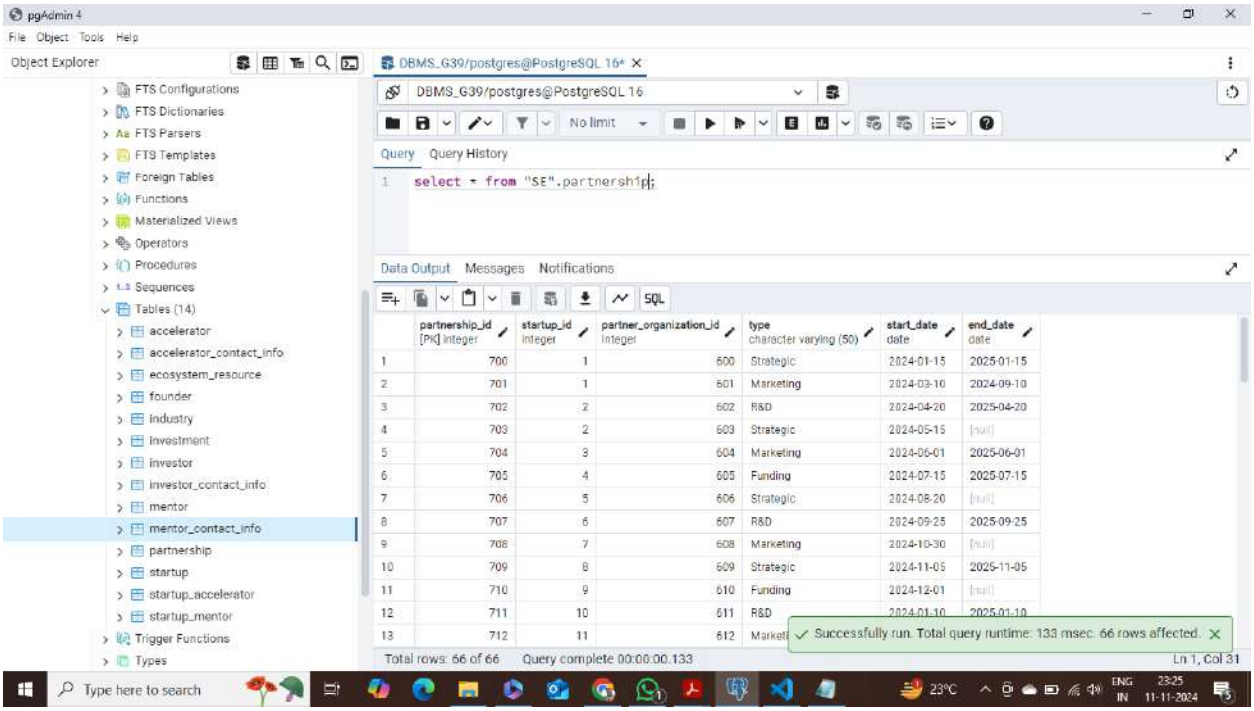
Accelerator Table



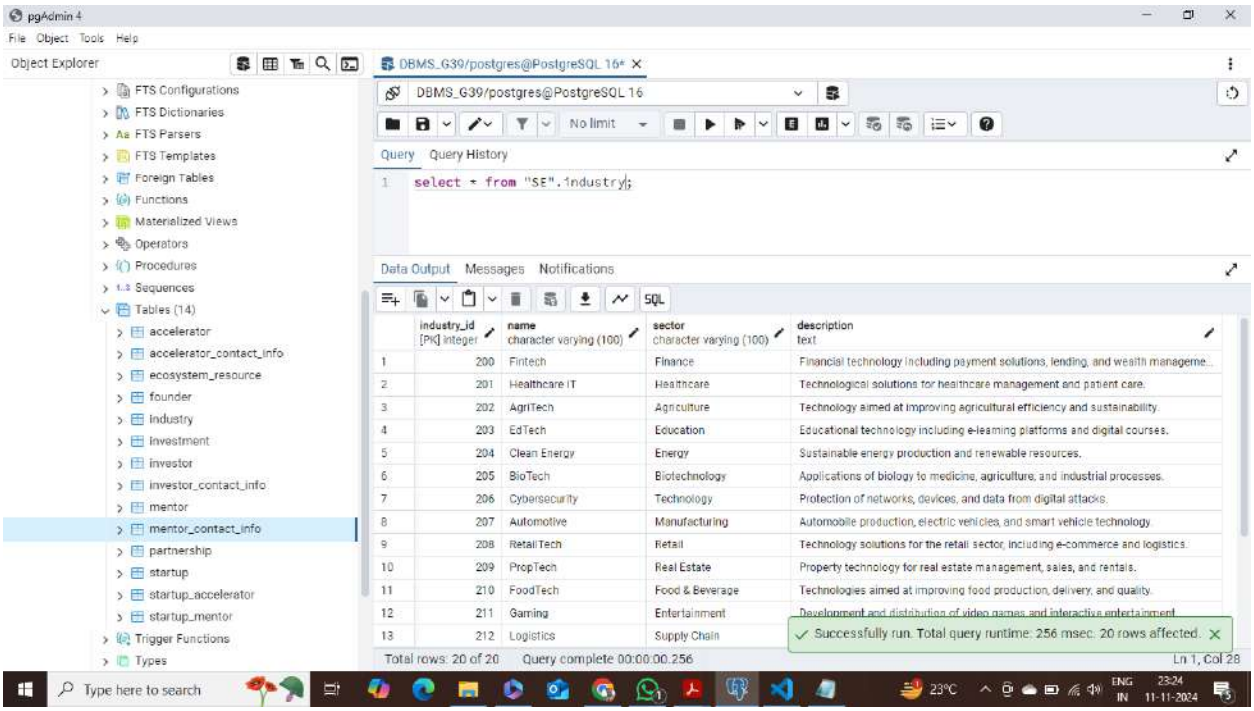
Ecosystem_Resource Table



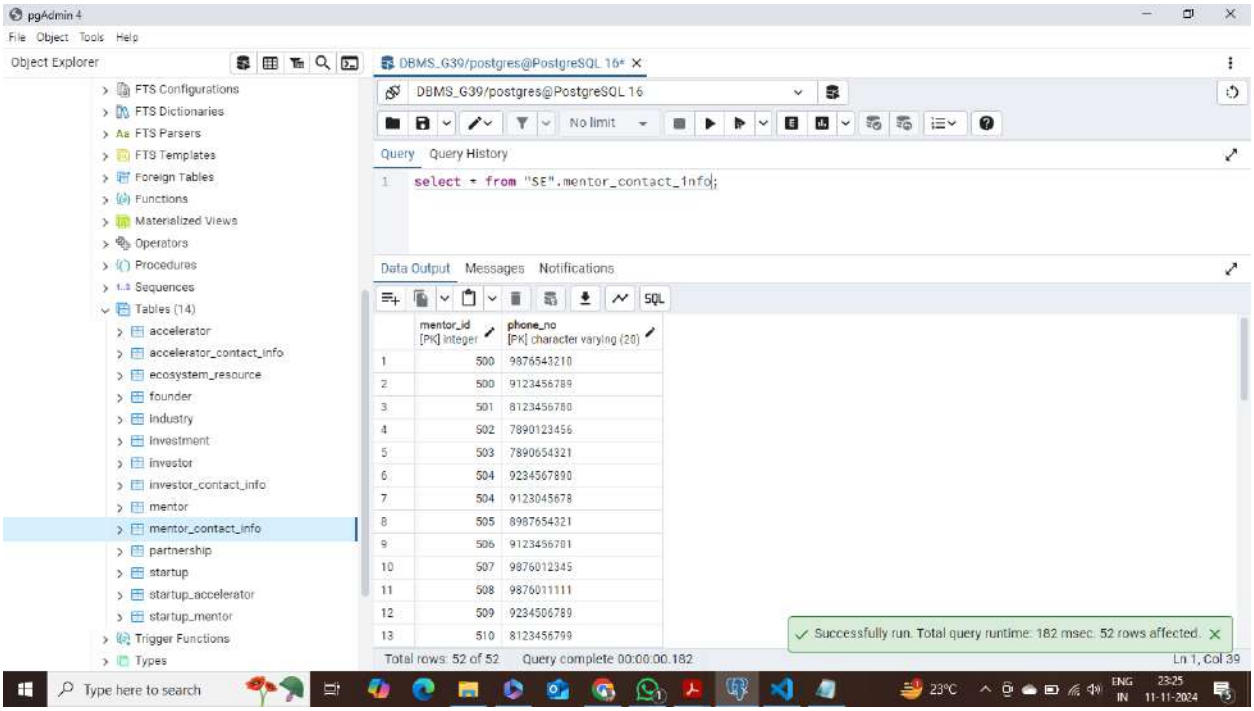
Partnership Table



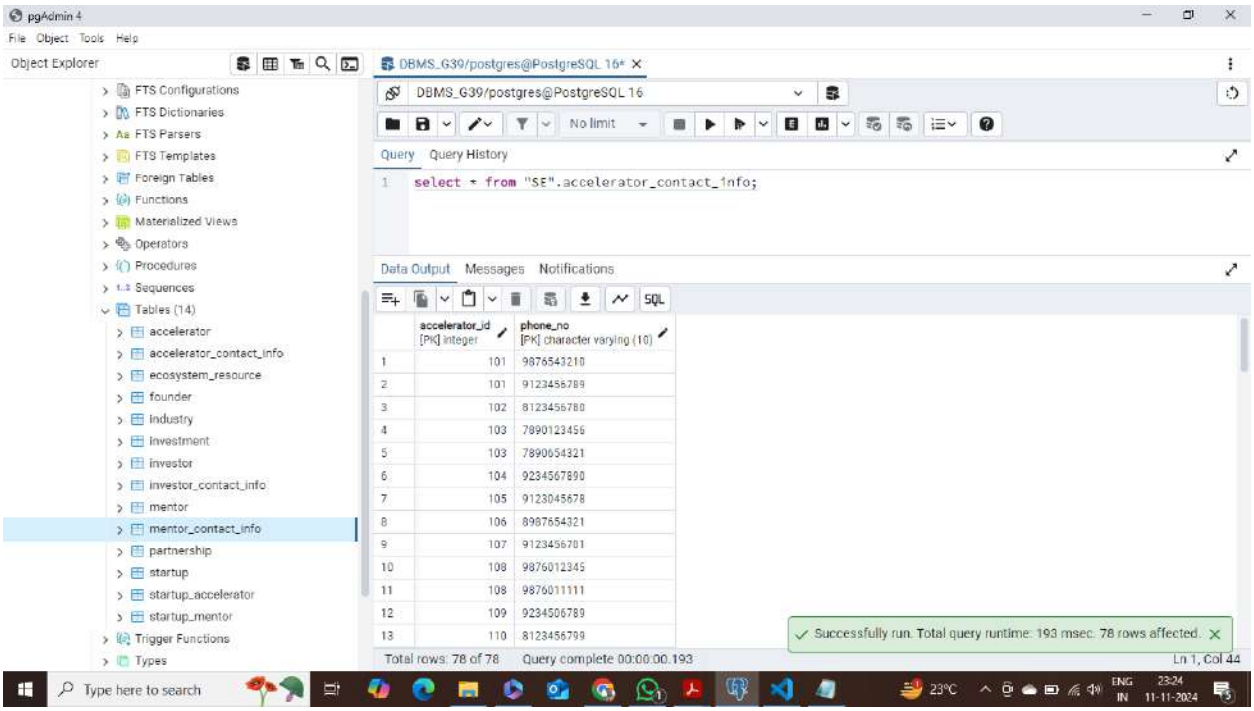
Industry Table



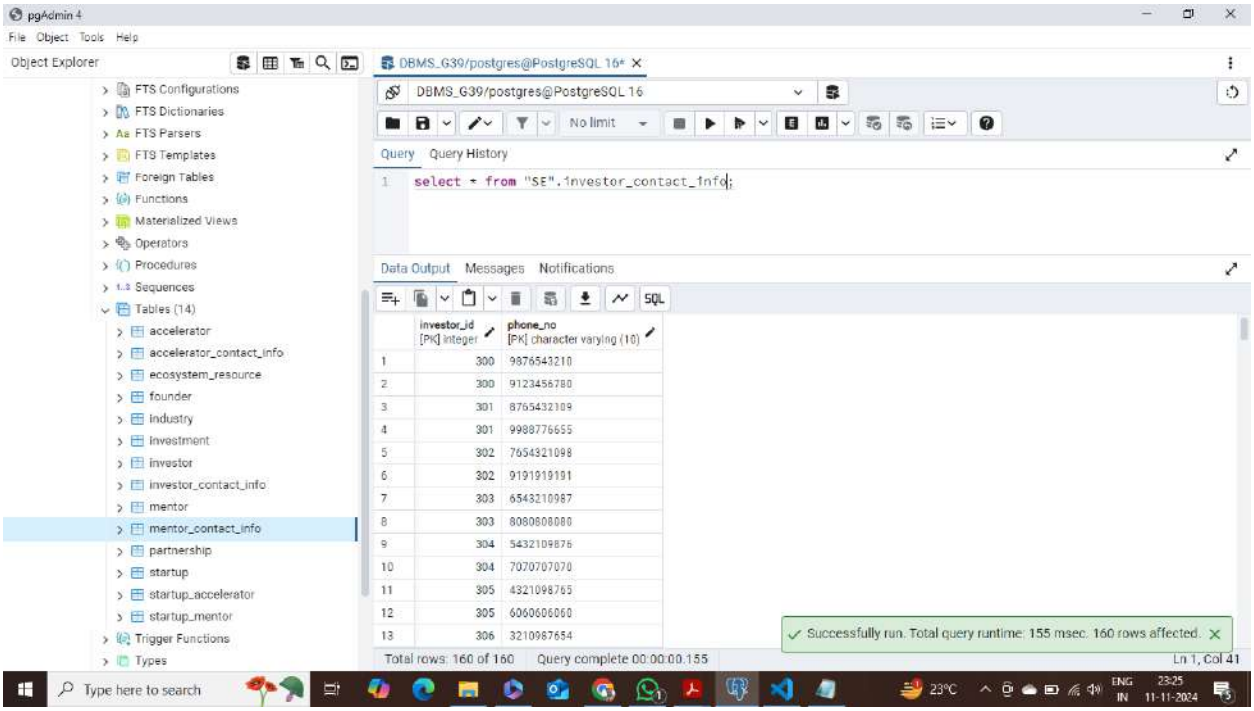
Mentor_Contact_Info Table



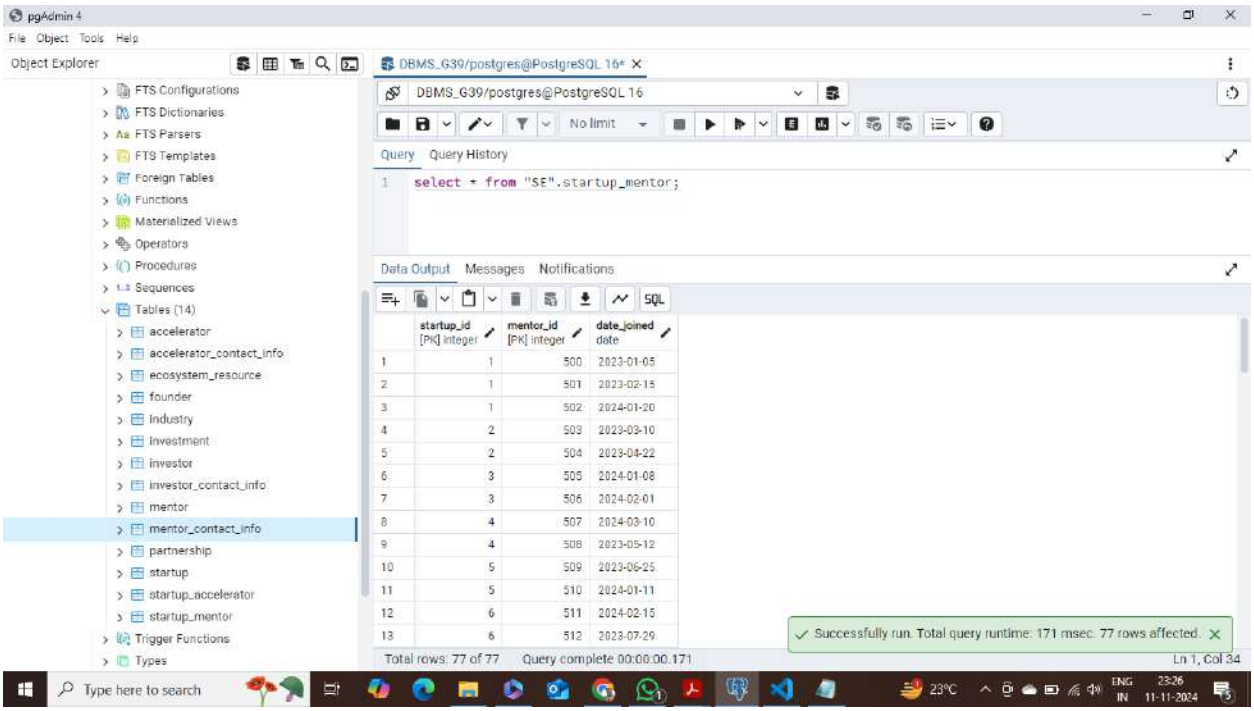
Accelerator_Contact_Info Table



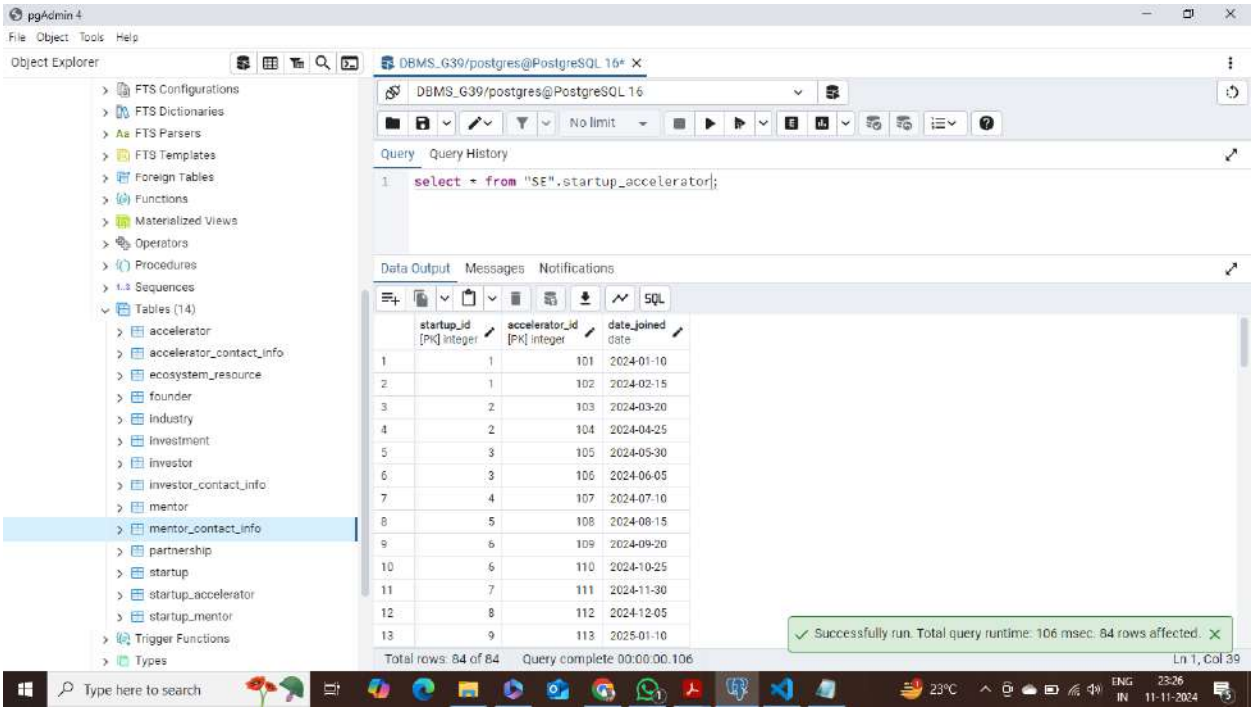
Investor_Contact_Info Table



Startup_Mentor Table



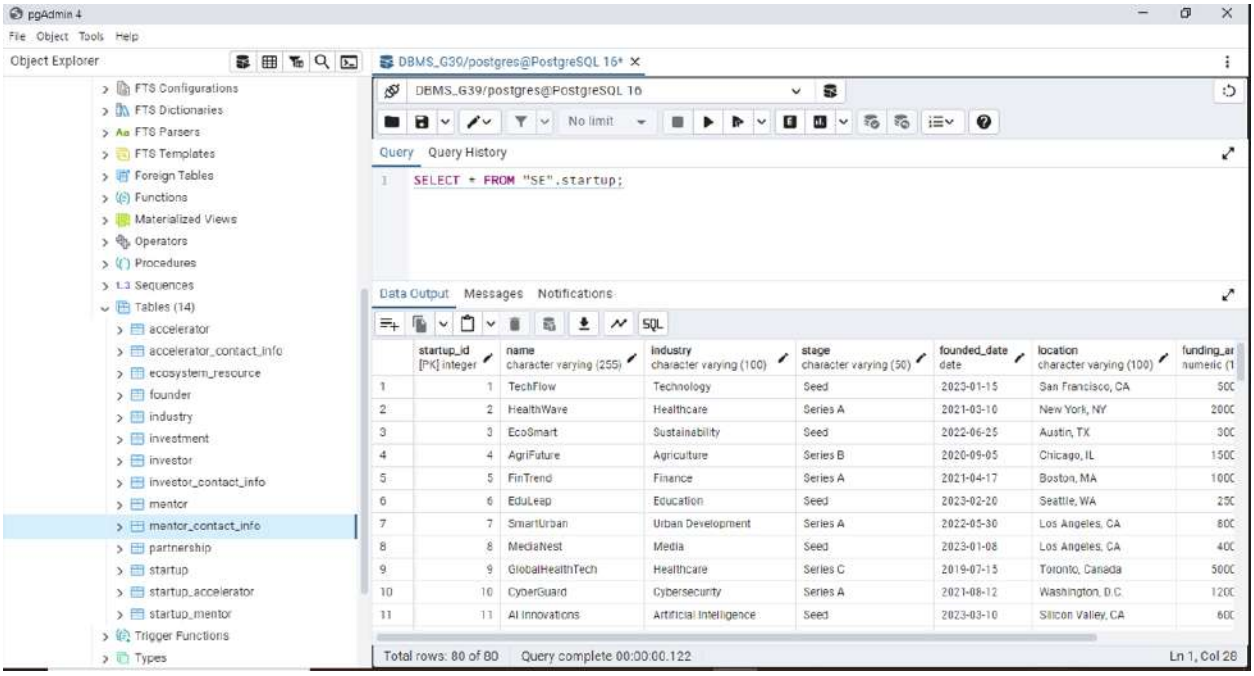
Startup_Accelerator Table



3. SQL Queries

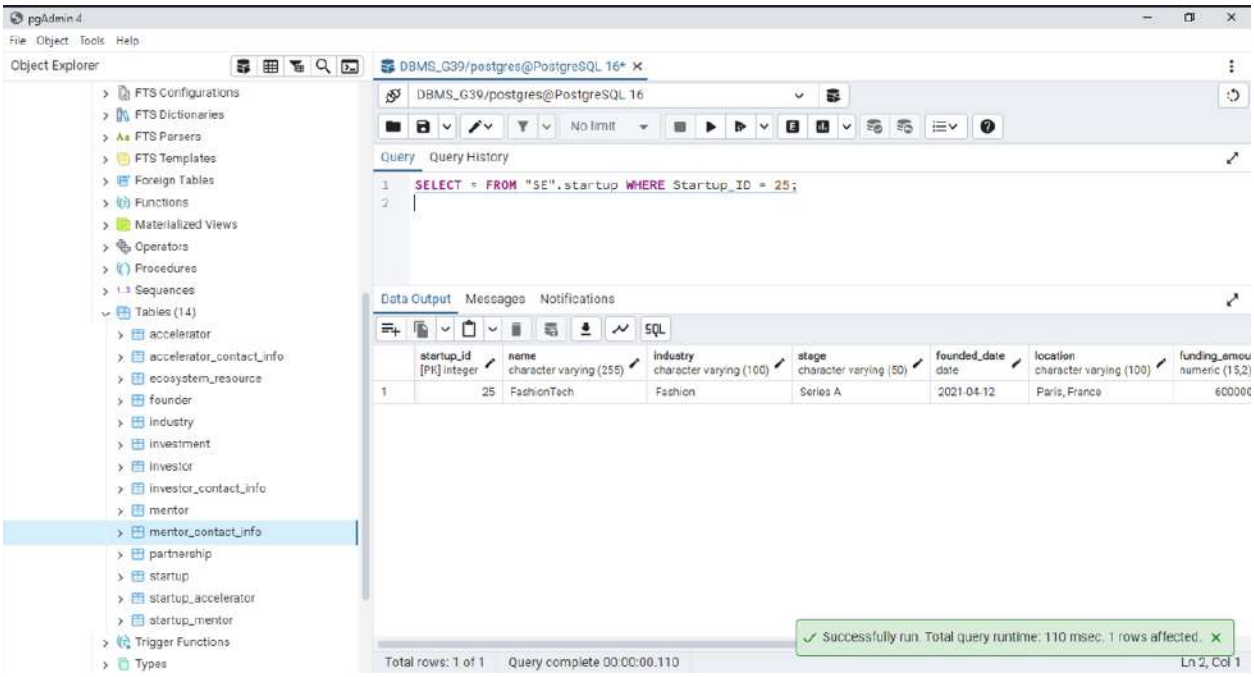
1. Select all startups.

```
SELECT * FROM "SE".startup;
```



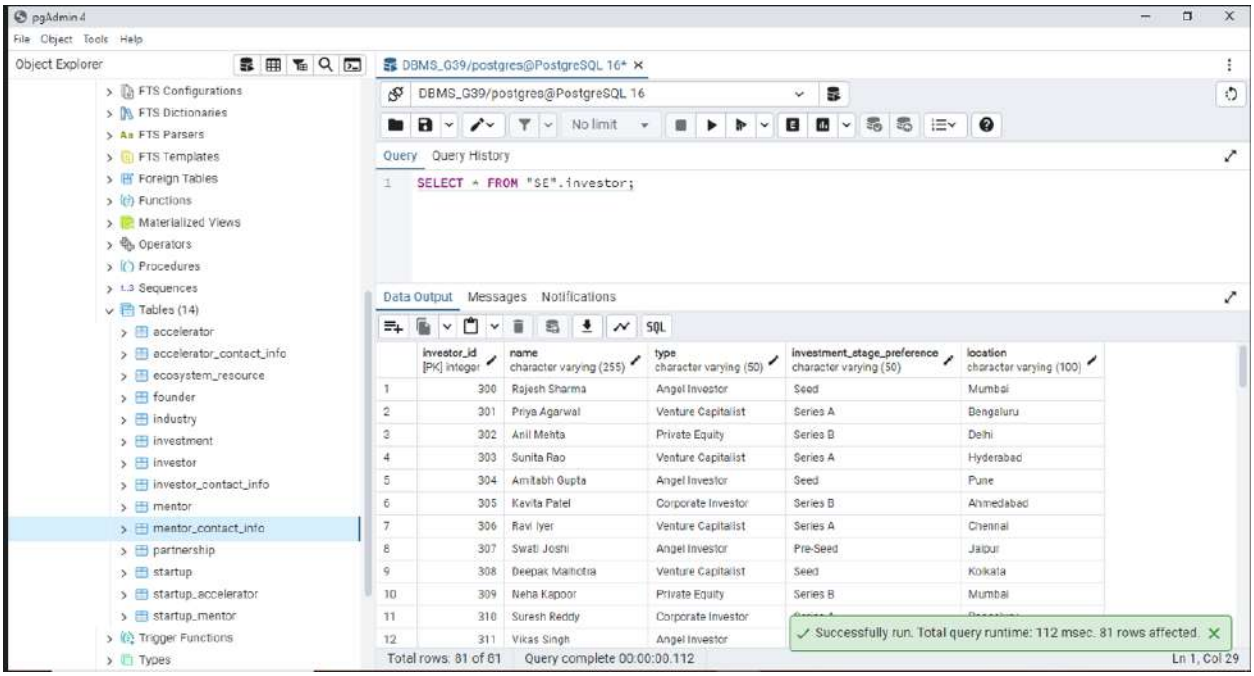
2. Get details of a specific startup by ID.

```
SELECT * FROM "SE".startup WHERE Startup_ID = 25;
```



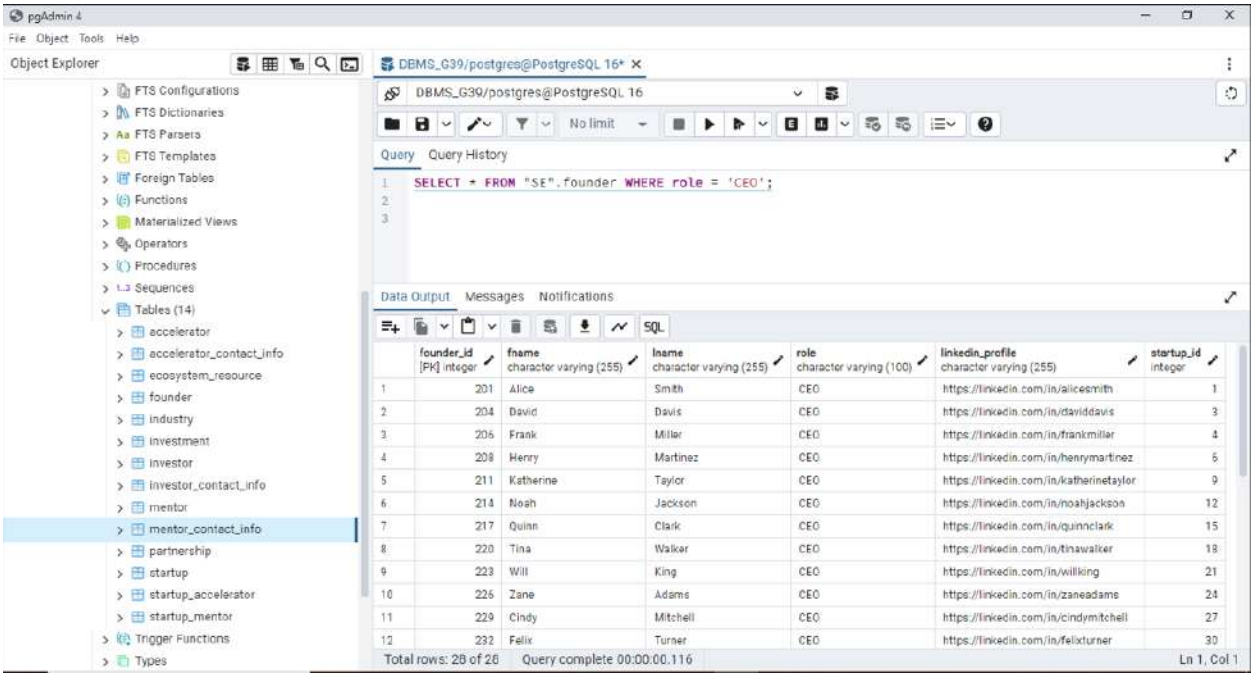
3. Get all investors.

```
SELECT * FROM "SE".investor;
```



4. List all founder in a particular role.

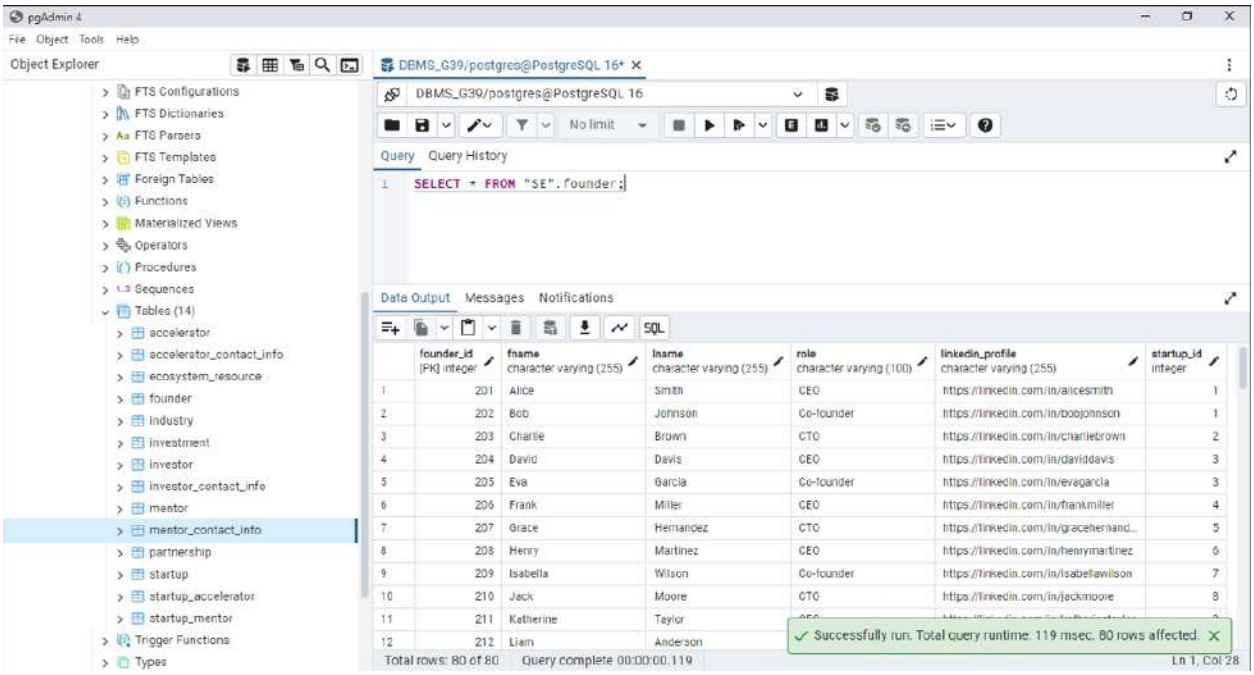
```
SELECT * FROM "SE".founder WHERE role = 'CEO';
```



	founder_id [PK] integer	fname character varying (255)	lname character varying (255)	role character varying (100)	linkedin_profile character varying (255)	startup_id integer
1	201	Alice	Smith	CEO	https://linkedin.com/in/alicesmith	1
2	204	David	Davis	CEO	https://linkedin.com/in/daviddavis	3
3	206	Frank	Miller	CEO	https://linkedin.com/in/frankmiller	4
4	208	Henry	Martinez	CEO	https://linkedin.com/in/henrymartinez	6
5	211	Katherine	Taylor	CEO	https://linkedin.com/in/katherinetaylor	9
6	214	Noah	Jackson	CEO	https://linkedin.com/in/noahjackson	12
7	217	Quinn	Clark	CEO	https://linkedin.com/in/quinnclark	15
8	220	Tina	Walker	CEO	https://linkedin.com/in/tinawalker	18
9	223	Will	King	CEO	https://linkedin.com/in/willking	21
10	226	Zane	Adams	CEO	https://linkedin.com/in/zaneadams	24
11	229	Cindy	Mitchell	CEO	https://linkedin.com/in/cindymitchell	27
12	232	Felix	Turner	CEO	https://linkedin.com/in/felixturner	30

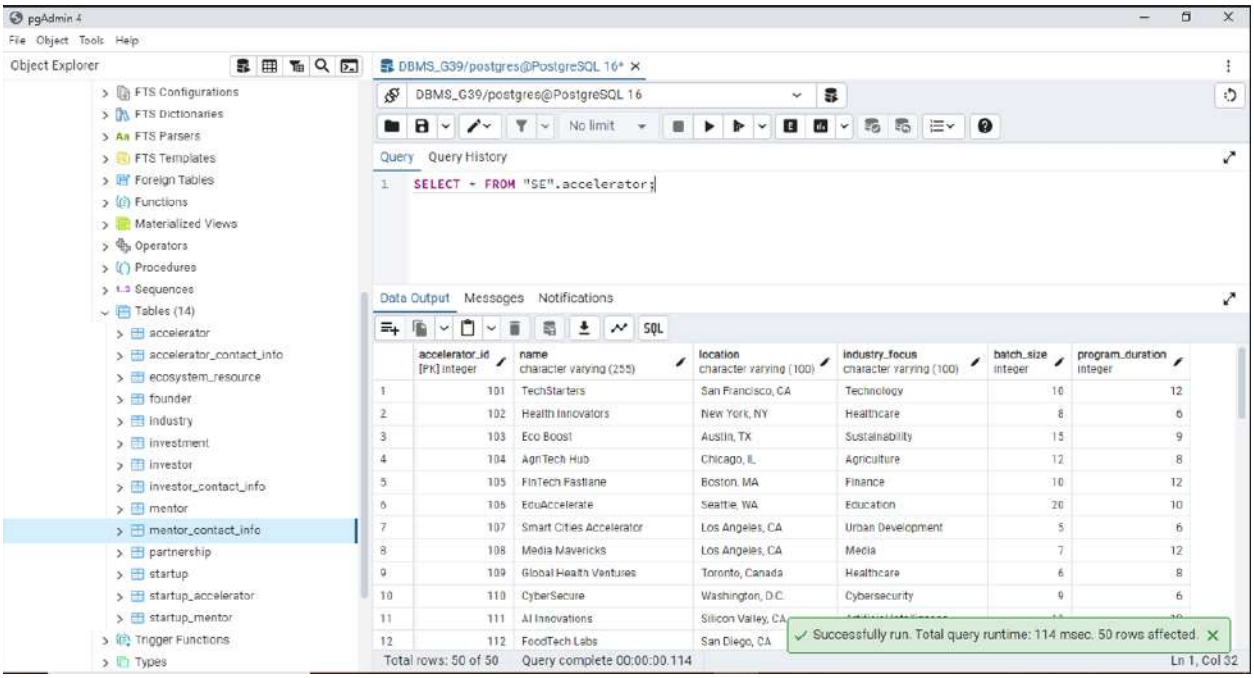
5.Get all founders of startups.

```
SELECT * FROM "SE".founder;
```



6. Get all accelerators.

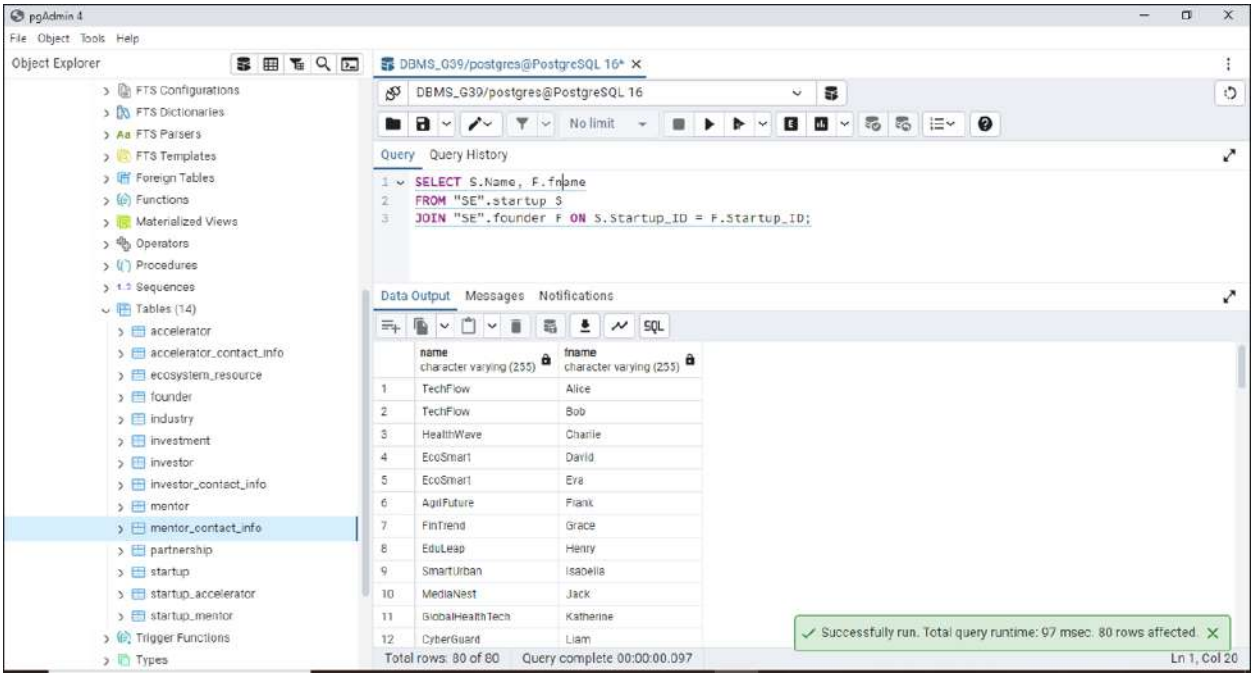
```
SELECT * FROM "SE".accelerator;
```



7. Select startup names and their founders.

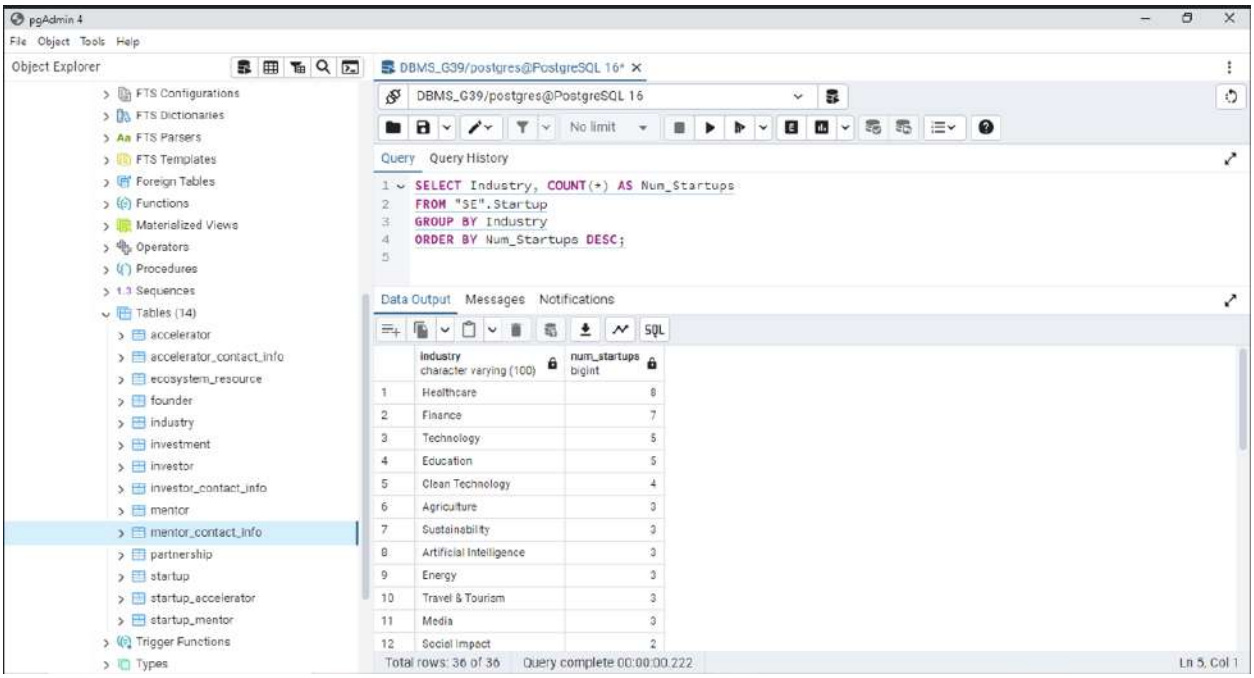
```
SELECT S.Name, F.Name
```

```
FROM "SE".startup S
JOIN "SE".founder F ON S.Startup_ID = F.Startup_ID;
```



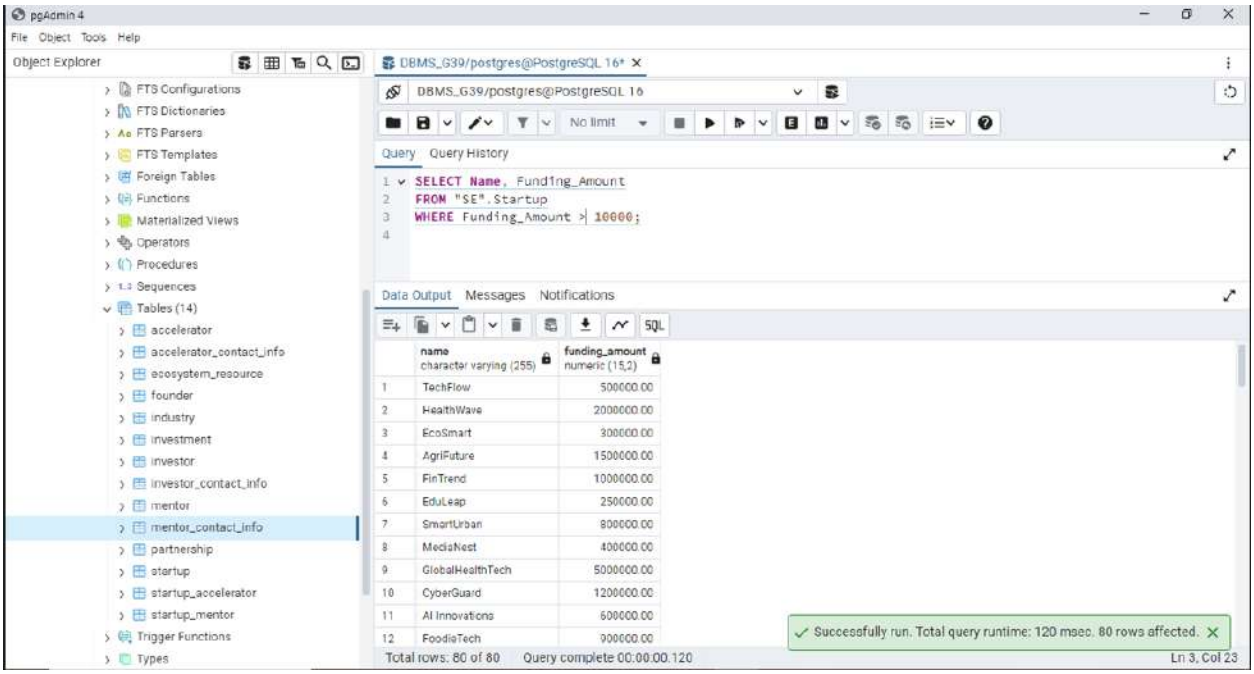
8. Count startup in each stage.

```
SELECT Industry, COUNT(*) AS Num_Startups
FROM "SE".Startup
GROUP BY Industry
ORDER BY Num_Startups DESC;
```



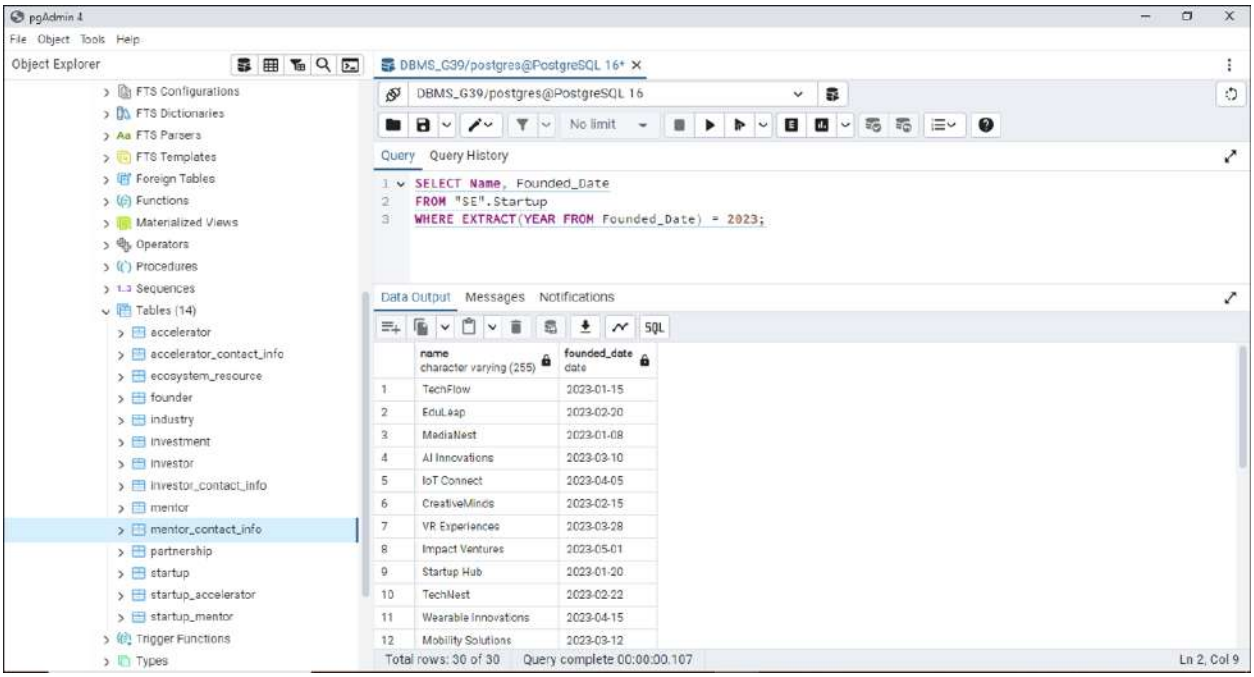
9. Find Startups with Funding Above 10000.

```
SELECT Name, Funding_Amount

FROM "SE".Startup

WHERE Funding_Amount > 10000;j
```



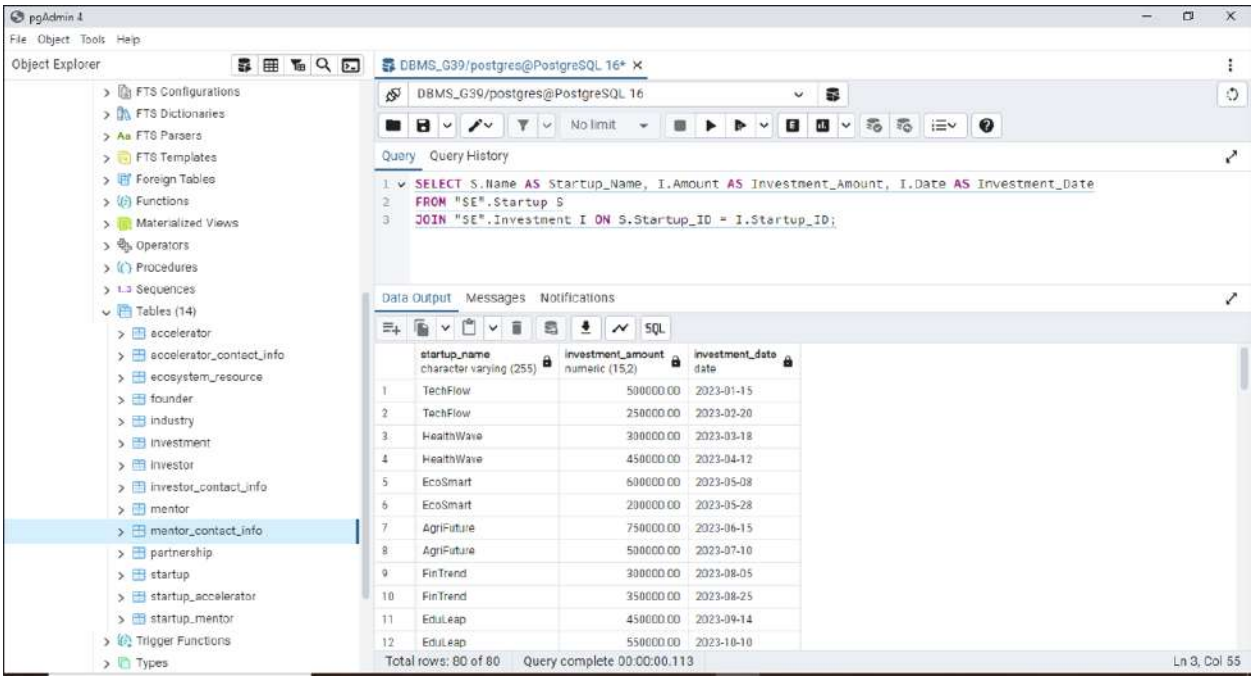
10. Get Startups Founded in a Specific Year.

```
SELECT Name, Founded_Date

FROM "SE".Startup

WHERE EXTRACT(YEAR FROM Founded_Date) = 2023;
```



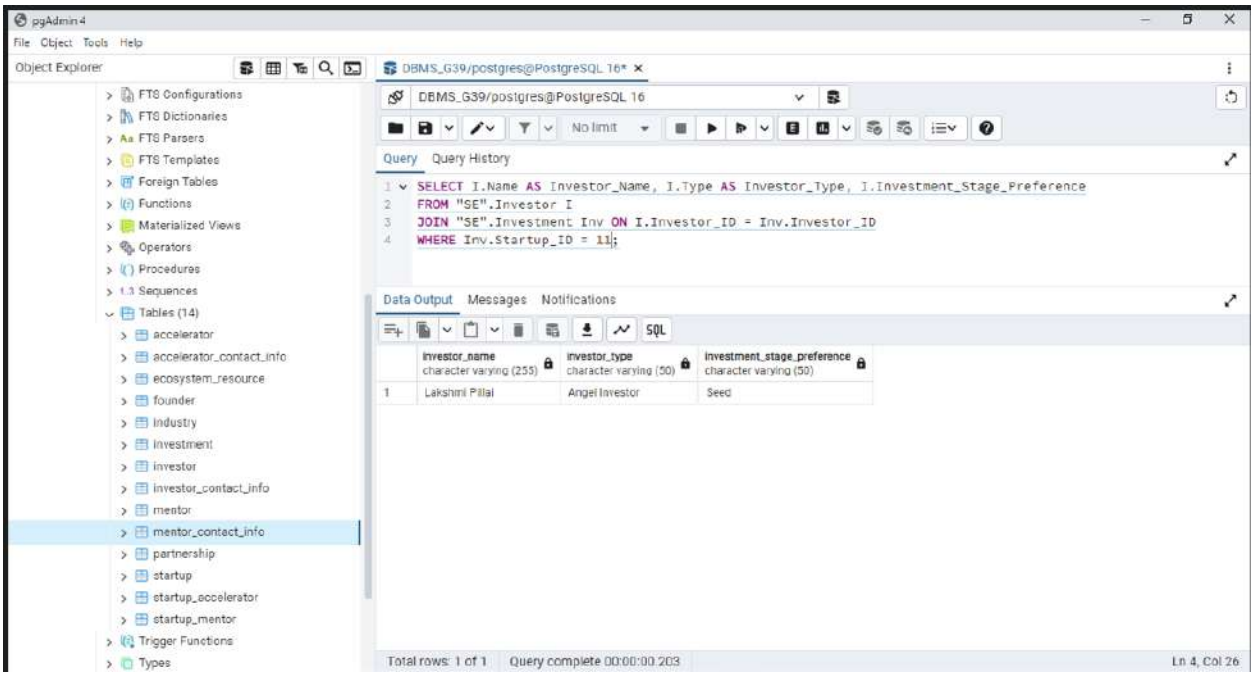
11. Join Startup and Investment to Get Funding Details.

```
SELECT S.Name AS Startup_Name, I.Amount AS Investment_Amount, I.Date AS Investment_Date

FROM "SE".Startup S

JOIN "SE".Investment I ON S.Startup_ID = I.Startup_ID;
```



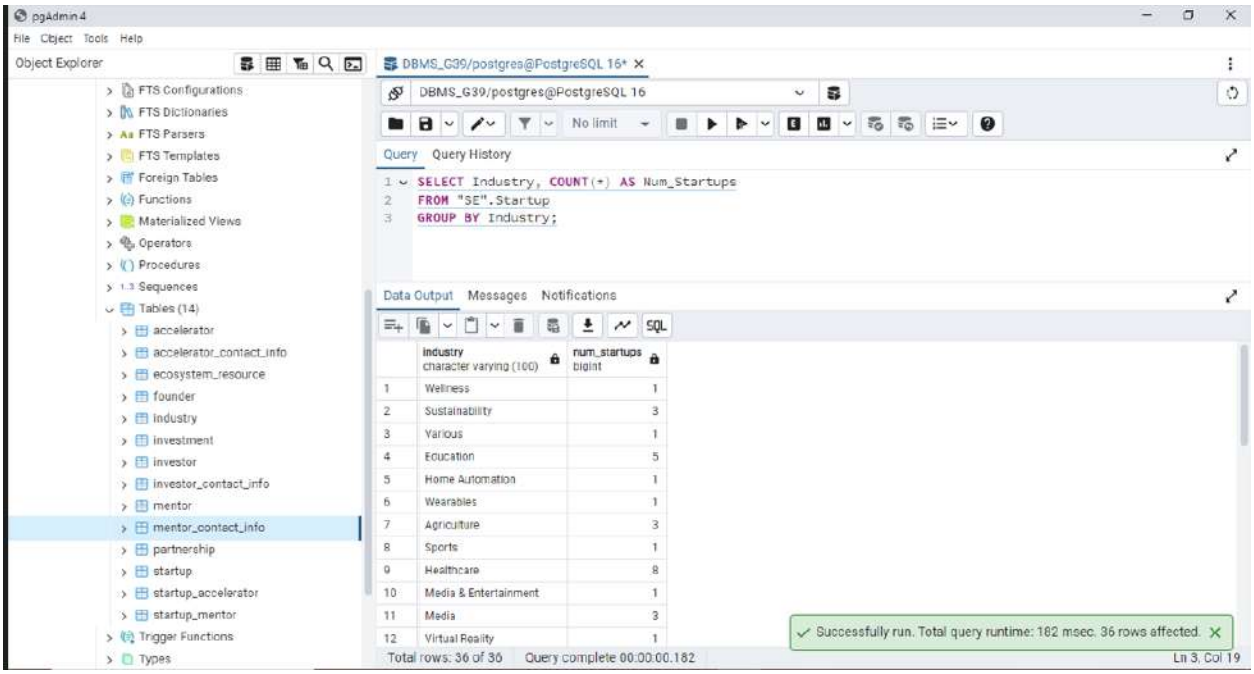
12. Get Investors Who Invested in a Specific Startup.

```
SELECT I.Name AS Investor_Name, I.Type AS Investor_Type, I.Investment_Stage_Preference
FROM "SE".Investor I
JOIN "SE".Investment Inv ON I.Investor_ID = Inv.Investor_ID
WHERE Inv.Startup_ID = 11;
```



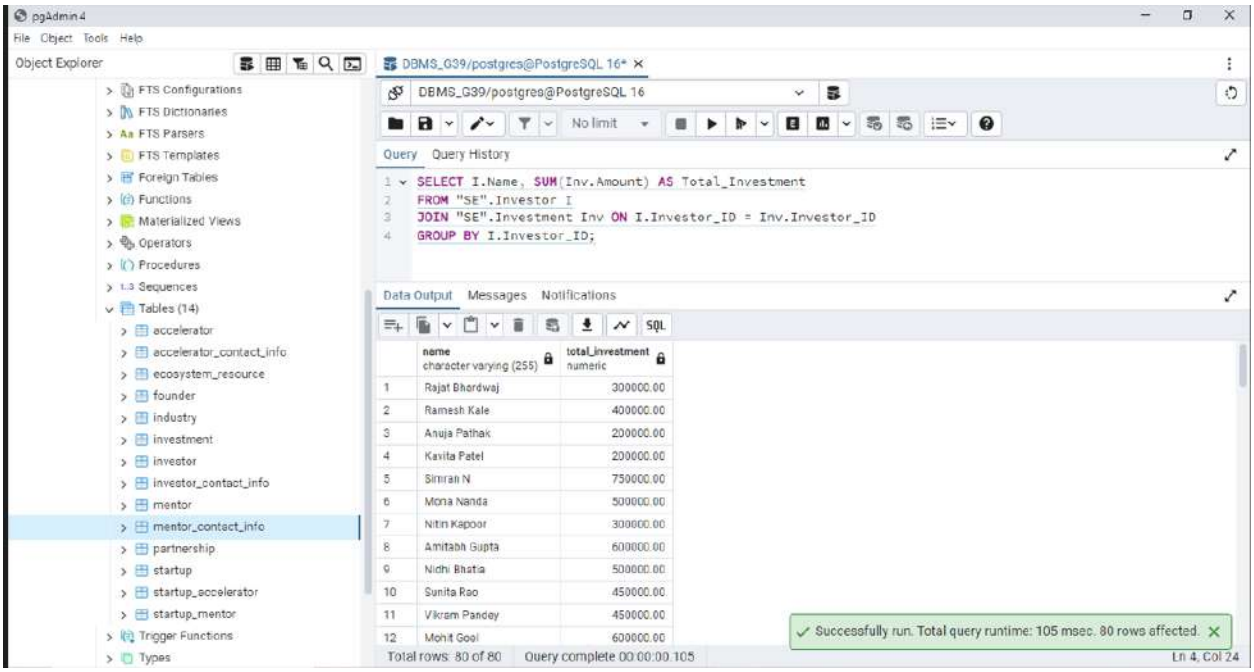
13. Count Startups in Each Industry.

```
SELECT Industry, COUNT(*) AS Num_Startups
FROM "SE".Startup
GROUP BY Industry;
```



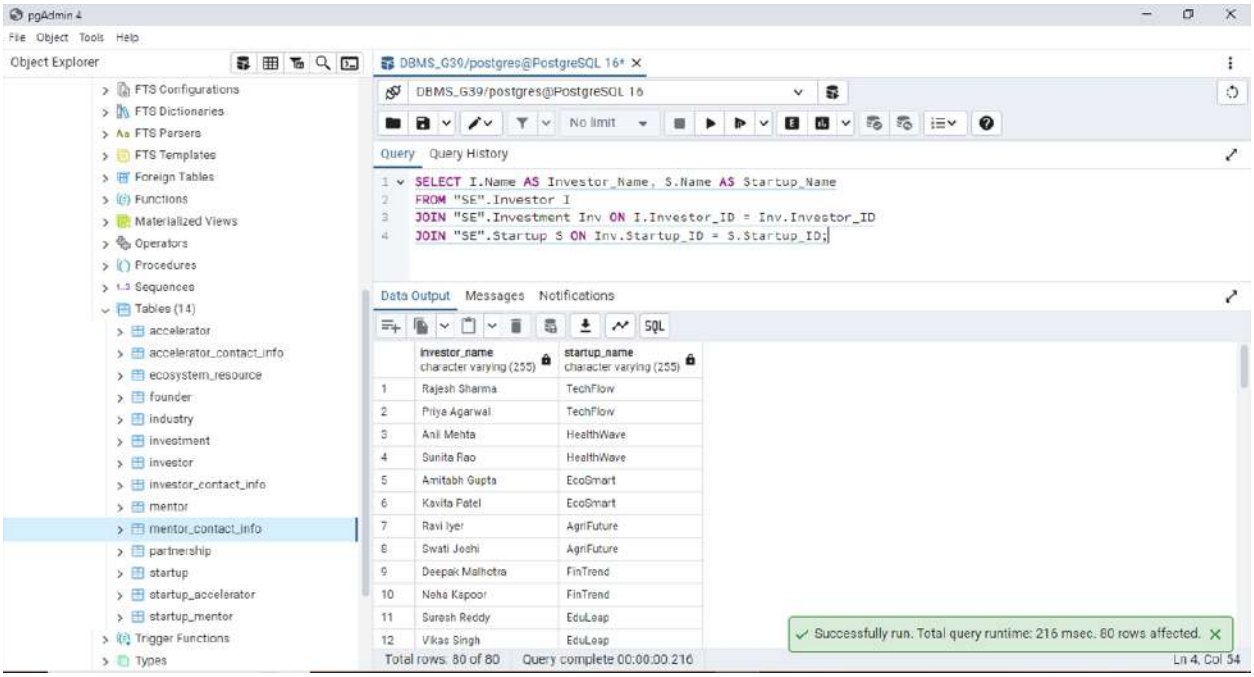
14. Total Investment Amount by Investor.

```
SELECT I.Name, SUM(Inv.Amount) AS Total_Investment
FROM "SE".Investor I
JOIN "SE".Investment Inv ON I.Investor_ID = Inv.Investor_ID
GROUP BY I.Investor_ID;
```



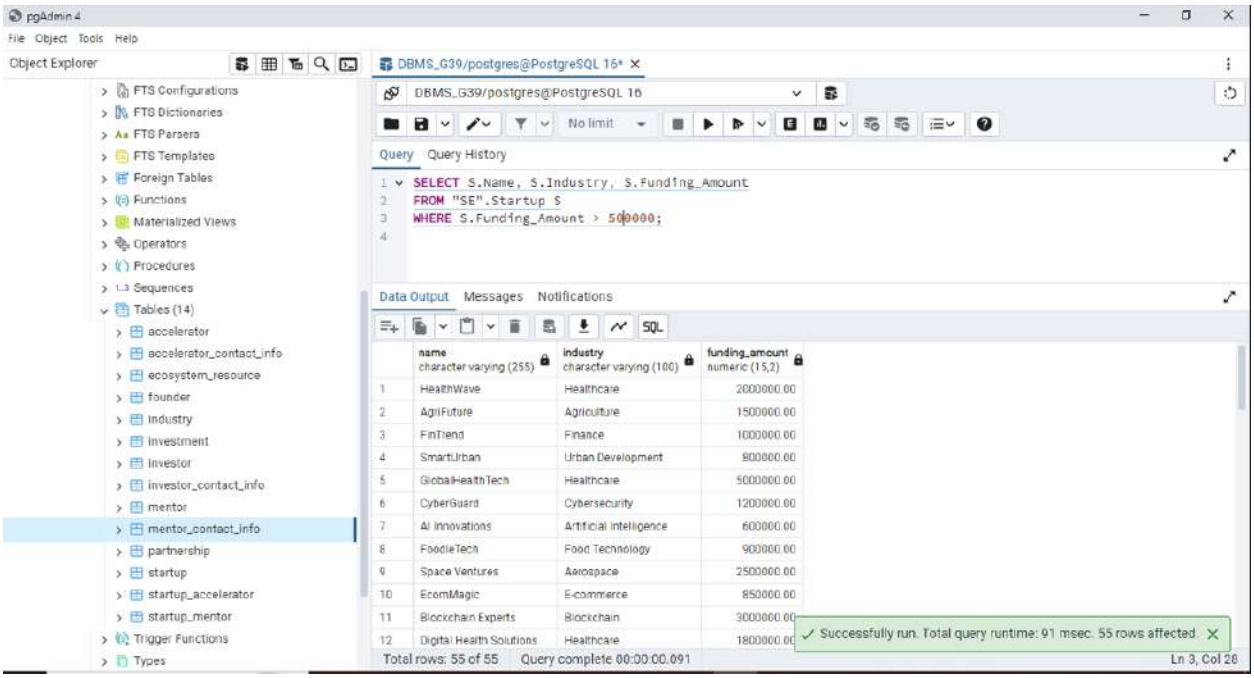
15. List Investors and the Startups They Have Invested In.

```
SELECT I.Name AS Investor_Name, S.Name AS Startup_Name
FROM "SE".Investor I
JOIN "SE".Investment Inv ON I.Investor_ID = Inv.Investor_ID
JOIN "SE".Startup S ON Inv.Startup_ID = S.Startup_ID;
```



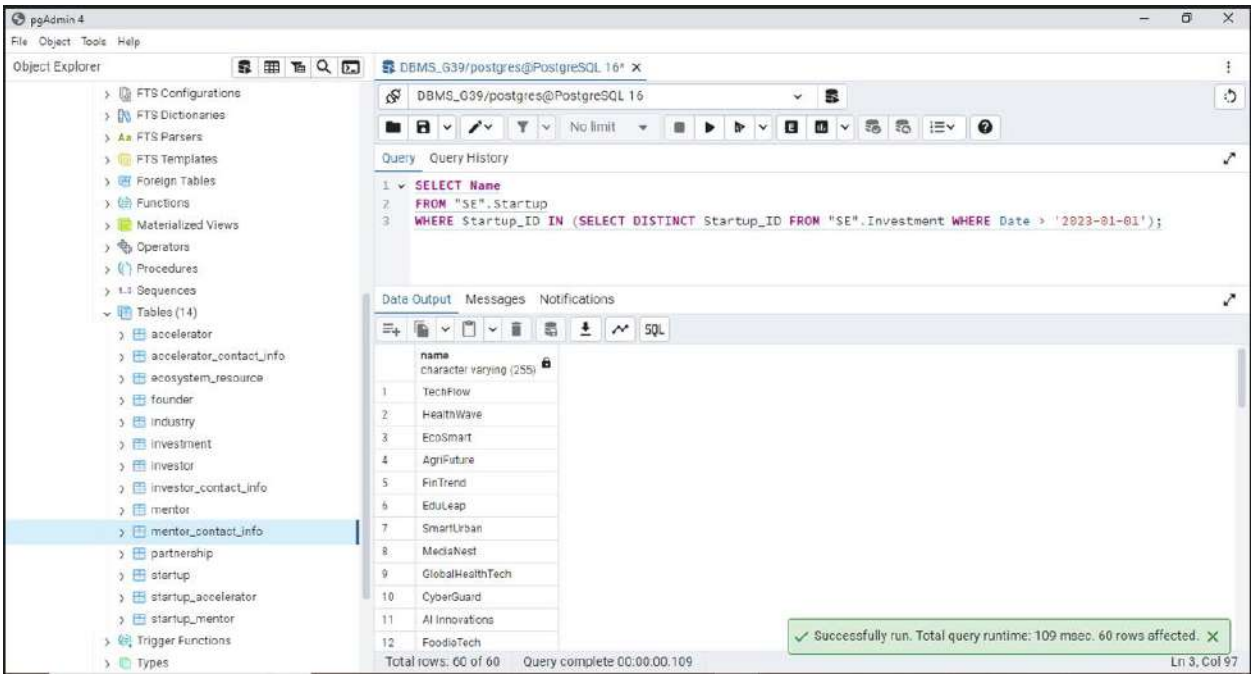
16. Find Startups and Their Industry Focus with Funding Above 500000.

```
SELECT S.Name, S.Industry, S.Funding_Amount

FROM "SE".Startup S

WHERE S.Funding_Amount > 500000;
```



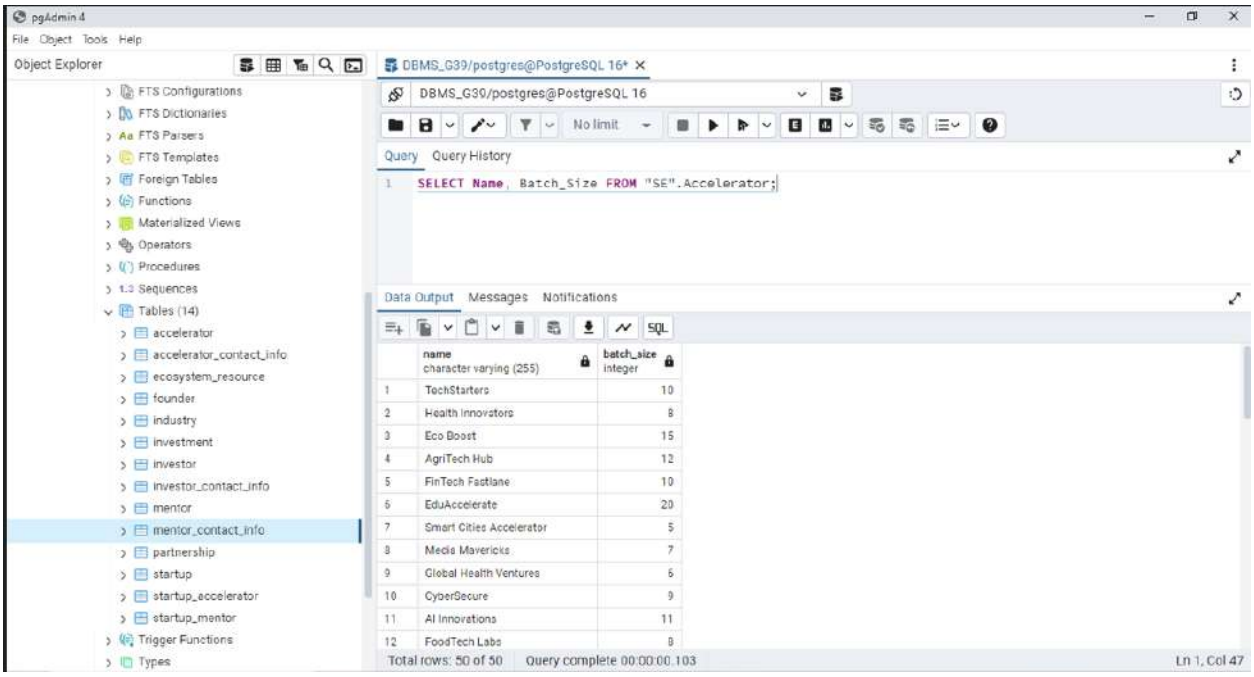
17. Get Startups That Received Funding After a Specific Date.

```
SELECT Name

FROM "SE".Startup

WHERE Startup_ID IN (SELECT DISTINCT Startup_ID FROM "SE".Investment WHERE Date >
'2023-01-01');
```



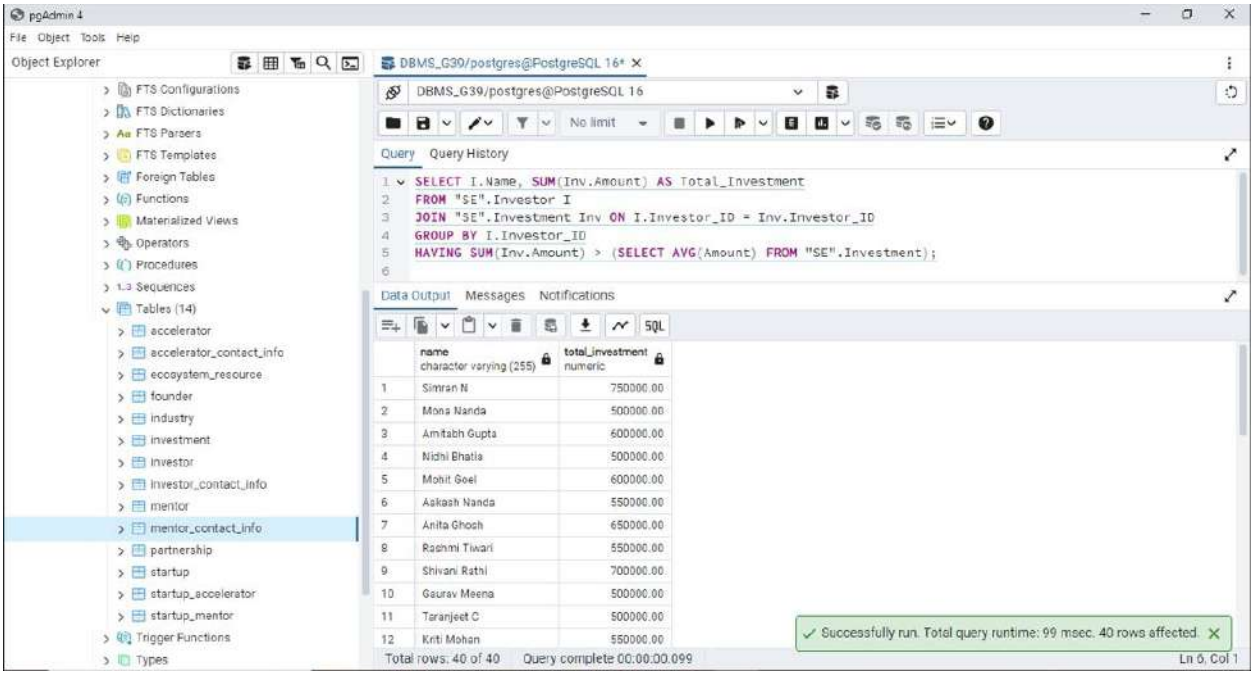
18. List Accelerators and Their Batch Sizes.

```
SELECT Name, Batch_Size FROM "SE".Accelerator;
```



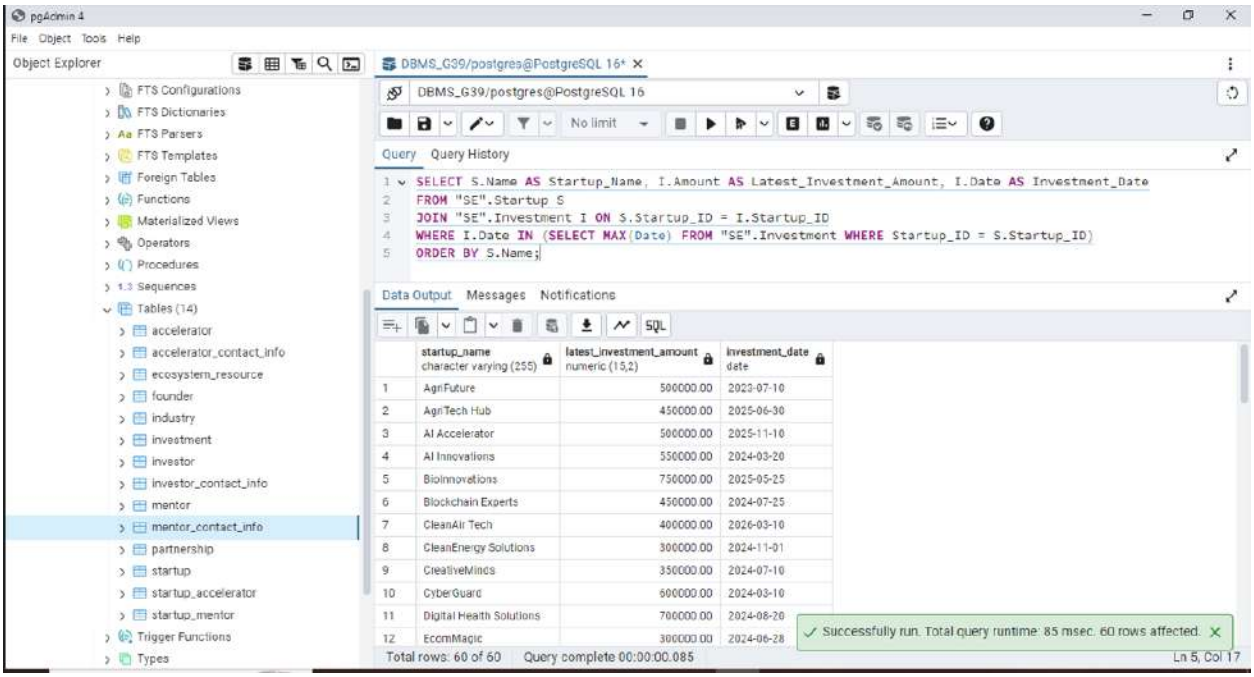
19. Find Investors Who Invested More Than the Average Investment Amount.

```
SELECT I.Name, SUM(Inv.Amount) AS Total_Investment

FROM "SE".Investor I

JOIN "SE".Investment Inv ON I.Investor_ID = Inv.Investor_ID

GROUP BY I.Investor_ID

HAVING SUM(Inv.Amount) > (SELECT AVG(Amount) FROM "SE".Investment);
```



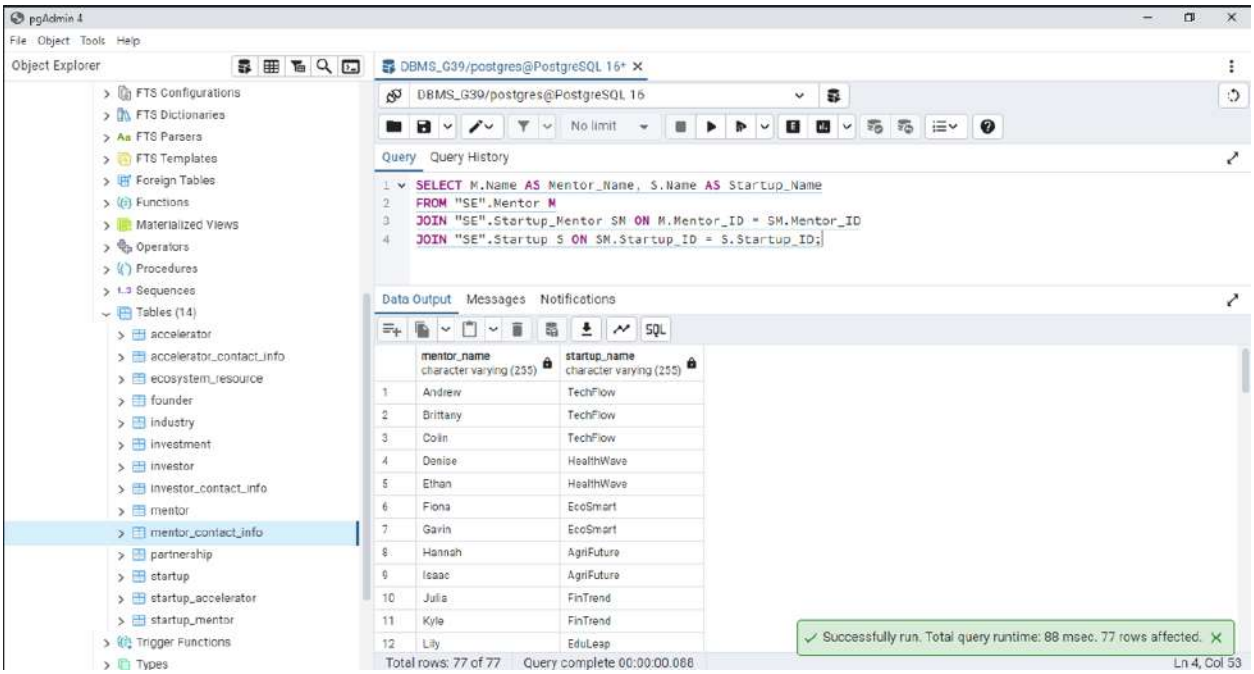
20. Find the Latest Investment in Each Startup.

```
SELECT S.Name AS Startup_Name, I.Amount AS Latest_Investment_Amount, I.Date AS
Investment_Date

FROM "SE".Startup S

JOIN "SE".Investment I ON S.Startup_ID = I.Startup_ID

WHERE I.Date IN (SELECT MAX(Date) FROM "SE".Investment WHERE Startup_ID =
S.Startup_ID)

ORDER BY S.Name;
```



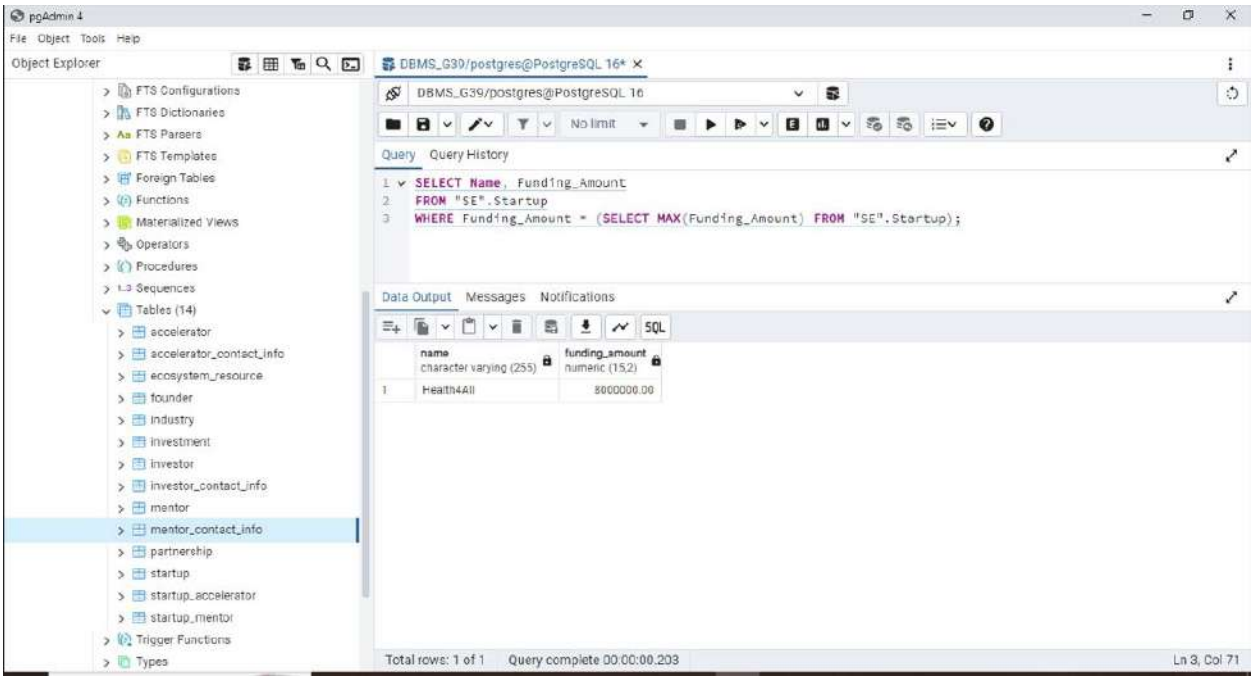
21. List Mentors and the Startups They Are Mentoring.

```
SELECT M.Name AS Mentor_Name, S.Name AS Startup_Name
FROM "SE".Mentor M
JOIN "SE".Startup_Mentor SM ON M.Mentor_ID = SM.Mentor_ID
JOIN "SE".Startup S ON SM.Startup_ID = S.Startup_ID;
```



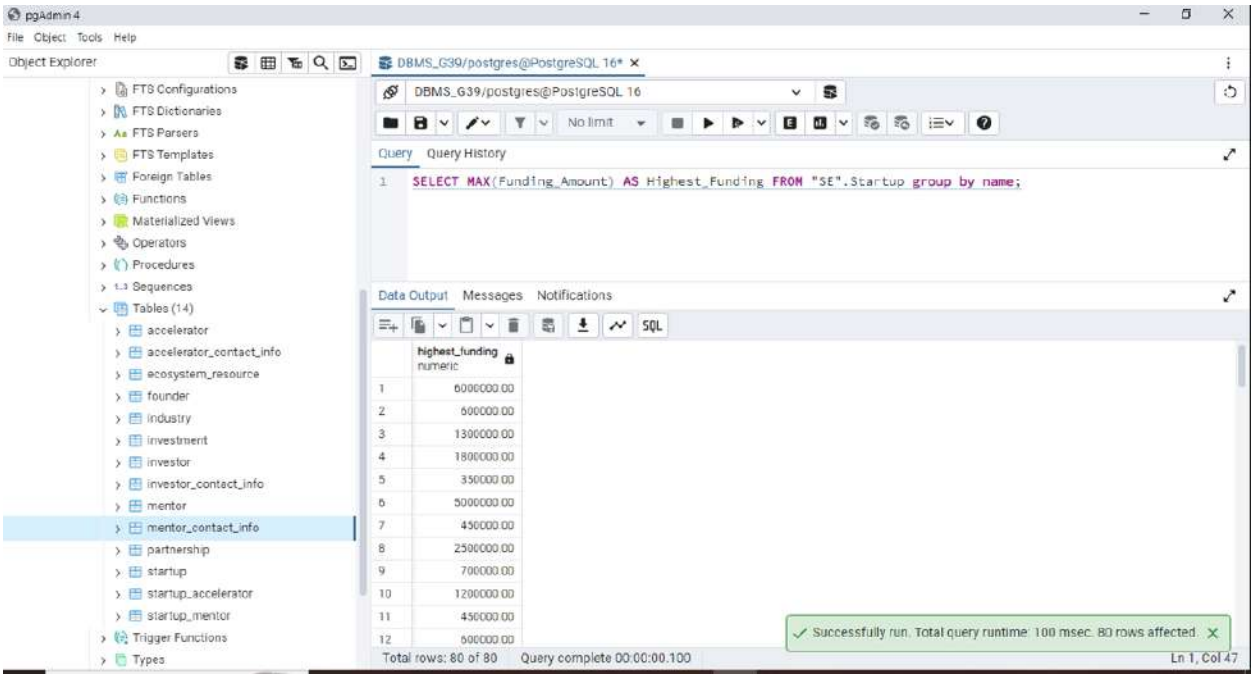
22. Find Startups with the Highest Funding Amount.

```
SELECT Name, Funding_Amount

FROM "SE".Startup

WHERE Funding_Amount = (SELECT MAX(Funding_Amount) FROM "SE".Startup);
```



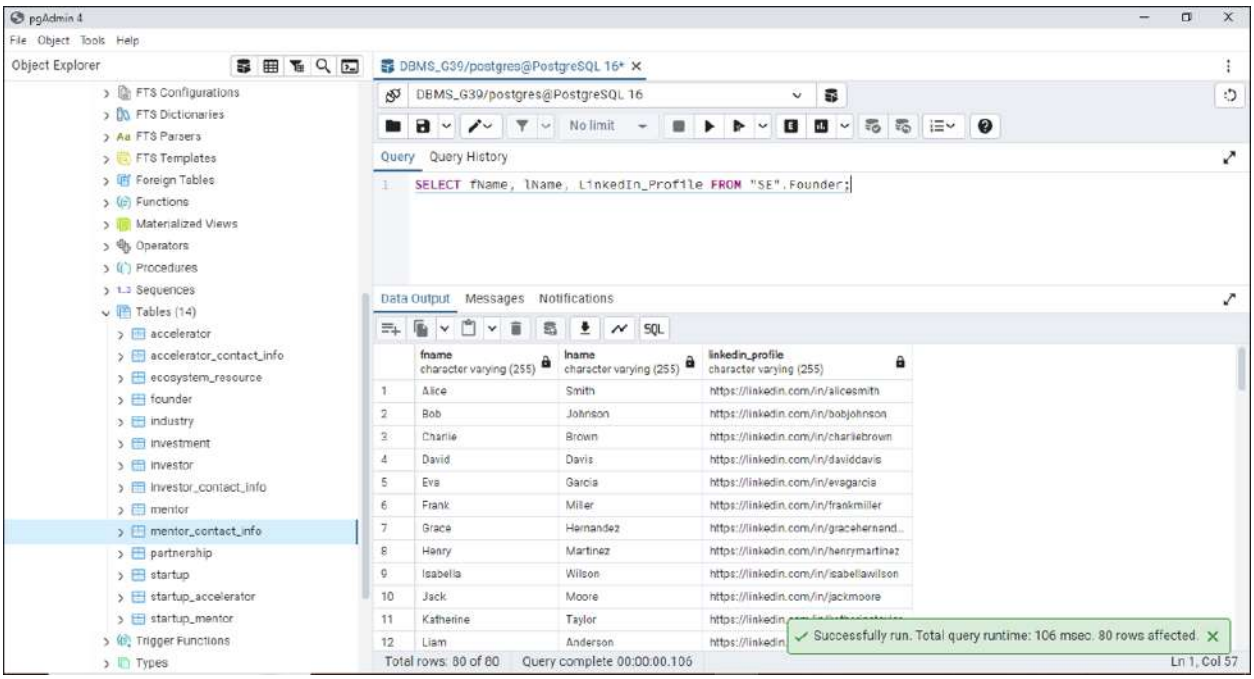
23. Find the Startup with the Highest Funding.

```
SELECT MAX(Funding_Amount) AS Highest_Funding FROM "SE".Startup Group by name;
```



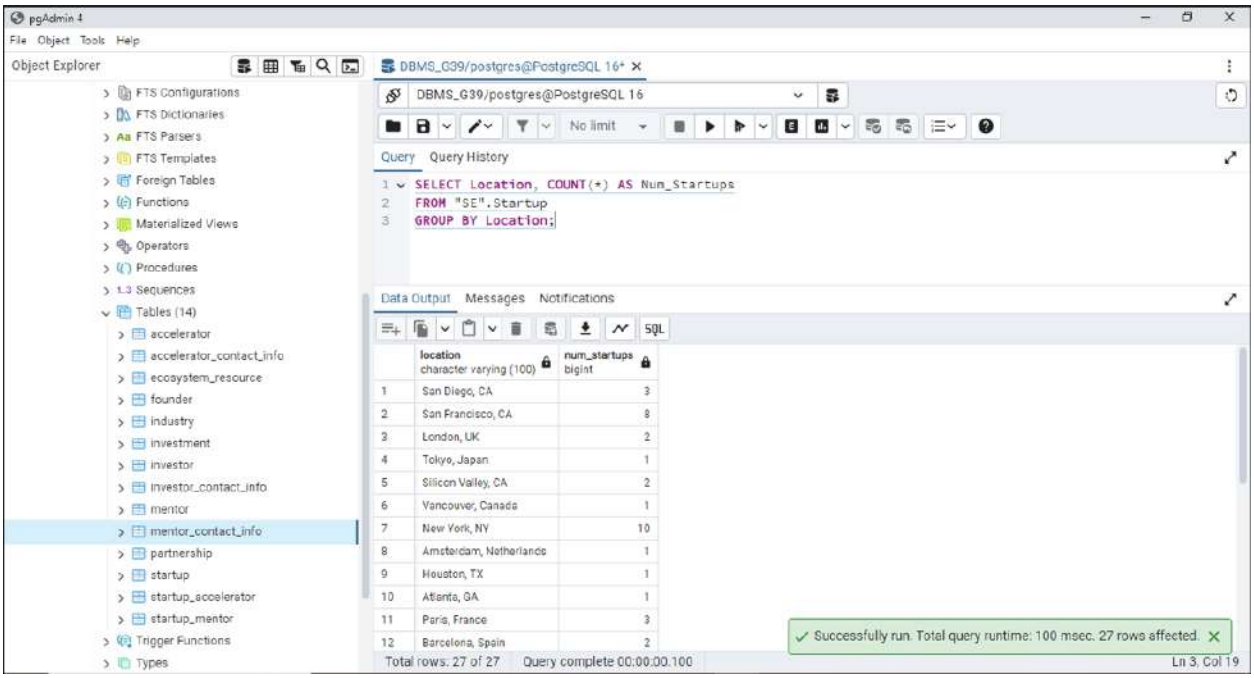
24. List Founders and Their LinkedIn Profiles.

```
SELECT fName, lName, LinkedIn_Profile FROM "SE".Founder;
```



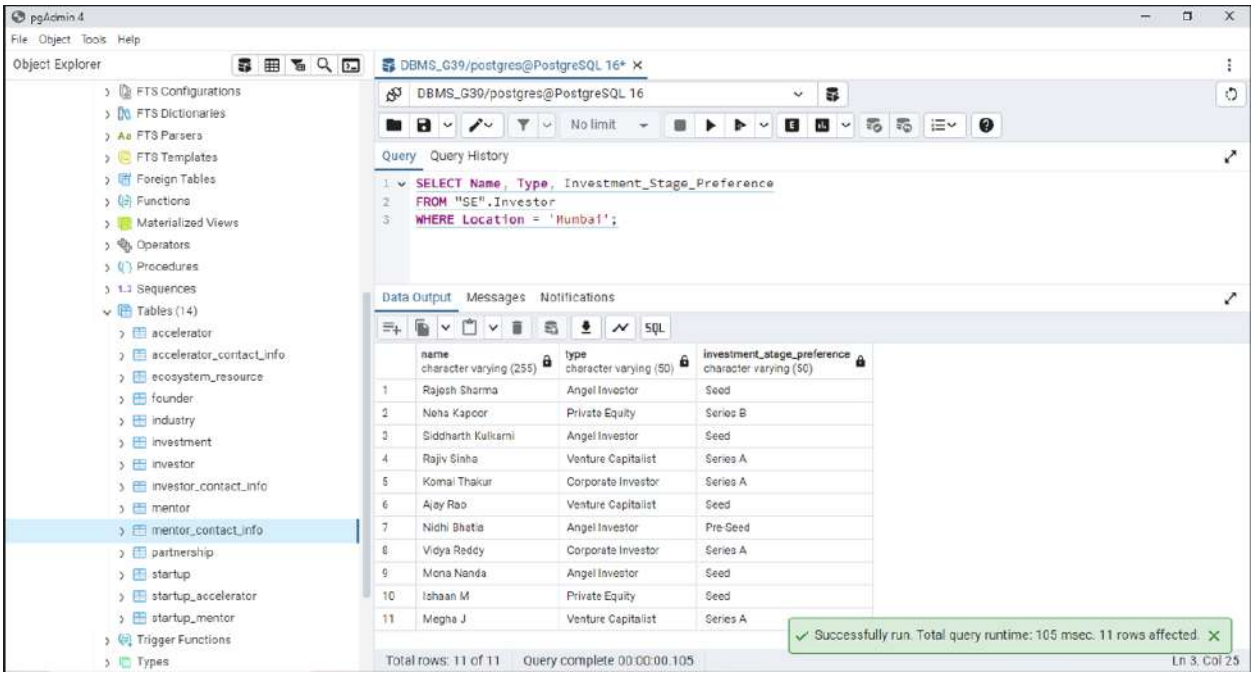
25. Count Startups by Location.

```
SELECT Location, COUNT(*) AS Num_Startups

FROM "SE".Startup

GROUP BY Location;
```



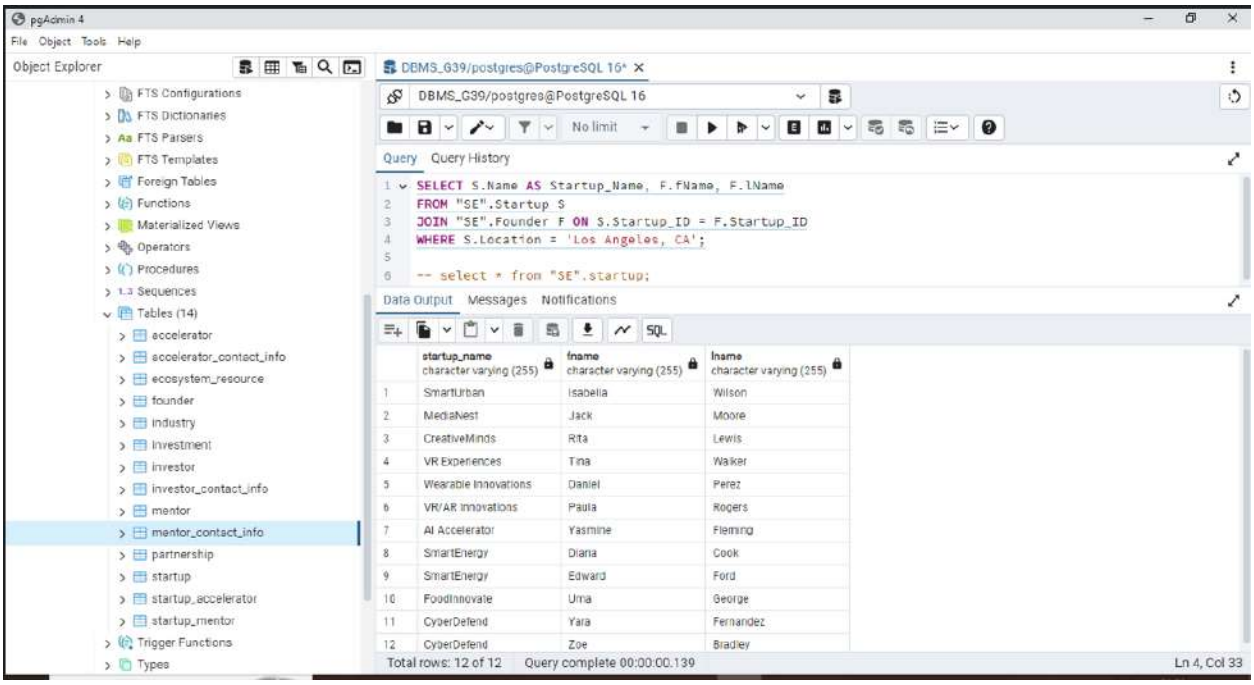
26. Find Investors in a Specific Location.

```
SELECT Name, Type, Investment_Stage_Preference
FROM "SE".Investor
WHERE Location = 'Mumbai';
```



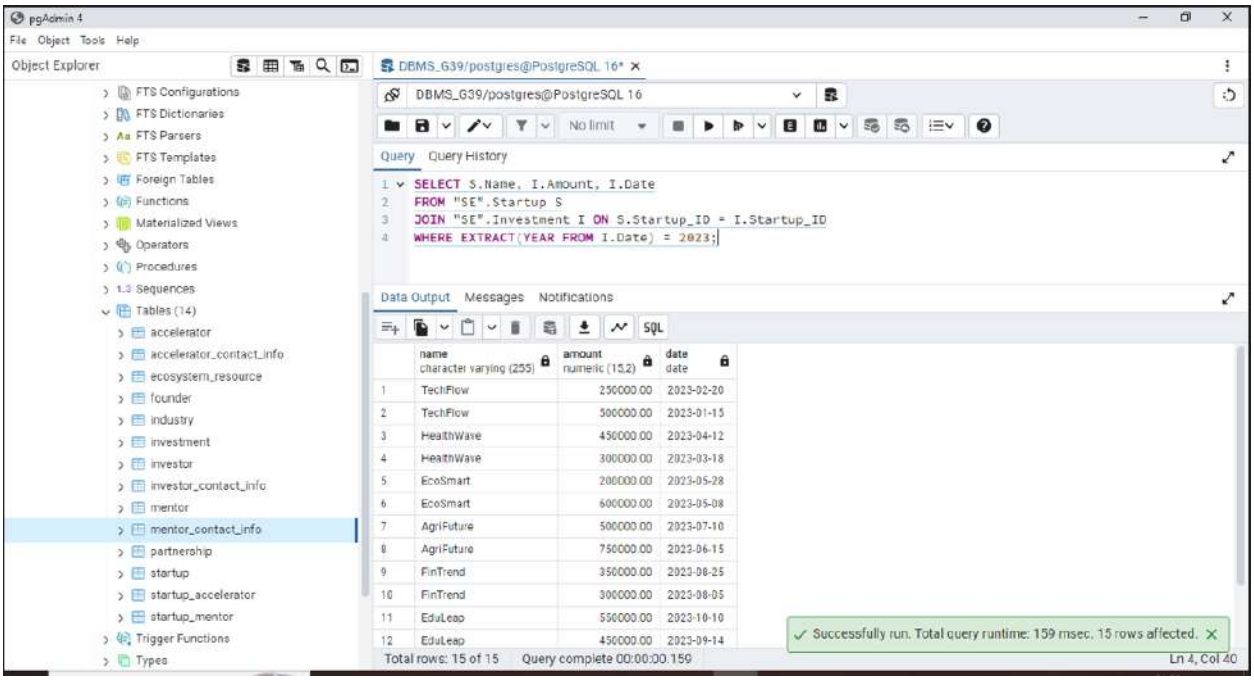
27. Find Startups and Their Founders in a Specific Location.

```
SELECT S.Name AS Startup_Name, F.fName, F.lName

FROM "SE".Startup S

JOIN "SE".Founder F ON S.Startup_ID = F.Startup_ID

WHERE S.Location = 'Los Angeles, CA';
```



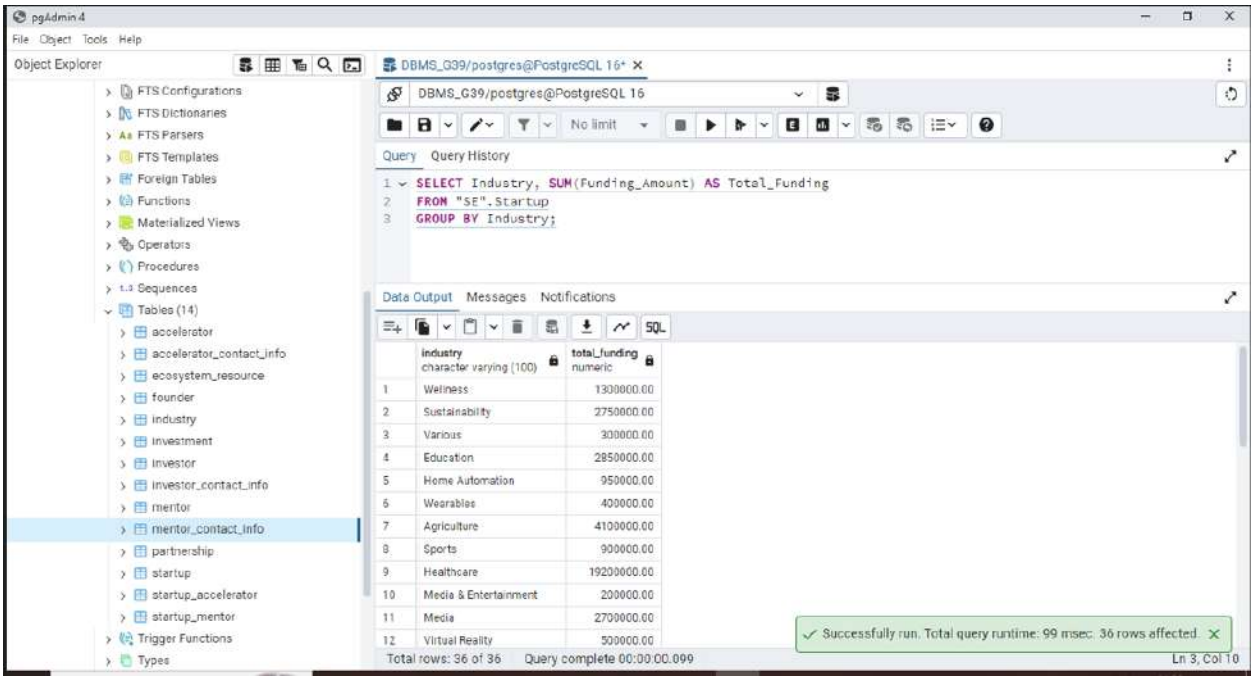
28. Find All Startups Receiving Investment in a Specific Year.

```
SELECT S.Name, I.Amount, I.Date

FROM "SE".Startup S

JOIN "SE".Investment I ON S.Startup_ID = I.Startup_ID

WHERE EXTRACT(YEAR FROM I.Date) = 2023;
```



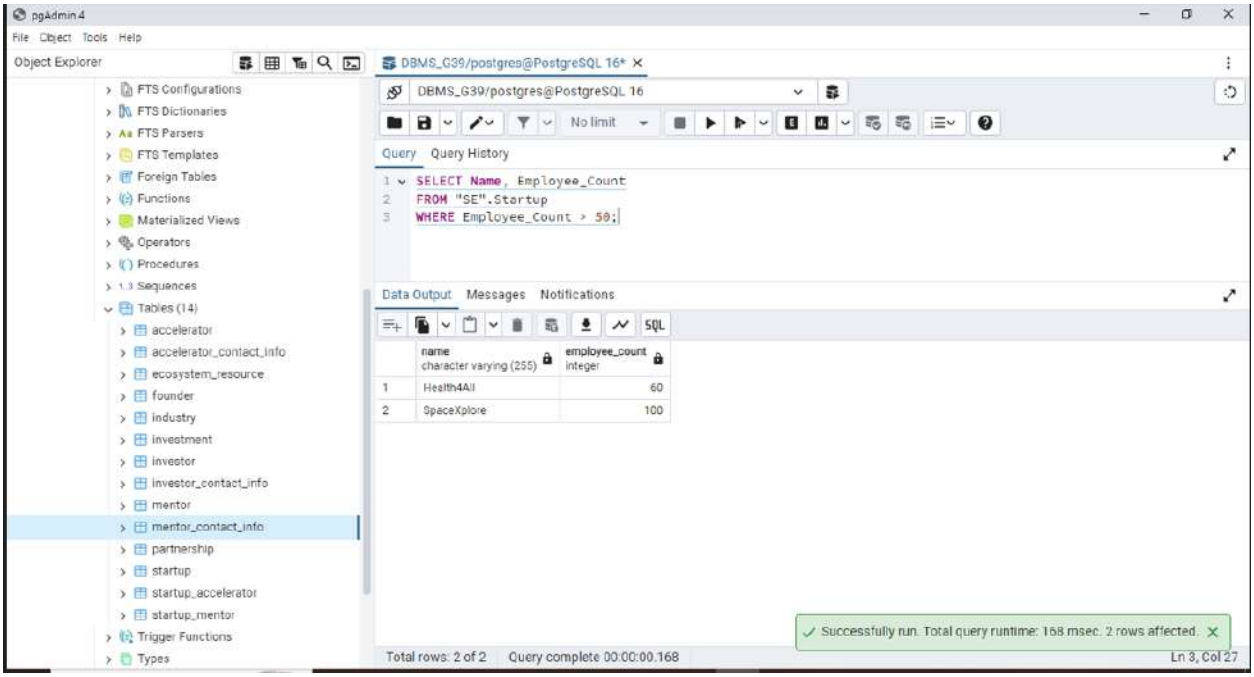
29. Get the Total Funding Amount in Each Industry.

```
SELECT Industry, SUM(Funding_Amount) AS Total_Funding
FROM "SE".Startup
GROUP BY Industry;
```



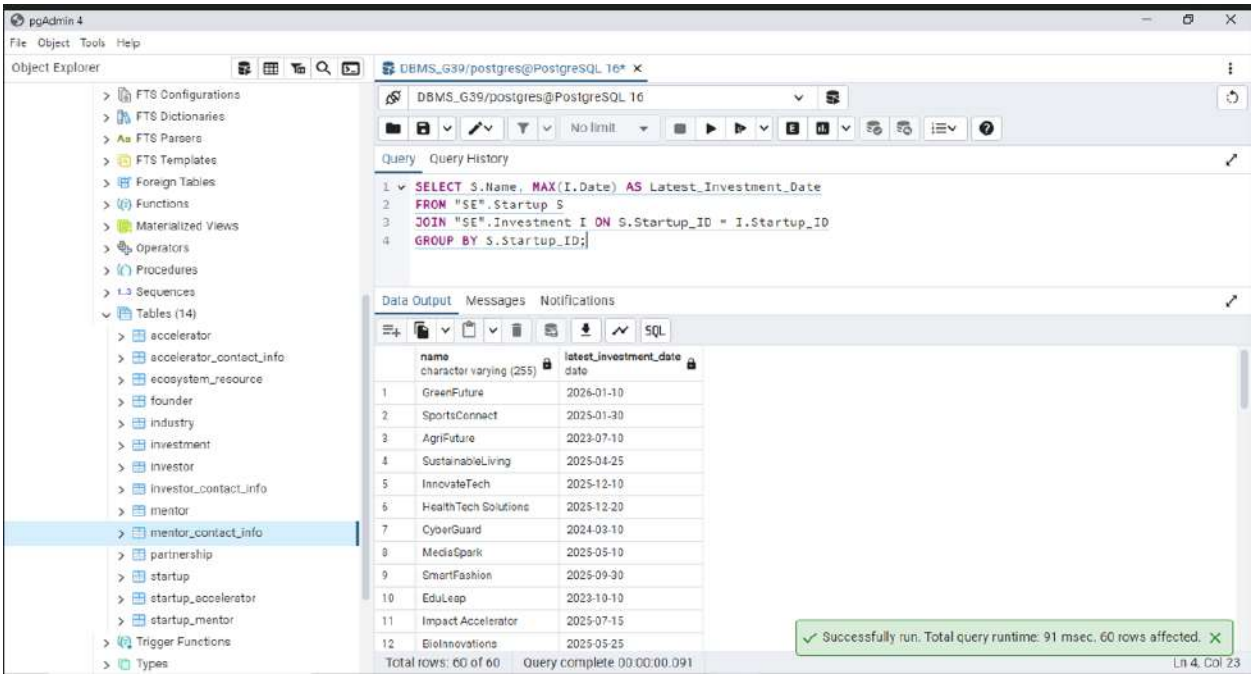
30. List Startups with More Than 50 Employees.

```
SELECT Name, Employee_Count
FROM "SE".Startup
WHERE Employee_Count > 50;
```



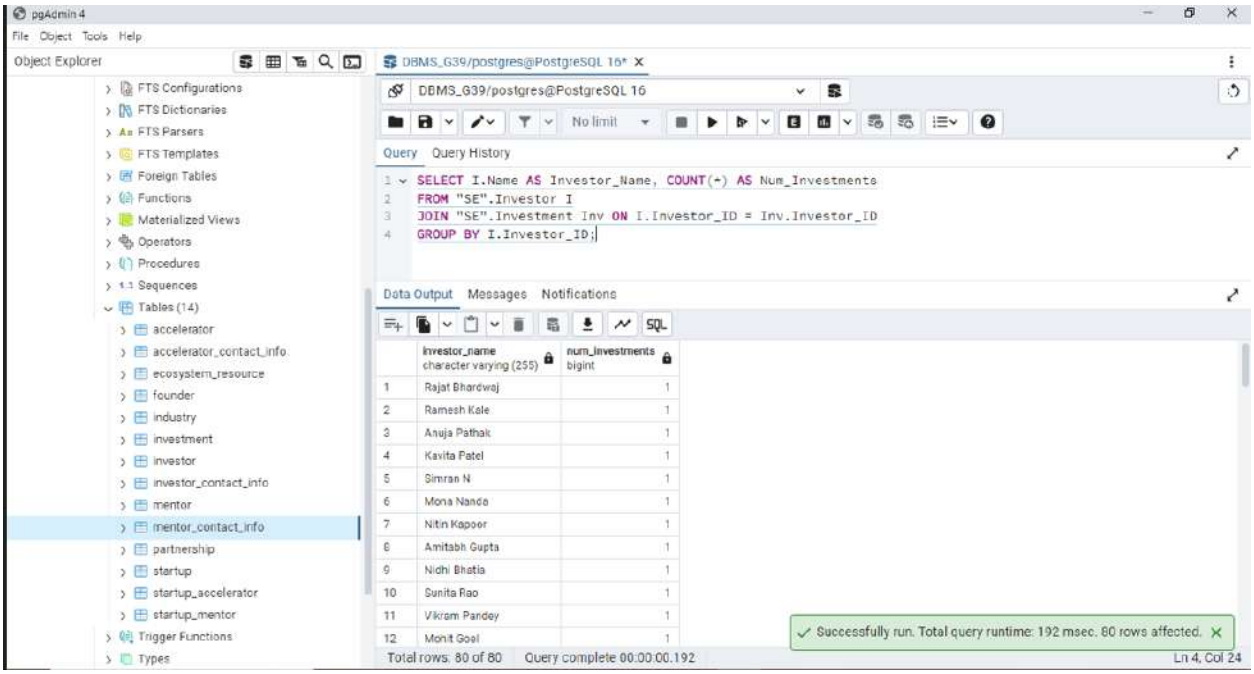
31. Find the Most Recent Investment for a Startup.

```
SELECT S.Name, MAX(I.Date) AS Latest_Investment_Date
FROM "SE".Startup S
JOIN "SE".Investment I ON S.Startup_ID = I.Startup_ID
GROUP BY S.Startup_ID;
```



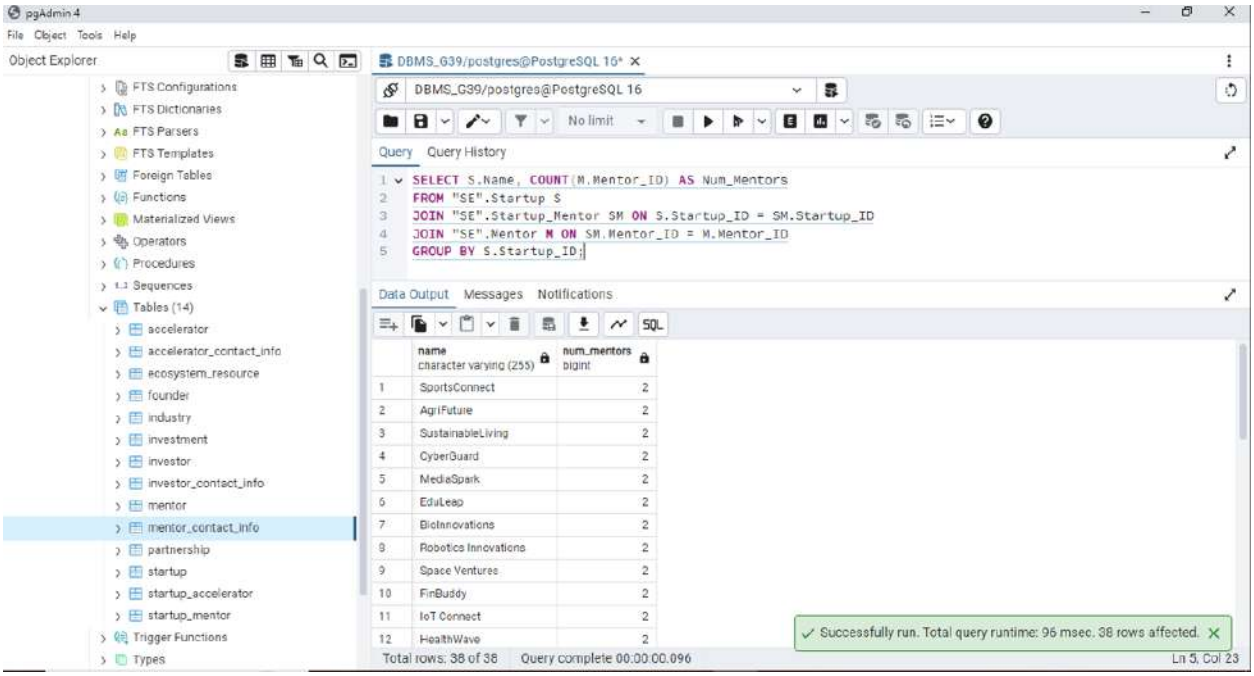
32. Find the Number of Startups for Each Investor.

```
SELECT I.Name AS Investor_Name, COUNT(*) AS Num_Investments
FROM "SE".Investor I
JOIN "SE".Investment Inv ON I.Investor_ID = Inv.Investor_ID
GROUP BY I.Investor_ID;
```



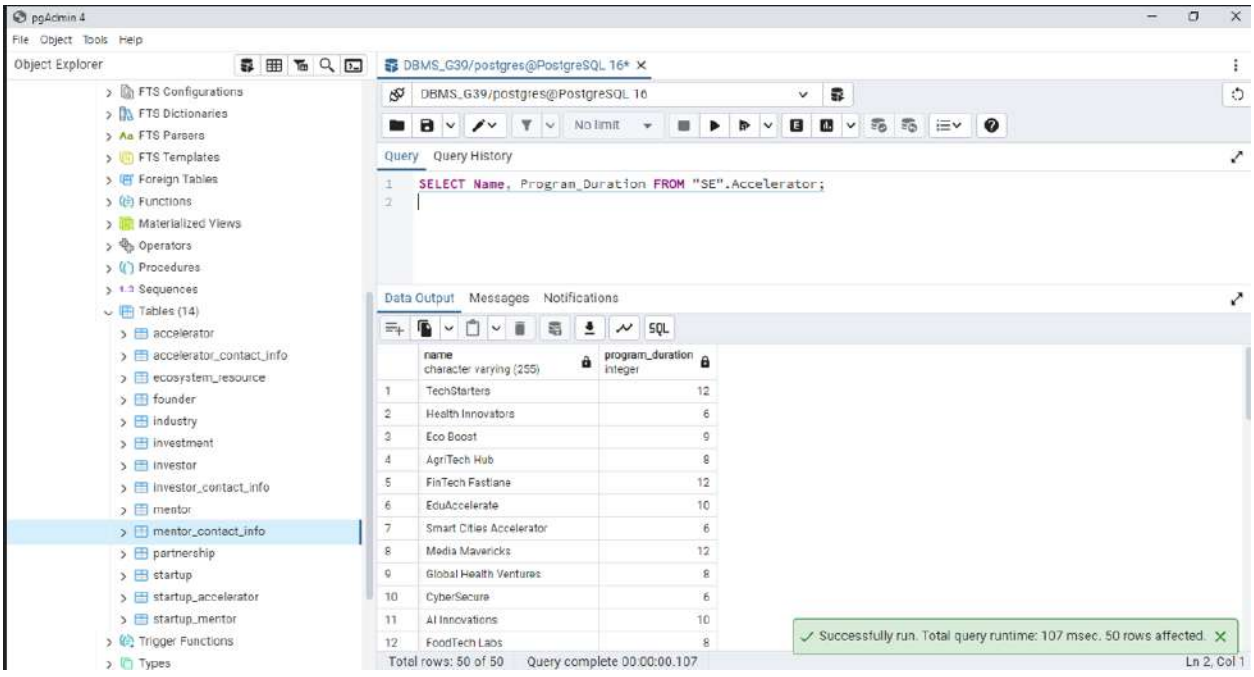
33. Get the Number of Mentors for Each Startup.

```
SELECT S.Name, COUNT(M.Mentor_ID) AS Num_Mentors
FROM "SE".Startup S
JOIN "SE".Startup_Mentor SM ON S.Startup_ID = SM.Startup_ID
JOIN "SE".Mentor M ON SM.Mentor_ID = M.Mentor_ID
GROUP BY S.Startup_ID;
```



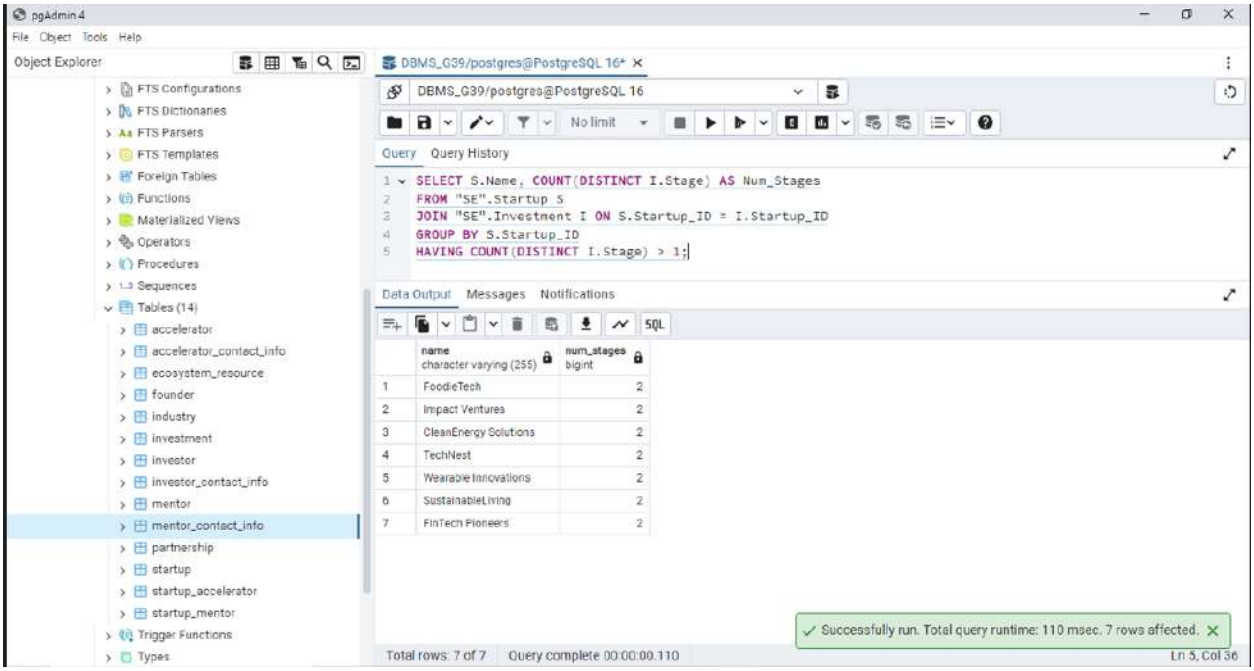
34. List Accelerators and Their Program Durations.

```
SELECT Name, Program_Duration FROM "SE".Accelerator;
```



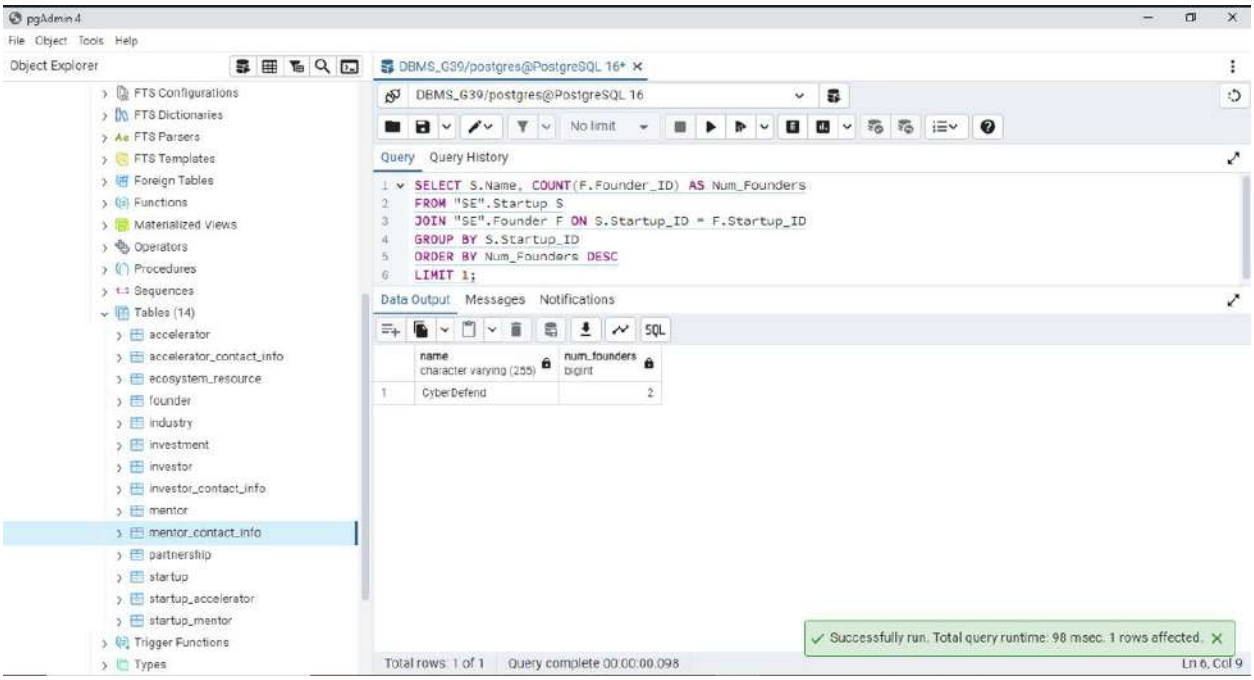
35. Find Startups with Investments in Multiple Stages.

```
SELECT S.Name, COUNT(DISTINCT I.Stage) AS Num_Stages
FROM "SE".Startup S
JOIN "SE".Investment I ON S.Startup_ID = I.Startup_ID
GROUP BY S.Startup_ID
HAVING COUNT(DISTINCT I.Stage) > 1;
```



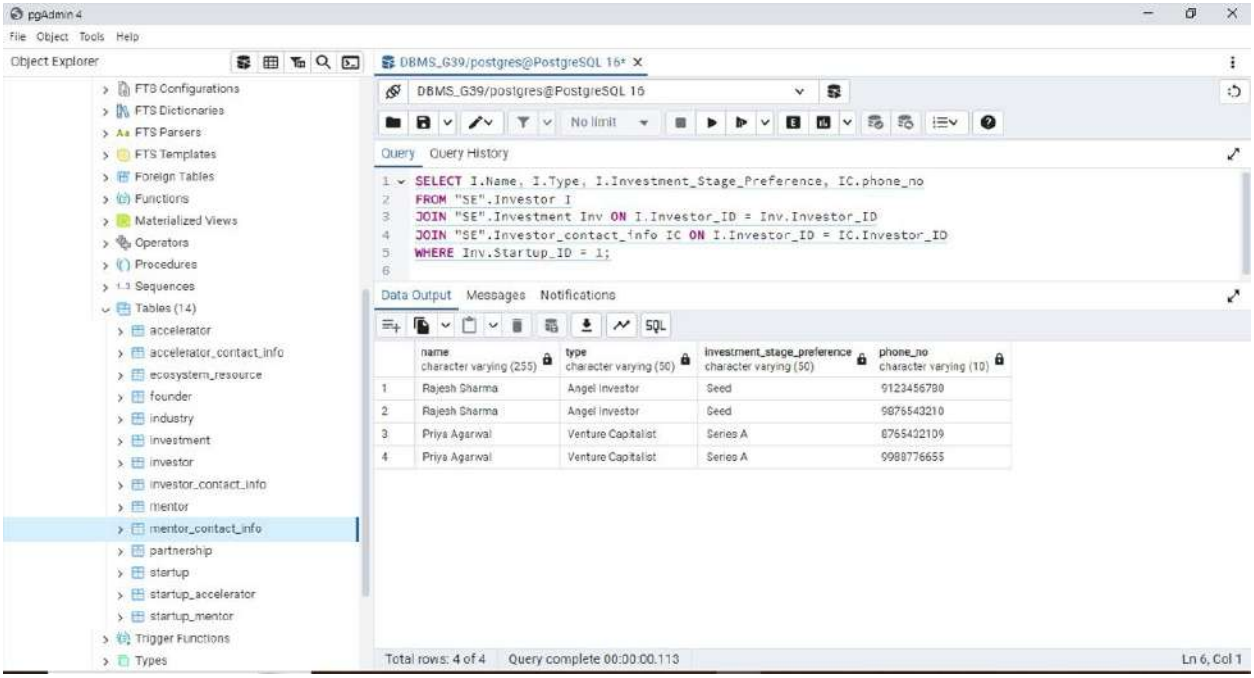
36. Find Startups with the Maximum Number of Founders.

```
SELECT S.Name, COUNT(F.Founder_ID) AS Num_Founders
FROM "SE".Startup S
JOIN "SE".Founder F ON S.Startup_ID = F.Startup_ID
GROUP BY S.Startup_ID
ORDER BY Num_Founders DESC
LIMIT 1;
```



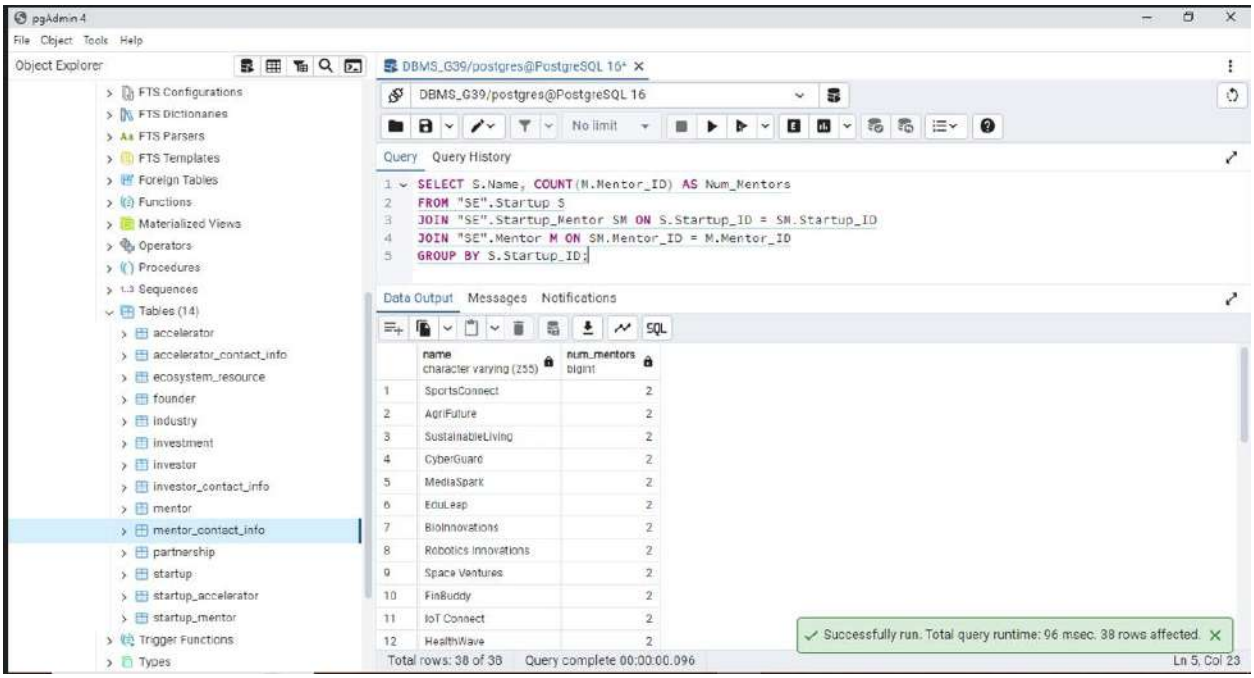
37. Get Investors Who Have Invested in a Startup and Their Contact Info.

```
SELECT I.Name, I.Type, I.Investment_Stage_Preference, IC.phone_no

FROM "SE".Investor I

JOIN "SE".Investment Inv ON I.Investor_ID = Inv.Investor_ID

JOIN "SE".Investor_contact_info IC ON I.Investor_ID = IC.Investor_ID

WHERE Inv.Startup_ID = 1;
```



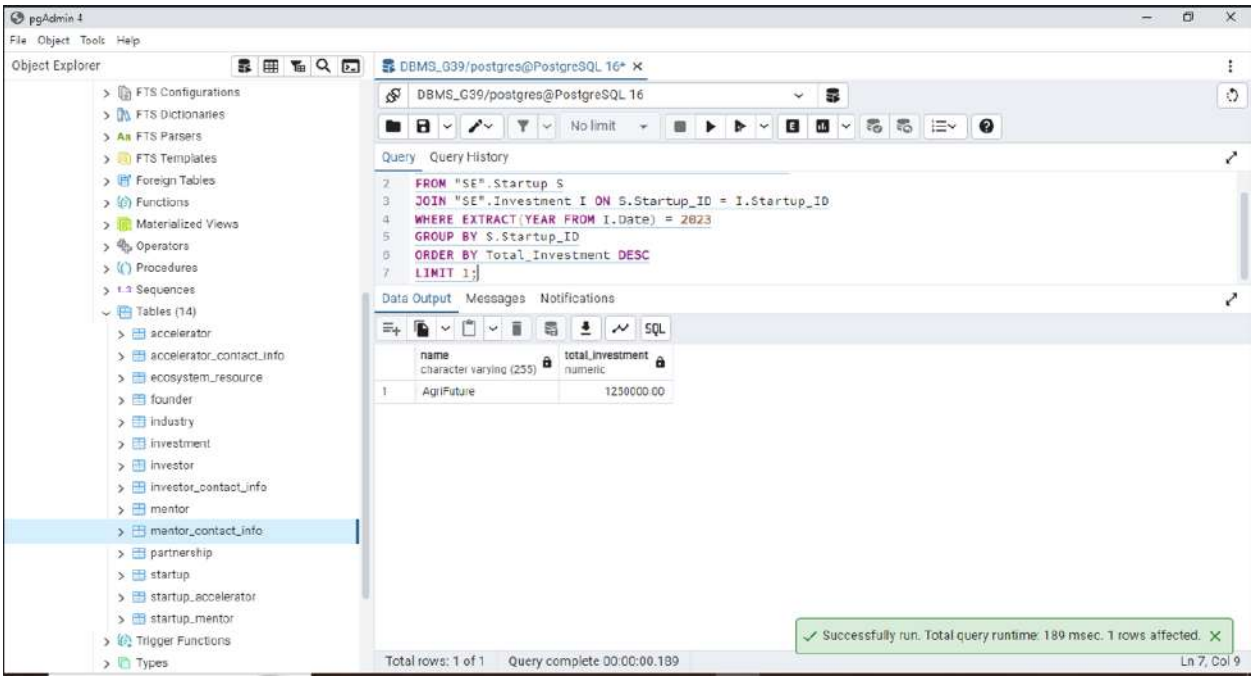
38. Find Startups with the Highest Number of Mentors.

```
SELECT S.Name, COUNT(M.Mentor_ID) AS Num_Mentors
FROM "SE".Startup S
JOIN "SE".Startup_Mentor SM ON S.Startup_ID = SM.Startup_ID
JOIN "SE".Mentor M ON SM.Mentor_ID = M.Mentor_ID
GROUP BY S.Startup_ID;
```



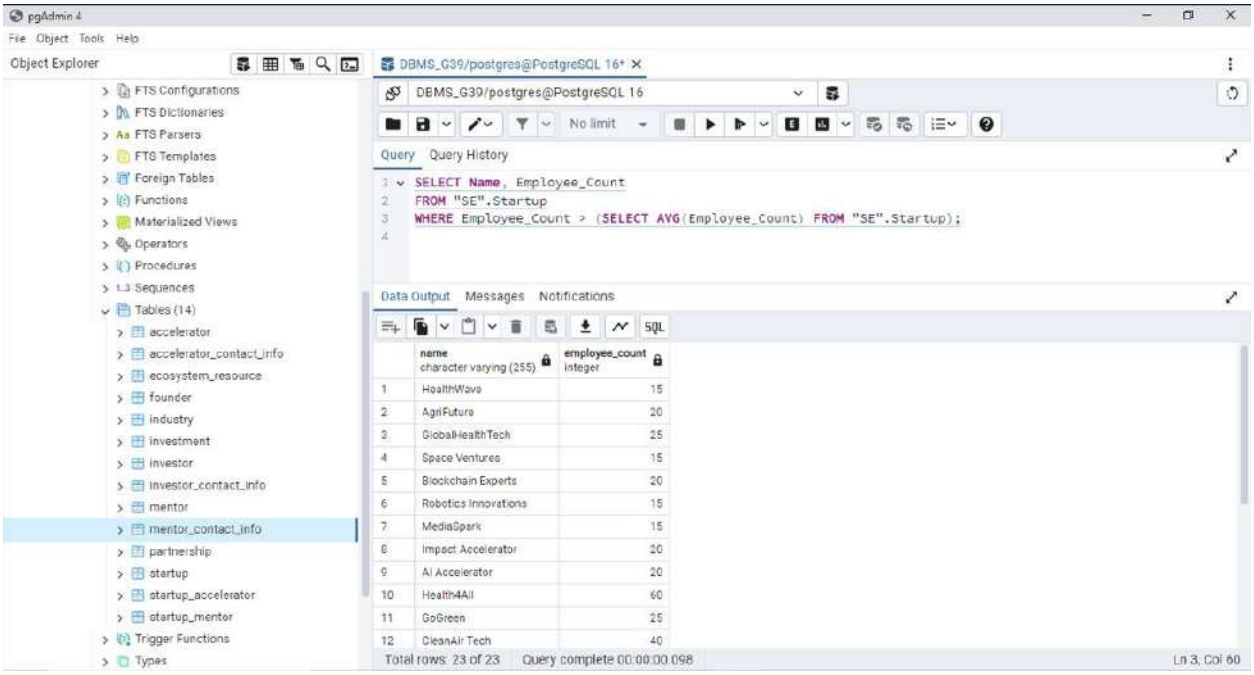
39. Find Startups with the Most Investment in a Specific Year.

```
SELECT S.Name, SUM(I.Amount) AS Total_Investment
FROM "SE".Startup S
JOIN "SE".Investment I ON S.Startup_ID = I.Startup_ID
WHERE EXTRACT(YEAR FROM I.Date) = 2023
GROUP BY S.Startup_ID
ORDER BY Total_Investment DESC
LIMIT 1;
```



40. Find Startups with More Employees Than the Average Employee Count.

```
SELECT Name, Employee_Count
FROM "SE".Startup
WHERE Employee_Count > (SELECT AVG(Employee_Count) FROM "SE".Startup);
```



Chapter 5: Interface Implementation

1. Setup JDBC and Basic GUI

Startup Table

DatabaseManager.java

```
import java.sql.*;

public class DatabaseManager {
```

```
private static final String URL = "jdbc:postgresql://localhost:5432/DBMS_G39";

private static final String USER = "postgres";

private static final String PASSWORD = "";


public Connection connect() throws SQLException {

   return DriverManager.getConnection(URL, USER, PASSWORD);

}


public void insertStartup(String name,String industry,String stage,String founded_date,String
location ,int funding_amount ,int employee_count){

   String insertSQL = "INSERT INTO \"SE\".startup (name, industry,stage,founded_date,
location,funding_amount,employee_count) VALUES (?, ?, ?, ? , ? , ? , ?)";

   try (Connection connection = connect();

   PreparedStatement pstmt = connection.prepareStatement(insertSQL)) {

   pstmt.setString(1, name);

   pstmt.setString(2, industry);

   pstmt.setString(3, stage);

   pstmt.setString(4, founded_date);

   pstmt.setString(5, location);

   pstmt.setInt(6, funding_amount);

   pstmt.setInt(7, employee_count);

   pstmt.executeUpdate();

   } catch (SQLException e) {

      e.printStackTrace();

   }

}


public ResultSet readStartup() {
```

```
    String selectSQL = "SELECT * FROM \"SE\".startup";
    try {
    Connection connection = connect();
    PreparedStatement pstmt = connection.prepareStatement(selectSQL);
    return pstmt.executeQuery();
    } catch (SQLException e) {
        e.printStackTrace();
    }
    return null;
}

public void updateStartup(int startup_id, String name, String industry, String stage,String
founded_date,String location ,int funding_amount ,int employee_count) {
    String updateSQL = "UPDATE \"SE\".startup SET name = ?, industry = ?, stage = ?, founded_date
= ?, location = ?, funding_amount = ?, employee_count = ? WHERE startup_id = ?";
    try (Connection connection = connect();
    PreparedStatement pstmt = connection.prepareStatement(updateSQL)) {
        pstmt.setString(1, name);
        pstmt.setString(2, industry);
        pstmt.setString(3, stage);
        pstmt.setString(4, founded_date);
        pstmt.setString(5, location);
        pstmt.setInt(6, funding_amount);
        pstmt.setInt(7, employee_count);
        pstmt.setInt(8, startup_id);
        pstmt.executeUpdate();
    } catch (SQLException e) {
        e.printStackTrace();
```

```
    }
}

public void deleteStartup(int startup_id) {
    String deleteSQL = "DELETE FROM \"SE\".startup WHERE startup_id = ?";
    try (Connection connection = connect();
    PreparedStatement pstmt = connection.prepareStatement(deleteSQL)) {
        pstmt.setInt(1, startup_id);
        pstmt.executeUpdate();
    } catch (SQLException e) {
        e.printStackTrace();
    }
}
}
```

StartupGUI.java

```
import javax.swing.*;
import javax.swing.table.DefaultTableModel;
import java.awt.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.sql.ResultSet;
import java.sql.SQLException;
public class StartupGUI extends JFrame {
    private JTextField nameField, industryField, stageField, dateField, locationField,
funding_amountField, employee_countField, idField;
```

```
    private JButton addButton, updateButton, deleteButton, loadButton;
    private JTable startupTable;
    private DefaultTableModel tableModel;
    private DatabaseManager dbManager;

public StartupGUI() {
    dbManager = new DatabaseManager();
    setTitle("Startup Management");
    setLayout(new BorderLayout());

    JPanel inputPanel = new JPanel(new GridLayout(4, 1));
    inputPanel.add(new JLabel("ID:"));
    idField = new JTextField();
    inputPanel.add(idField);

    inputPanel.add(new JLabel("Name:"));
    nameField = new JTextField();
    inputPanel.add(nameField);

    inputPanel.add(new JLabel("Industry:"));
    industryField = new JTextField();
    inputPanel.add(industryField);

    inputPanel.add(new JLabel("Stage:"));
    stageField = new JTextField();
    inputPanel.add(stageField);
```

```
  inputPanel.add(new JLabel("Date:"));
  dateField = new JTextField();
  inputPanel.add(dateField);

  inputPanel.add(new JLabel("Location:"));
  locationField = new JTextField();
  inputPanel.add(locationField);

  inputPanel.add(new JLabel("Funding Amount:"));
  funding_amountField = new JTextField();
  inputPanel.add(funding_amountField);

  inputPanel.add(new JLabel("Employee Count:"));
  employee_countField = new JTextField();
  inputPanel.add(employee_countField);

  JPanel buttonPanel = new JPanel();
  addButton = new JButton("Add");
  updateButton = new JButton("Update");
  deleteButton = new JButton("Delete");
  loadButton = new JButton("Load");
  buttonPanel.add(addButton);
  buttonPanel.add(updateButton);
  buttonPanel.add(deleteButton);
  buttonPanel.add(loadButton);

  tableModel = new DefaultTableModel(new String[]{"ID", "Name", "Industry", "Stage", "Date",
"Location","FundAmount","EmployeeCount"}, 0);
```

```
    startupTable = new JTable(tableModel);
    JScrollPane scrollPane = new JScrollPane(startupTable);

    add(inputPanel, BorderLayout.NORTH);
    add(scrollPane, BorderLayout.CENTER);
    add(buttonPanel, BorderLayout.SOUTH);

addButton.addActionListener(new ActionListener() {
    @Override

    public void actionPerformed(ActionEvent e) {
        String name = nameField.getText();
        String industry= industryField.getText();
        String stage= stageField.getText();
        String date= dateField.getText();
        String location= locationField.getText();
        int funding_amount = Integer.parseInt(funding_amountField.getText());
        int employee_count = Integer.parseInt(employee_countField.getText());
        dbManager.insertStartup(name, industry,stage,date,
location ,funding_amount ,employee_count);
        loadStartup();
    }
});

updateButton.addActionListener(new ActionListener() {
    @Override
    public void actionPerformed(ActionEvent e) {
        int startup_id = Integer.parseInt(idField.getText());
```

```
    String name = nameField.getText();
    String industry= industryField.getText();
    String stage= stageField.getText();
    String founded_date = dateField.getText();
    String location= locationField.getText();
    int funding_amount = Integer.parseInt(funding_amountField.getText());
    int employee_count = Integer.parseInt(employee_countField.getText());
    dbManager.updateStartup(startup_id,name, industry,stage,founded_date,
location ,funding_amount, employee_count);
    loadStartup();
  }
});

deleteButton.addActionListener(new ActionListener() {
  @Override
  public void actionPerformed(ActionEvent e) {
    int startup_id = Integer.parseInt(idField.getText());
    dbManager.deleteStartup(startup_id);
    loadStartup();
  }
});
loadButton.addActionListener(new ActionListener() {
  @Override
  public void actionPerformed(ActionEvent e) {
    loadStartup();
  }
});
```

```
    setSize(600, 400);
    setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    setVisible(true);
}

private void loadStartup() {
    try {
        ResultSet resultSet = dbManager.readStartup();
        tableModel.setRowCount(0); // Clear existing data
        while (resultSet != null && resultSet.next()) {
            int id = resultSet.getInt("startup_id");
            String name = resultSet.getString("name");
            String industry= resultSet.getString("industry");
            String stage = resultSet.getString("stage");
            String date= resultSet.getString("founded_date");
            String location= resultSet.getString("location");
            int fundAmt =resultSet.getInt("funding_amount");
            int employee_count= resultSet.getInt("employee_count");

            tableModel.addRow(new Object[]{id, name, industry,stage,date, location ,fundAmt ,
employee_count});
        }
    } catch (SQLException e) {
        e.printStackTrace();
    }
}

public static void main(String[] args) {
```

```
    new StartupGUI();
}
}
```

Accelerator Table

DatabaseManager1.java

```
import java.sql.*;
public class DatabaseManager1 {
private static final String URL = "jdbc:postgresql://localhost:5432/DBMS_G39";
private static final String USER = "postgres";
private static final String PASSWORD = "";
public Connection connect() throws SQLException {
    return DriverManager.getConnection(URL, USER, PASSWORD);
}

public void insertAccelerator(String name, String location, String industry_focus, int batch_size, int program_duration){
    String insertSQL = "INSERT INTO \"SE\".accelerator (name, location, industry_focus, batch_size, program_duration) VALUES (?, ?, ?, ? , ?)";
    try (Connection connection = connect();
    PreparedStatement pstmt = connection.prepareStatement(insertSQL)) {
        pstmt.setString(1, name);
        pstmt.setString(2, location);
        pstmt.setString(3, industry_focus);
        pstmt.setInt(4, batch_size);
```

```
      pstmt.setInt(5, program_duration);
      pstmt.executeUpdate();
    } catch (SQLException e) {
      e.printStackTrace();
    }
}

public ResultSet readAccelerator() {
    String selectSQL = "SELECT * FROM \"SE\".accelerator";
    try {
      Connection connection = connect();
      PreparedStatement pstmt = connection.prepareStatement(selectSQL);
      return pstmt.executeQuery();
    } catch (SQLException e) {
      e.printStackTrace();
    }
    return null;
}

public void updateAccelerator(int accelerator_id, String name, String location, String
industry_focus, int batch_size, int program_duration ) {
    String updateSQL = "UPDATE \"SE\".accelerator SET name = ?, location = ?, industry_focus = ?,
batch_size = ?, program_duration = ? WHERE accelerator_id = ?";

    try (Connection connection = connect();
    PreparedStatement pstmt = connection.prepareStatement(updateSQL)) {
      pstmt.setString(1, name);
      pstmt.setString(2, location);
```

```
        pstmt.setString(3, industry_focus);
        pstmt.setInt(4, batch_size);
        pstmt.setInt(5, program_duration);
        pstmt.setInt(6, accelerator_id);
        pstmt.executeUpdate();
    } catch (SQLException e) {
        e.printStackTrace();
    }
}

public void deleteAccelerator(int accelerator_id) {
    String deleteSQL = "DELETE FROM \"SE\".accelerator WHERE accelerator_id = ?";
    try (Connection connection = connect();
    PreparedStatement pstmt = connection.prepareStatement(deleteSQL)) {
        pstmt.setInt(1, accelerator_id);
        pstmt.executeUpdate();
    } catch (SQLException e) {
        e.printStackTrace();
    }
}
}
```

AcceleratorGUI.java

```
import javax.swing.*;
import javax.swing.table.DefaultTableModel;
import java.awt.*;
import java.awt.event.ActionEvent;
```

```
import java.awt.event.ActionListener;
import java.sql.ResultSet;
import java.sql.SQLException;
public class AcceleratorGUI extends JFrame {
  private JTextField nameField, locationField, industry_focusField, batch_sizeField,
program_durationField, idField;
  private JButton addButton, updateButton, deleteButton, loadButton;
  private JTable acceleratorTable;
  private DefaultTableModel tableModel1;
  private DatabaseManager1 dbManager;

  public AcceleratorGUI() {
  dbManager = new DatabaseManager1();
  setTitle("Accelerator Management");
  setLayout(new BorderLayout());

  JPanel inputPanel = new JPanel(new GridLayout(5, 2));
  inputPanel.add(new JLabel("ID:"));
  idField = new JTextField();
  inputPanel.add(idField);

  inputPanel.add(new JLabel("Name:"));
  nameField = new JTextField();
  inputPanel.add(nameField);

  inputPanel.add(new JLabel("Location:"));
  locationField = new JTextField();
  inputPanel.add(locationField);
```

```
  inputPanel.add(new JLabel("Industry Focus :"));
  industry_focusField = new JTextField();
  inputPanel.add(industry_focusField);

  inputPanel.add(new JLabel("Batch Size:"));
  batch_sizeField = new JTextField();
  inputPanel.add(batch_sizeField);

  inputPanel.add(new JLabel("Program Duration:"));
  program_durationField = new JTextField();
  inputPanel.add(program_durationField);

  JPanel buttonPanel = new JPanel();
  addButton = new JButton("Add");
  updateButton = new JButton("Update");
  deleteButton = new JButton("Delete");
  loadButton = new JButton("Load");
  buttonPanel.add(addButton);
  buttonPanel.add(updateButton);
  buttonPanel.add(deleteButton);
  buttonPanel.add(loadButton);

  tableModel1 = new DefaultTableModel(new String[]{"ID", "Name", "Location", "Industry Focus",
"Batch Size", "Program Duration"}, 0);
  acceleratorTable = new JTable(tableModel1);
  JScrollPane scrollPane = new JScrollPane(acceleratorTable);
```

```
    add(inputPanel, BorderLayout.NORTH);
    add(scrollPane, BorderLayout.CENTER);
    add(buttonPanel, BorderLayout.SOUTH);

addButton.addActionListener(new ActionListener() {
    @Override
    public void actionPerformed(ActionEvent e) {
        String name = nameField.getText();
        String location = locationField.getText();
        String industry_focus = industry_focusField.getText();
        int batch_size = Integer.parseInt(batch_sizeField.getText());
        int program_duration = Integer.parseInt(program_durationField.getText());
        dbManager.insertAccelerator(name, location, industry_focus, batch_size , program_duration);
        loadAccelerator();
    }
});

updateButton.addActionListener(new ActionListener() {
    @Override
    public void actionPerformed(ActionEvent e) {
        int accelerator_id = Integer.parseInt(idField.getText());
        String name = nameField.getText();
        String location = locationField.getText();
        String industry_focus = industry_focusField.getText();
        int batch_size = Integer.parseInt(batch_sizeField.getText());
        int program_duration = Integer.parseInt(program_durationField.getText());
        dbManager.updateAccelerator(accelerator_id, name, location, industry_focus, batch_size,
program_duration);
```

```
        loadAccelerator();
    }
});

deleteButton.addActionListener(new ActionListener() {
    @Override
    public void actionPerformed(ActionEvent e) {
        int accelerator_id = Integer.parseInt(idField.getText());
        dbManager.deleteAccelerator(accelerator_id);
        loadAccelerator();
    }
});

loadButton.addActionListener(new ActionListener() {
    @Override
    public void actionPerformed(ActionEvent e) {
        loadAccelerator();
    }
});

    setSize(600, 400);
    setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    setVisible(true);
}

private void loadAccelerator() {
    try {
```

```
  ResultSet resultSet = dbManager.readAccelerator();
  tableModel1.setRowCount(0); // Clear existing data
  while (resultSet != null && resultSet.next()) {
    int id = resultSet.getInt("accelerator_id");
    String name = resultSet.getString("name");
    String location = resultSet.getString("location");
    String industry_focus = resultSet.getString("industry_focus");
    int batch_size = resultSet.getInt("batch_size");
    int program_duration = resultSet.getInt("program_duration");

    tableModel1.addRow(new Object[]{id, name, location, industry_focus, batch_size,
program_duration});
  }
  } catch (SQLException e) {
    e.printStackTrace();
  }
}
public static void main(String[] args) {
  new AcceleratorGUI();
}
}
```

Mentor Table

DatabaseManager2.java

```
import java.sql.*;
public class DatabaseManager2 {
```

```
private static final String URL = "jdbc:postgresql://localhost:5432/DBMS_G39";

private static final String USER = "postgres";

private static final String PASSWORD = "";

public Connection connect() throws SQLException {

   return DriverManager.getConnection(URL, USER, PASSWORD);

}


public void insertMentor(String name, String expertise, String affiliation, String linkedin_profile){

   String insertSQL = "INSERT INTO \"SE\".mentor (name, expertise, affiliation, linkedin_profile)
VALUES (?, ?, ?, ?)";

   try (Connection connection = connect();

   PreparedStatement pstmt = connection.prepareStatement(insertSQL)) {

      pstmt.setString(1, name);

      pstmt.setString(2, expertise);

      pstmt.setString(3, affiliation);

      pstmt.setString(4, linkedin_profile);

      pstmt.executeUpdate();

   } catch (SQLException e) {

      e.printStackTrace();

   }

}


public ResultSet readMentor() {

   String selectSQL = "SELECT * FROM \"SE\".mentor";

   try {

      Connection connection = connect();

      PreparedStatement pstmt = connection.prepareStatement(selectSQL);

      return pstmt.executeQuery();
```

```
    } catch (SQLException e) {
        e.printStackTrace();
    }
    return null;
}

public void updateMentor(int mentor_id, String name, String expertise, String affiliation, String
linkedin_profile) {
    String updateSQL = "UPDATE \"SE\".mentor SET name = ?, expertise = ?, affiliation = ?,
linkedin_profile = ? WHERE mentor_id = ?";
    try (Connection connection = connect();
    PreparedStatement pstmt = connection.prepareStatement(updateSQL)) {
        pstmt.setString(1, name);
        pstmt.setString(2, name);
        pstmt.setString(3, expertise);
        pstmt.setString(4, affiliation);
        pstmt.setInt(5, mentor_id);
        pstmt.executeUpdate();
    } catch (SQLException e) {
        e.printStackTrace();
    }
}

public void deleteMentor(int mentor_id) {
    String deleteSQL = "DELETE FROM \"SE\".mentor WHERE mentor_id = ?";
    try (Connection connection = connect();
    PreparedStatement pstmt = connection.prepareStatement(deleteSQL)) {
        pstmt.setInt(1, mentor_id);
```

```
        pstmt.executeUpdate();
    } catch (SQLException e) {
        e.printStackTrace();
    }
}
}
```

MentorGUI.java

```
import javax.swing.*;
import javax.swing.table.DefaultTableModel;
import java.awt.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.sql.ResultSet;
import java.sql.SQLException;
public class MentorGUI extends JFrame {
    private JTextField nameField, expertiseField, affiliationField, linkedin_profileField, idField;
    private JButton addButton, updateButton, deleteButton, loadButton;
    private JTable mentorTable;
    private DefaultTableModel tableModel1;
    private DatabaseManager2 dbManager;
public MentorGUI() {
    dbManager = new DatabaseManager2();
    setTitle("Mentor Management");
    setLayout(new BorderLayout());
```

```
JPanel inputPanel = new JPanel(new GridLayout(5, 2));
inputPanel.add(new JLabel("ID:"));
idField = new JTextField();
inputPanel.add(idField);

inputPanel.add(new JLabel("Name:"));
nameField = new JTextField();
inputPanel.add(nameField);

inputPanel.add(new JLabel("Expertise:"));
expertiseField = new JTextField();
inputPanel.add(expertiseField);

inputPanel.add(new JLabel("Affiliation:"));
affiliationField = new JTextField();
inputPanel.add(affiliationField);

inputPanel.add(new JLabel("Linkedin Profile :"));
linkedin_profileField = new JTextField();
inputPanel.add(linkedin_profileField);

JPanel buttonPanel = new JPanel();
addButton = new JButton("Add");
updateButton = new JButton("Update");
deleteButton = new JButton("Delete");
loadButton = new JButton("Load");
buttonPanel.add(addButton);
```

```
    buttonPanel.add(updateButton);
    buttonPanel.add(deleteButton);
    buttonPanel.add(loadButton);

    tableModel1 = new DefaultTableModel(new String[]{"ID", "Name", "Expertise", "Affiliation",
"Linkedin Profile"}, 0);
    mentorTable = new JTable(tableModel1);
    JScrollPane scrollPane = new JScrollPane(mentorTable);

    add(inputPanel, BorderLayout.NORTH);
    add(scrollPane, BorderLayout.CENTER);
    add(buttonPanel, BorderLayout.SOUTH);

addButton.addActionListener(new ActionListener() {
    @Override
    public void actionPerformed(ActionEvent e) {
        String name = nameField.getText();
        String expertise = expertiseField.getText();
        String affiliation = affiliationField.getText();
        String linkedin_profile = linkedin_profileField.getText();;
        dbManager.insertMentor(name, expertise, affiliation, linkedin_profile);
        loadMentor();
    }
});

updateButton.addActionListener(new ActionListener() {
    @Override
    public void actionPerformed(ActionEvent e) {
```

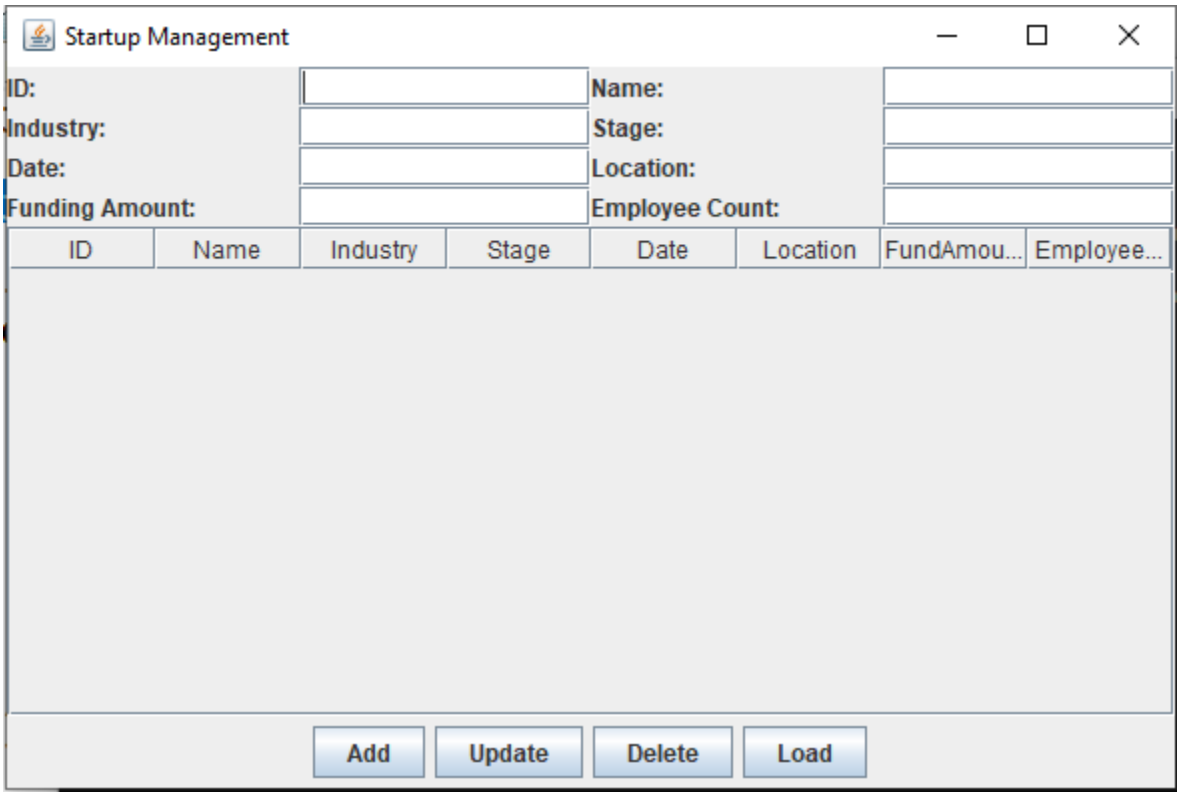
```
        int mentor_id = Integer.parseInt(idField.getText());
        String name = nameField.getText();
        String expertise = expertiseField.getText();
        String affiliation = affiliationField.getText();
        String linkedin_profile = linkedin_profileField.getText();
        dbManager.updateMentor(mentor_id, name, expertise, affiliation, linkedin_profile);
        loadMentor();
    }
});

deleteButton.addActionListener(new ActionListener() {
    @Override
    public void actionPerformed(ActionEvent e) {
        int mentor_id = Integer.parseInt(idField.getText());
        dbManager.deleteMentor(mentor_id);
        loadMentor();
    }
});

loadButton.addActionListener(new ActionListener() {
    @Override
    public void actionPerformed(ActionEvent e) {
        loadMentor();
    }
});

    setSize(600, 400);
```

```
    setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    setVisible(true);
}

private void loadMentor() {
    try {
        ResultSet resultSet = dbManager.readMentor();
        tableModel1.setRowCount(0); // Clear existing data
        while (resultSet != null && resultSet.next()) {
            int id = resultSet.getInt("mentor_id");
            String name = resultSet.getString("name");
            String expertise = resultSet.getString("expertise");
            String affiliation = resultSet.getString("affiliation");
            String linkedin_profile = resultSet.getString("linkedin_profile");

            tableModel1.addRow(new Object[]{id, name, expertise, affiliation, linkedin_profile});
        }
    } catch (SQLException e) {
        e.printStackTrace();
    }
}
public static void main(String[] args) {
    new MentorGUI();
}
}
```

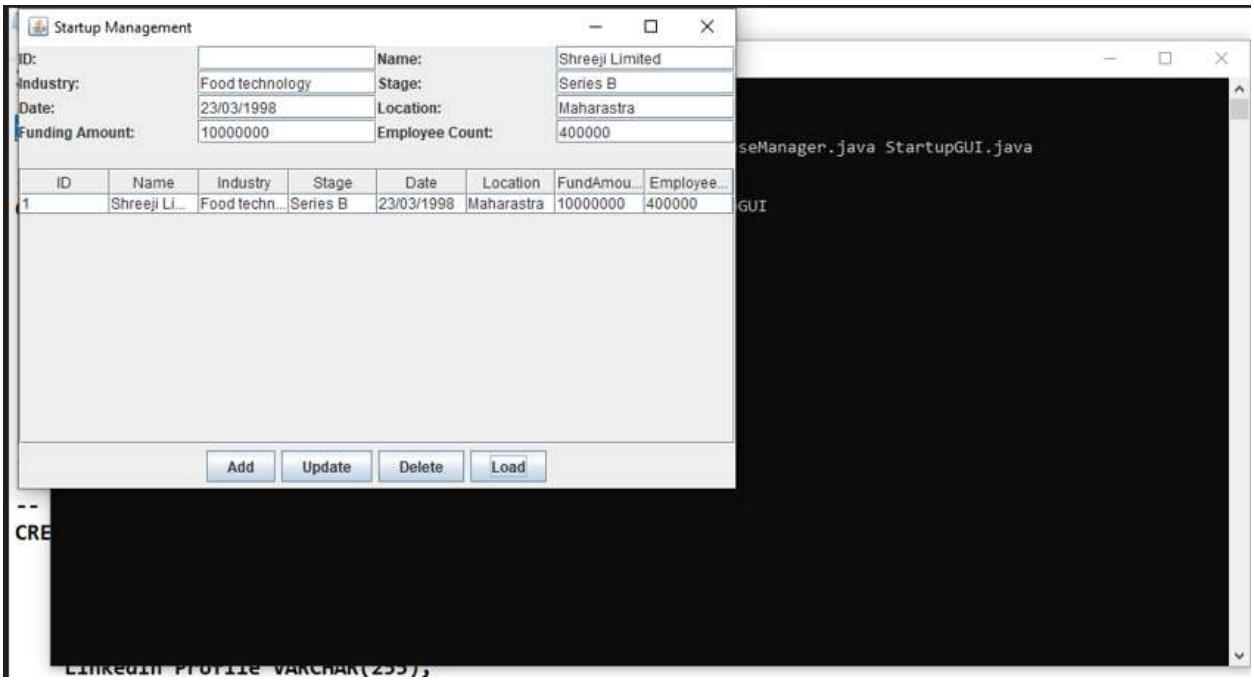
2. CRUD Operations in GUI

Startup Table

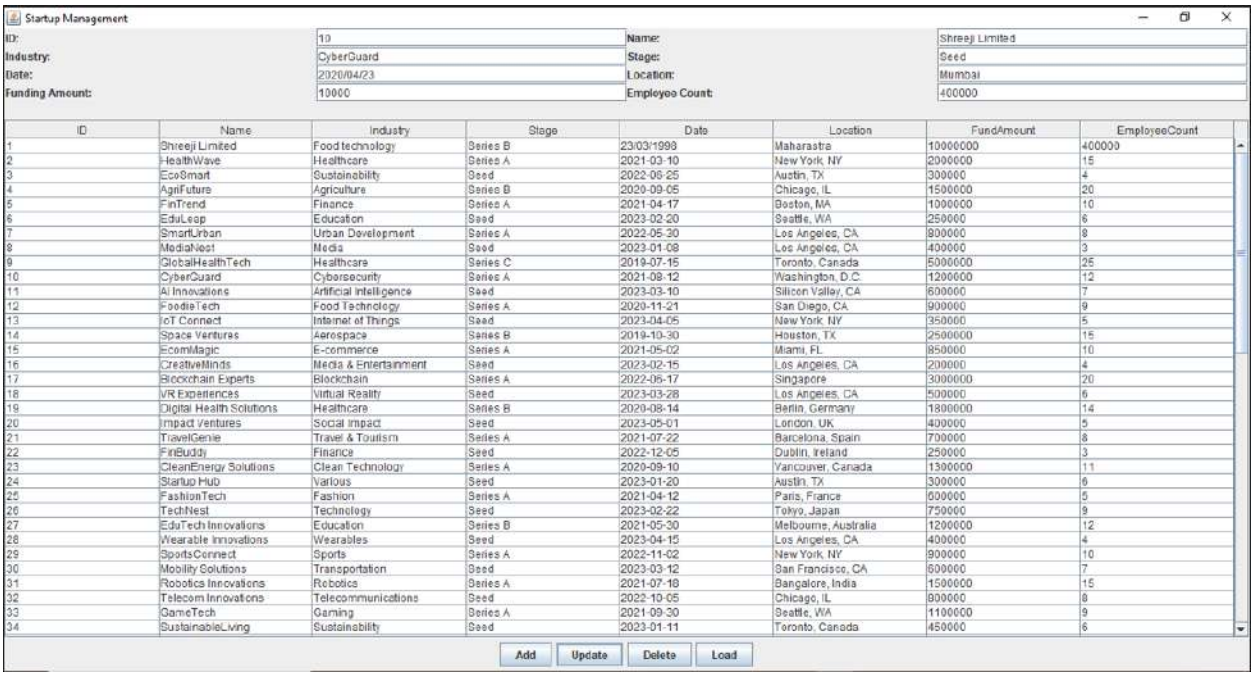
GUI



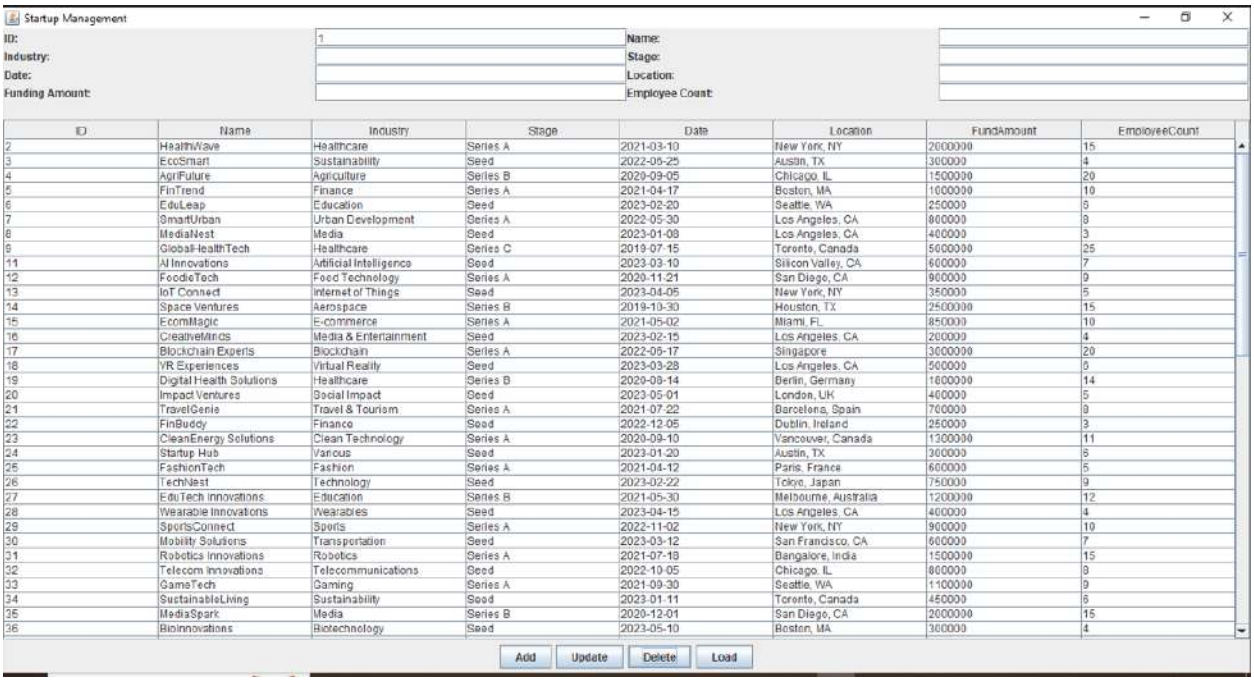
Add Startup



Update Startup



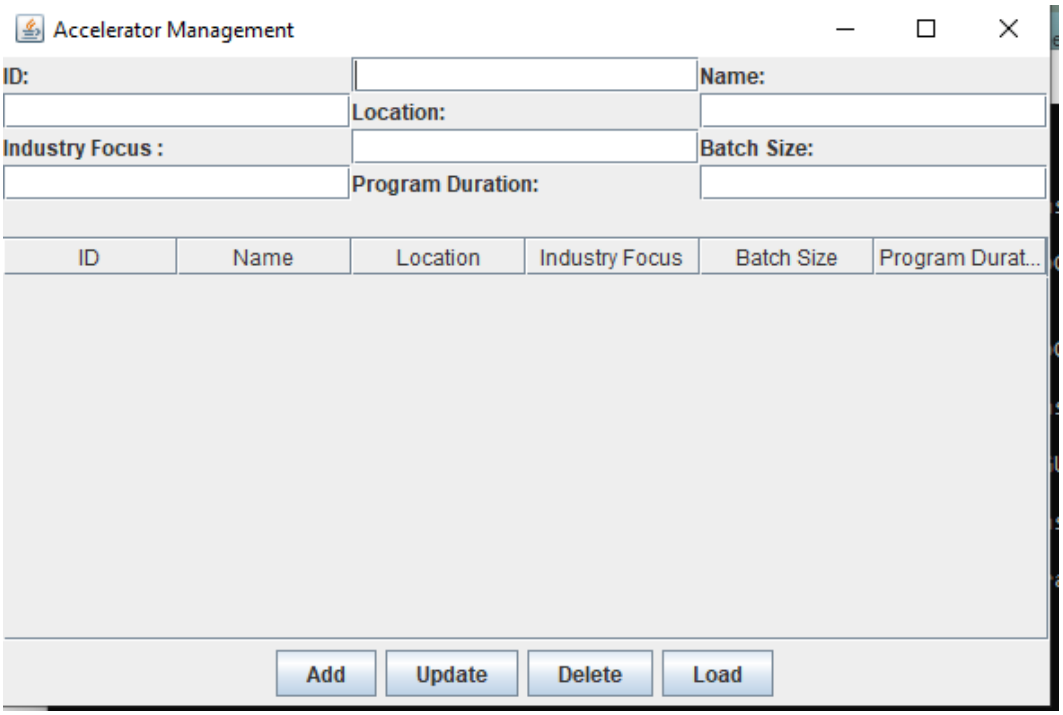
Delete Startup



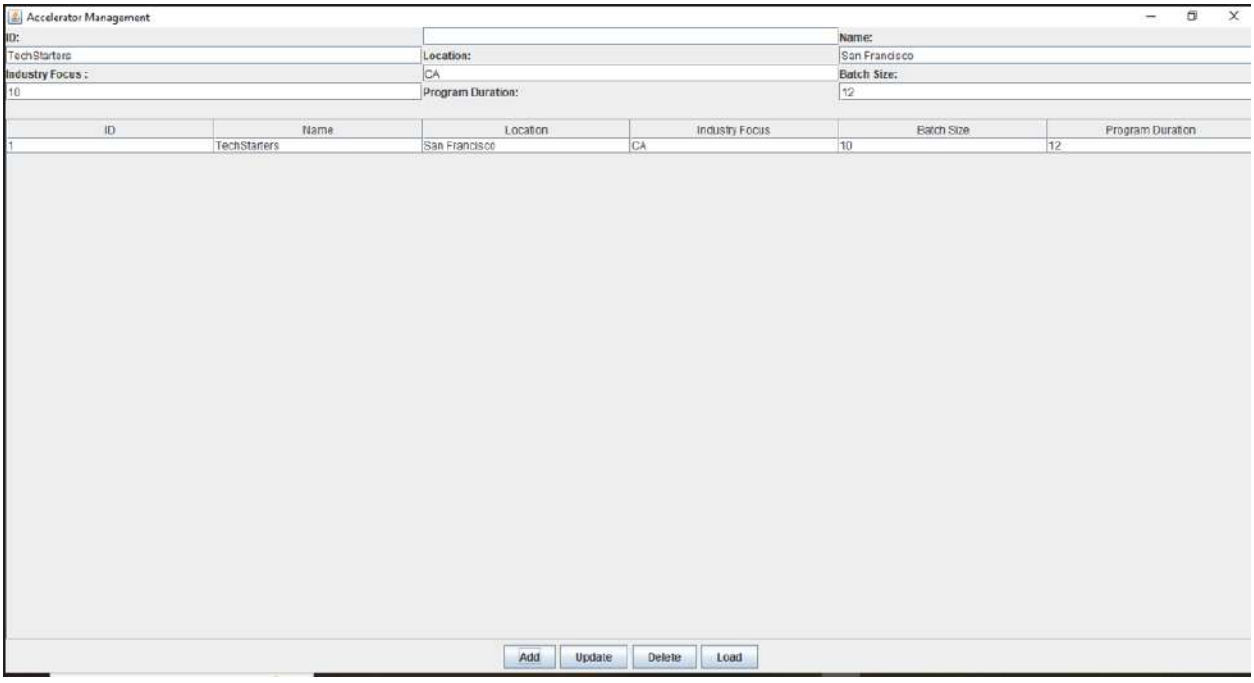
Load Startup

Accelerator Table

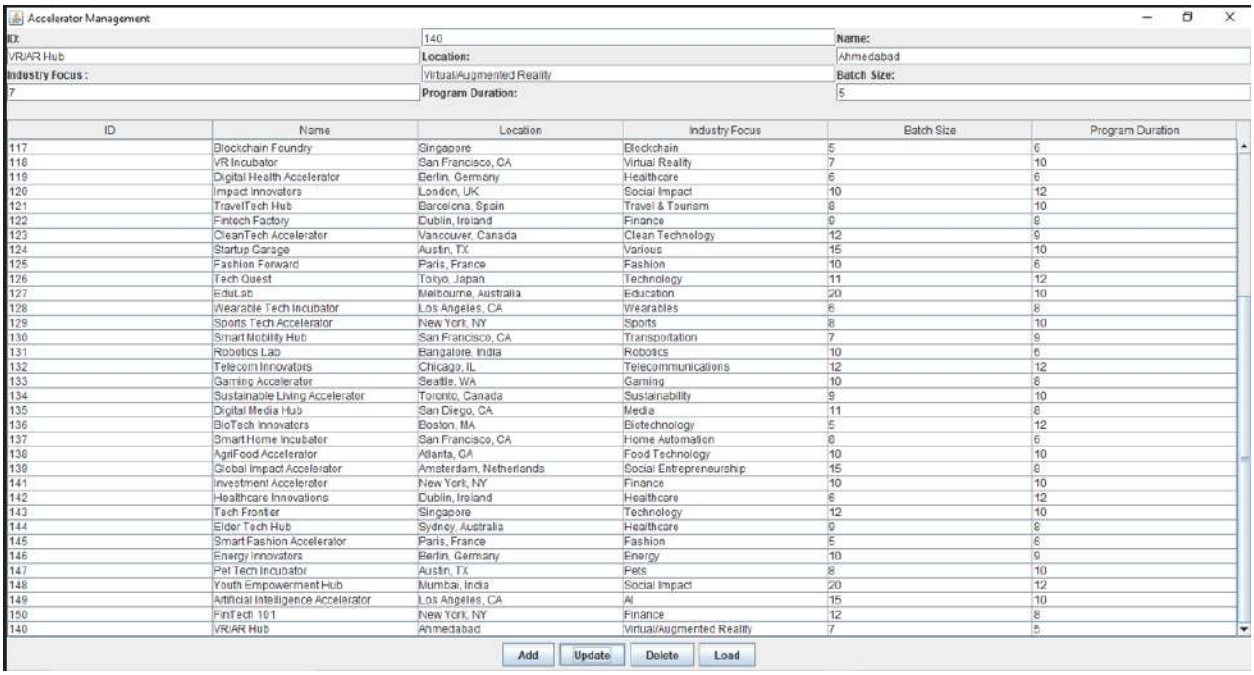
GUI



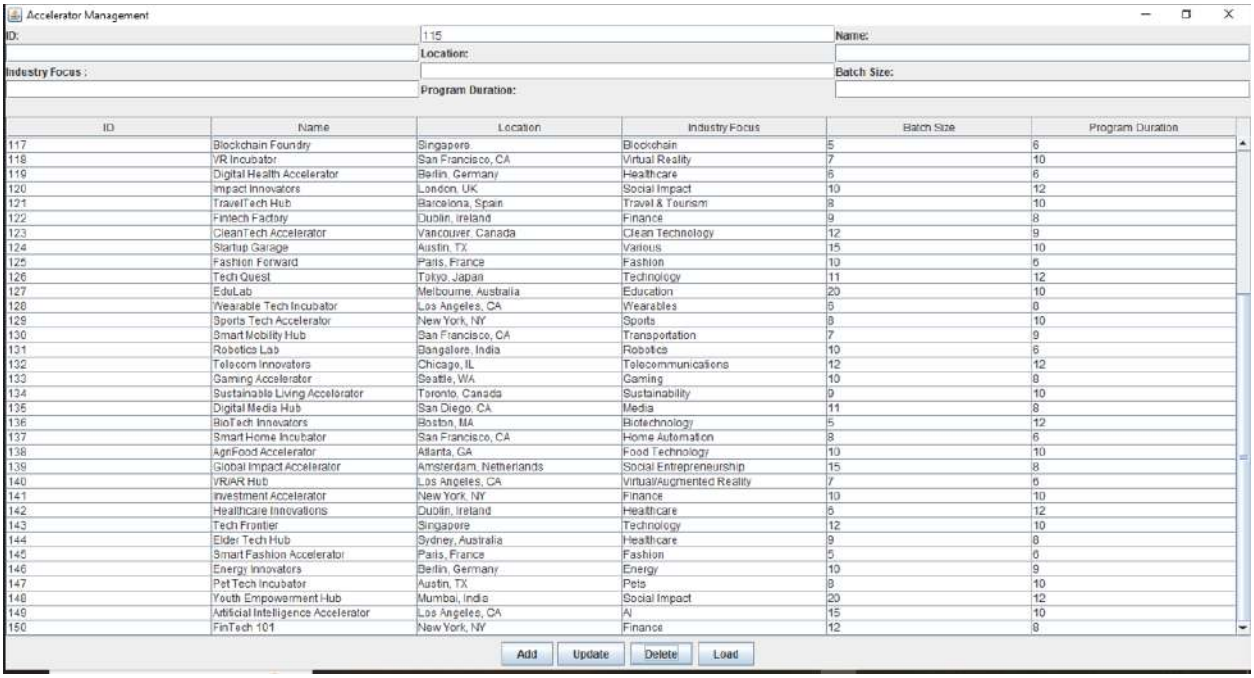
Add Accelerator



Update Accelerator



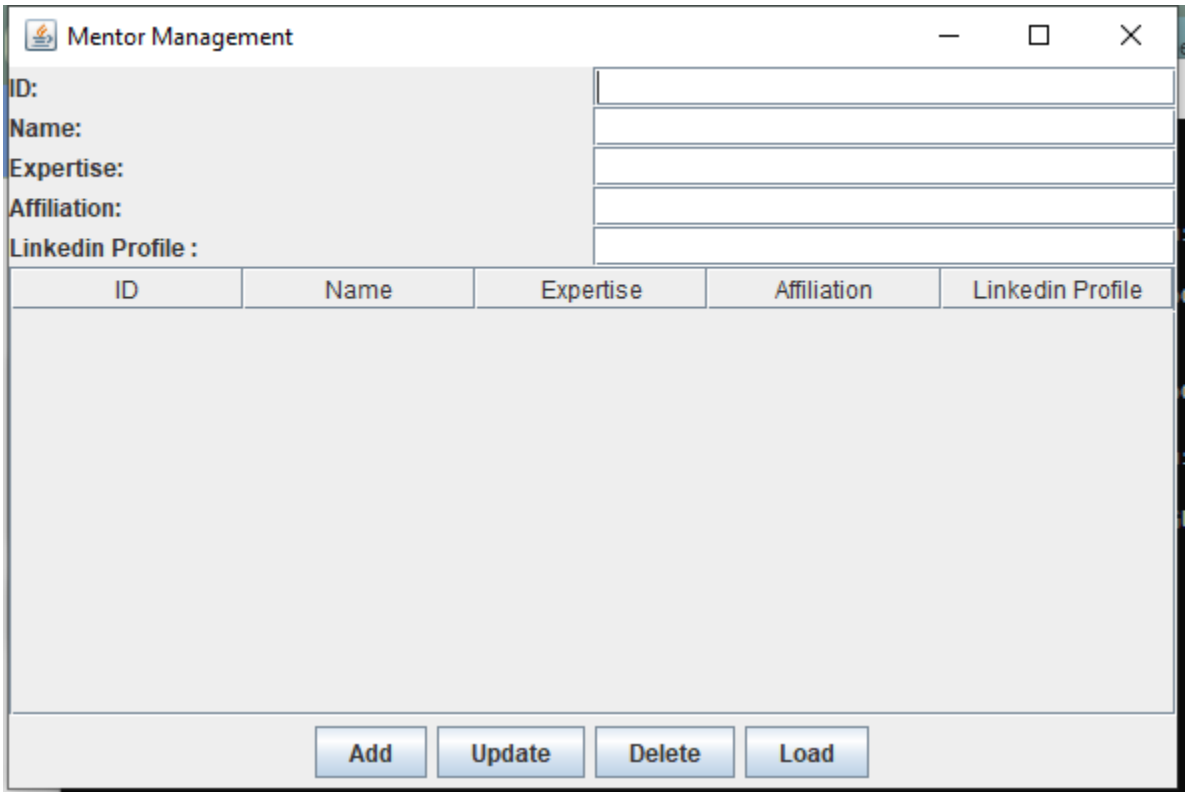
Delete Accelerator



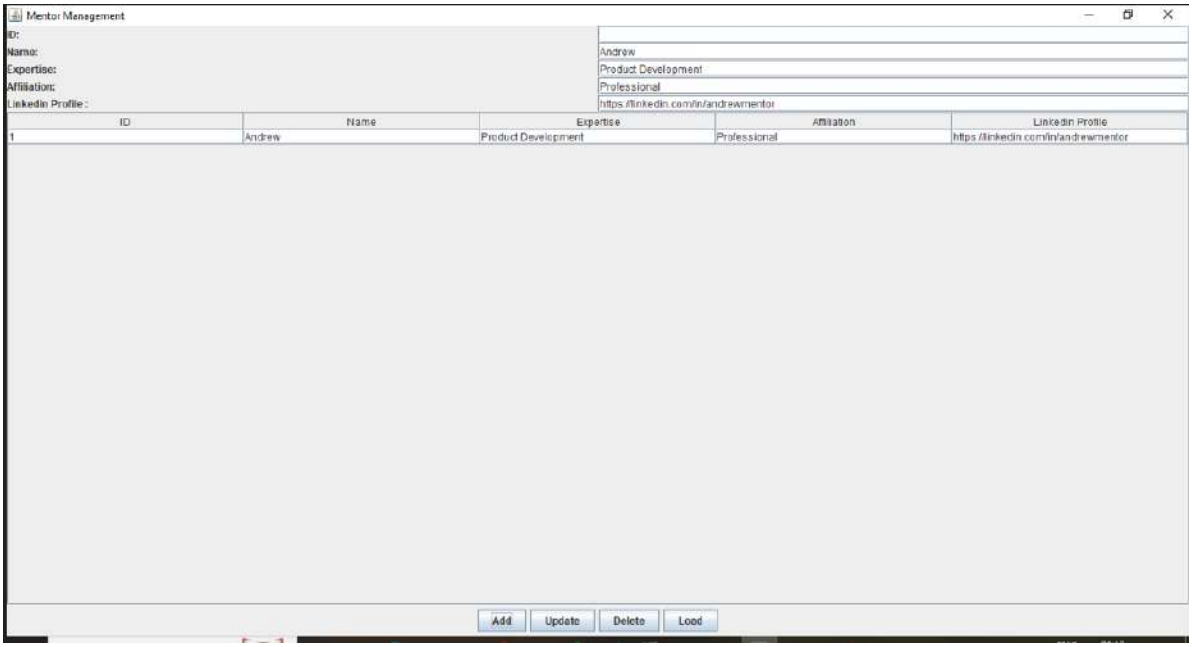
Load Accelerator

Mentor Table

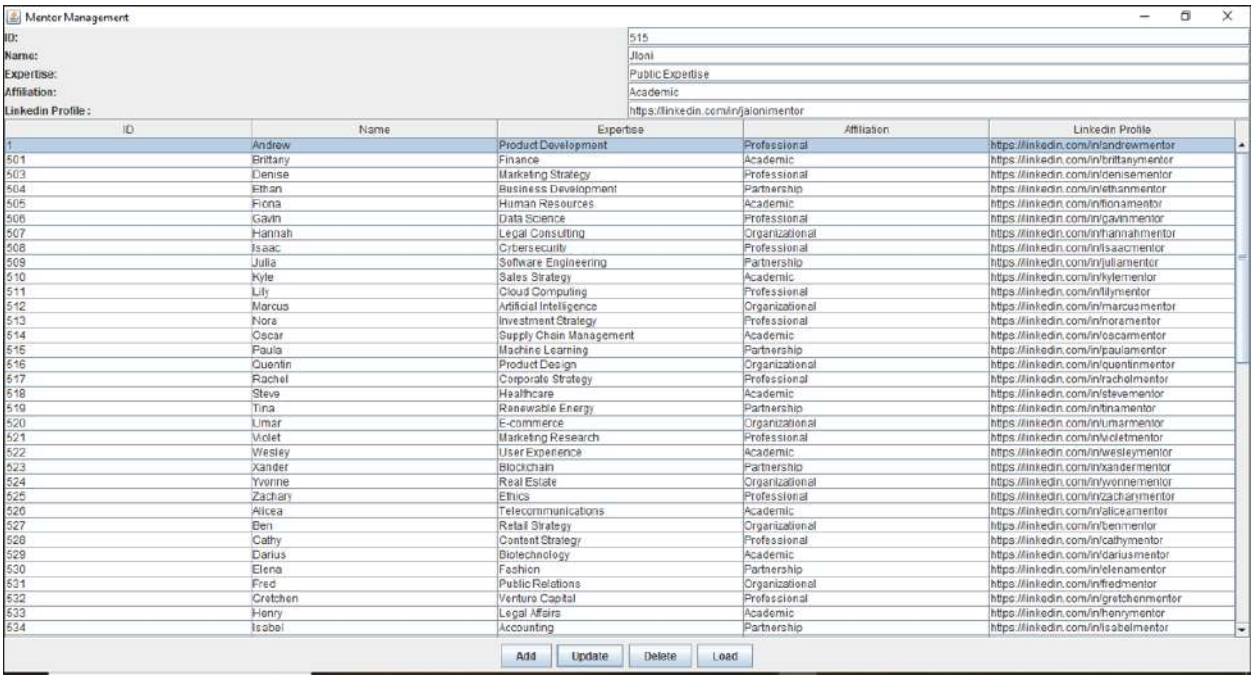
GUI



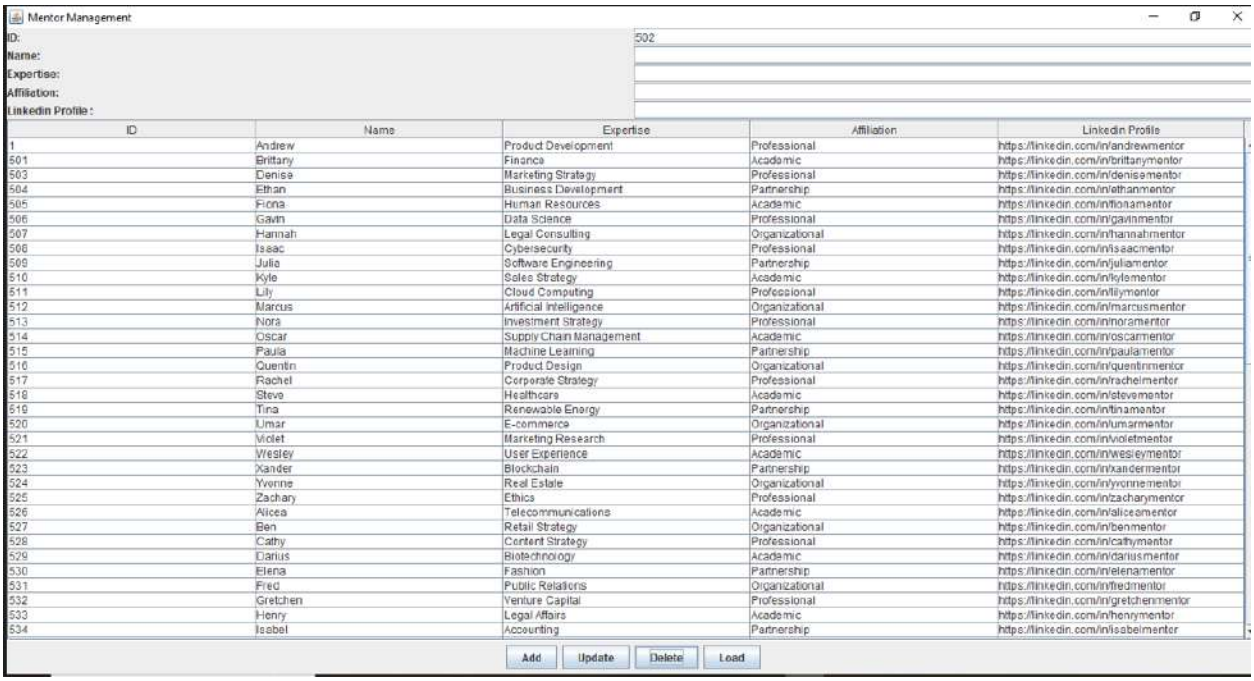
Add Mentor



Update Mentor



Delete Mentor


Mentor Management
ID:
502
Name:
Expertise:
Affiliation:
Linkedin Profile :
ID
Name
Expertise
Affiliation
Linkedin Profile
1 Andrew Product Development Professional https://linkedin.com/in/andrewmentor
501 Brittany Finance Academic https://linkedin.com/in/brittanymentor
503 Denise Marketing Strategy Professional https://linkedin.com/in/denisementor
504 Ethan Business Development Partnership https://linkedin.com/in/ethanmentor
505 Fiona Human Resources Academic https://linkedin.com/in/fionamentor
506 Gavin Data Science Professional https://linkedin.com/in/gavinmentor
507 Hannah Legal Consulting Organizational https://linkedin.com/in/hannahmentor
508 Isaac Cybersecurity Professional https://linkedin.com/in/isaacmentor
509 Julia Software Engineering Partnership https://linkedin.com/in/juliamentor
510 Kyle Sales Strategy Academic https://linkedin.com/in/kylementor
511 Lily Cloud Computing Professional https://linkedin.com/in/lilymentor
512 Marcus Artificial Intelligence Organizational https://linkedin.com/in/marcusmentor
513 Nora Investment Strategy Professional https://linkedin.com/in/noramentor
514 Oscar Supply Chain Management Academic https://linkedin.com/in/oscarmentor
515 Paula Machine Learning Partnership https://linkedin.com/in/paulamentor
516 Quentin Product Design Organizational https://linkedin.com/in/quentinmentor
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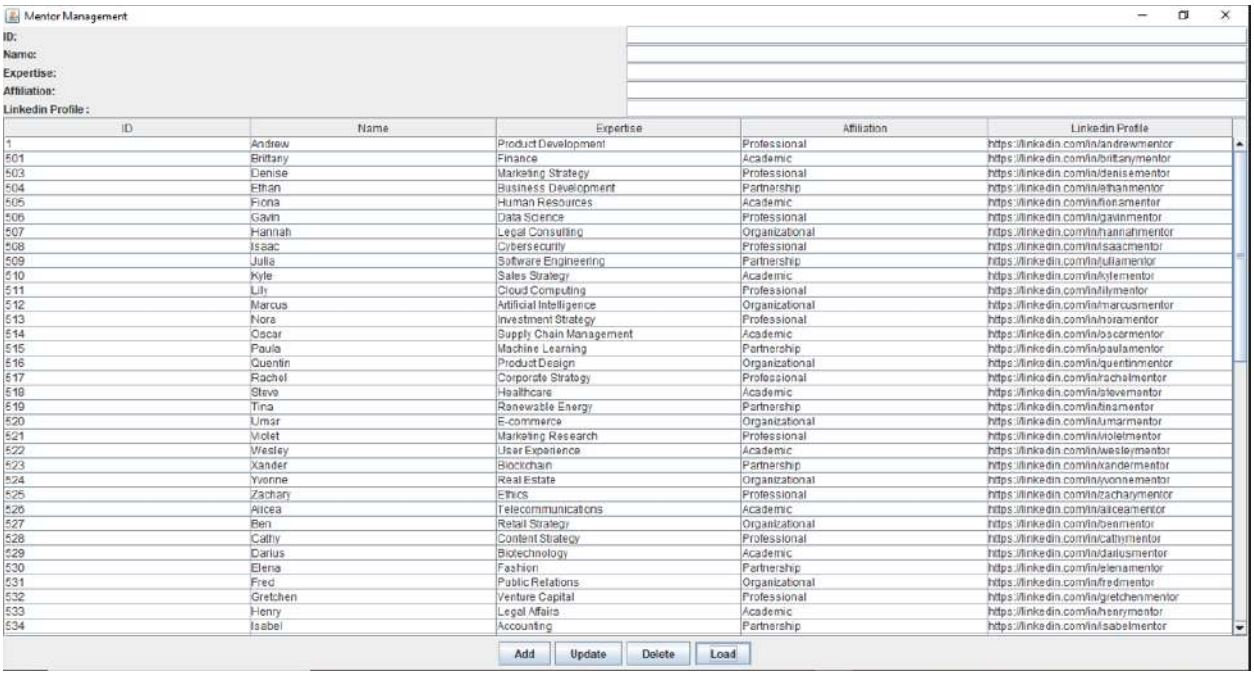
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Chapter 6: Technical Issues and Solution

1. Technical Issues

List all technical challenges encountered during project development.

Issue 1: ERD Constraints and Relationship Mapping

- **Description**: While using pgAdmin's GUI interface, defining certain relationships and constraints within the ERD was occasionally challenging, as the interface had limitations in representing complex many-to-many relationships directly.

Issue 2: Data Export for Backup

- **Description**: The pgAdmin GUI didn't offer straightforward options to export all database objects and data in a single operation, making it challenging to generate a consistent backup in a single `.sql` file.

2. Solution

○ **Describe the approach taken to resolve each issue.**

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    - **Approach**: We worked around these limitations by defining complex relationships and constraints directly through SQL statements rather than relying solely on the GUI. This ensured that our ERD accurately represented the intended structure, including all necessary primary keys, foreign keys, and constraints.
- **Solution for Issue 2 (Data Export for Backup)**
    - **Approach**: To address the export limitation, we utilized pgAdmin's "Backup" and "Restore" functions, exporting our database as a `.backup` file for PostgreSQL. This allowed for a straightforward and consistent export of our database objects and data, which could be restored as needed to prevent any data loss.