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DBMS Project 2:

Human Resource Management System

1. Abstract:

This project aims to develop a comprehensive HR management system leveraging relational database management techniques. The system encompasses various aspects of HR operations, including candidate recruitment, evaluation, onboarding, and performance tracking. Through the utilization of SQL queries, data analysis, and visualization, the system facilitates informed decision-making and efficient management of human resources. The project database, named HR_DB, comprises several interconnected tables representing entities such as candidates, job openings, evaluations, interviews, and reimbursements. Data has been inserted into these tables to simulate real-world scenarios and demonstrate the functionality of the system.

Key features of the system include candidate tracking, evaluation score distribution analysis, maximum test score identification, and status monitoring of job openings. These features enable HR professionals to streamline recruitment processes, assess candidate suitability, and ensure compliance with organizational standards. Through this project, we aim to provide a practical solution for HR management, empowering organizations to optimize their hiring processes, enhance candidate experience, and foster a productive workforce.

2. Design:

a. Introduction:

In today's dynamic business landscape, effective human resource management is vital for the success of any organization. The recruitment, evaluation, and retention of top talent play a crucial role in driving innovation, productivity, and organizational growth. With the increasing complexity of HR processes and the abundance of candidate data, there arises a need for robust HR management systems that can streamline operations and provide actionable insights. This project endeavors to address this need by developing a comprehensive HR management system using relational database management techniques. The system aims to automate and optimize various HR functions, ranging from candidate recruitment to performance evaluation and onboarding. By leveraging SQL queries, data analysis, and visualization, the system enables HR professionals to make informed decisions, track candidate progress, and ensure compliance with organizational policies.

The project database, HR_DB, serves as the backbone of the system, housing interconnected tables that represent entities such as candidates, job openings, evaluations, interviews, and reimbursements. Through the insertion of dummy data into these tables, the system demonstrates its functionality in managing real-world HR scenarios. By developing this HR management system, we aim to provide organizations with a powerful tool to optimize their HR operations, enhance candidate experience, and ultimately contribute to the achievement of strategic business objectives.

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b. E/R Diagram:

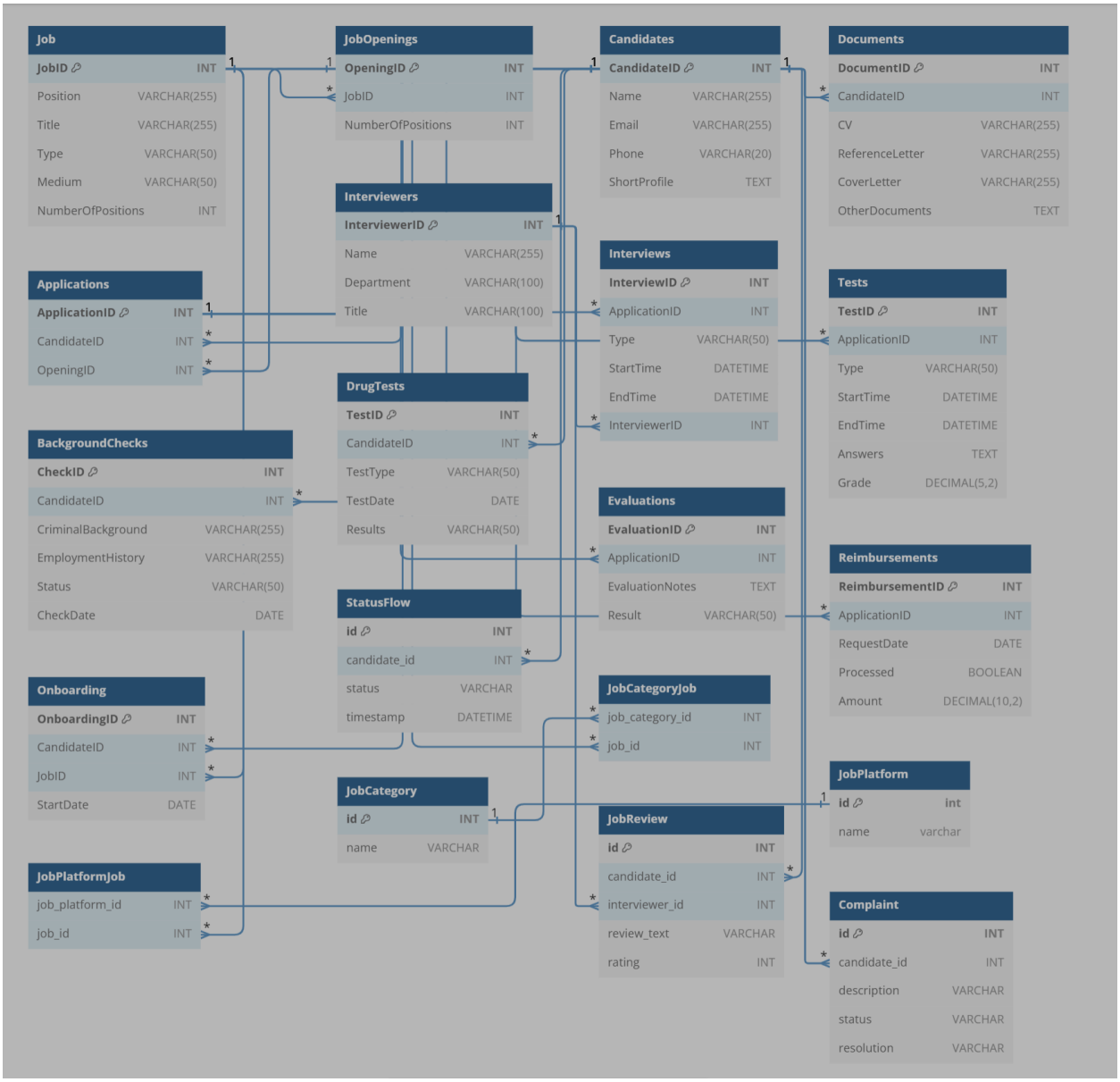

Fig 1: E/R Diagram for HR Database

c. Database Design Objects:

- Job:

JobID INT PRIMARY KEY

Position VARCHAR(255)

Title VARCHAR(255)

Type VARCHAR(50)

Medium VARCHAR(50)

NumberOfPositions INT

- JobOpenings:

OpeningID INT PRIMARY KEY

JobID INT FOREIGN KEY (Job.JobID)

NumberOfPositions INT

- Candidates:

CandidateID INT PRIMARY KEY

Name VARCHAR(255)

Email VARCHAR(255)

Phone VARCHAR(20)

ShortProfile TEXT

- Documents:

DocumentID INT PRIMARY KEY

CandidateID INT FOREIGN KEY (Candidates.CandidateID)

CV VARCHAR(255)

ReferenceLetter VARCHAR(255)

CoverLetter VARCHAR(255)

OtherDocuments TEXT

- Applications:

ApplicationID INT PRIMARY KEY

CandidateID INT FOREIGN KEY (Candidates.CandidateID)

OpeningID INT FOREIGN KEY (JobOpenings.OpeningID)

- Interviewers:

InterviewerID INT PRIMARY KEY

Name VARCHAR(255)

Department VARCHAR(100)

Title VARCHAR(100)

- Interviews:

InterviewID INT PRIMARY KEY

ApplicationID INT FOREIGN KEY (Applications.ApplicationID)

Type VARCHAR(50)

StartTime DATETIME

EndTime DATETIME

InterviewerID INT FOREIGN KEY (Interviewers.InterviewerID)

- Tests:

TestID INT PRIMARY KEY

ApplicationID INT FOREIGN KEY (Applications.ApplicationID)

Type VARCHAR(50)

StartTime DATETIME

EndTime DATETIME

Answers TEXT

Grade DECIMAL(5,2)

- BackgroundChecks:

CheckID INT PRIMARY KEY

CandidateID INT FOREIGN KEY (Candidates.CandidateID)

CriminalBackground VARCHAR(255)

EmploymentHistory VARCHAR(255)

Status VARCHAR(50)

CheckDate DATE

- DrugTests:

]TestID INT PRIMARY KEY

CandidateID INT FOREIGN KEY (Candidates.CandidateID)

TestType VARCHAR(50)

TestDate DATE

Results VARCHAR(50)

- Evaluations:

EvaluationID INT PRIMARY KEY

ApplicationID INT FOREIGN KEY (Applications.ApplicationID)

EvaluationNotes TEXT

Result VARCHAR(50)

- Reimbursements:

ReimbursementID INT PRIMARY KEY

ApplicationID INT FOREIGN KEY (Applications.ApplicationID)

RequestDate DATE

Processed BOOLEAN

Amount DECIMAL(10,2)

- Onboarding:

OnboardingID INT PRIMARY KEY

CandidateID INT FOREIGN KEY (Candidates.CandidateID)

JobID INT FOREIGN KEY (Job.JobID)

StartDate DATE

- StatusFlow:

ID INT PRIMARY KEY

CandidateID INT FOREIGN KEY (Candidates.CandidateID)

Status VARCHAR

Timestamp DATETIME

- JobCategoryJob:

JobCategoryID INT FOREIGN KEY (JobCategory.ID)

JobID INT FOREIGN KEY (Job.JobID)

- JobPlatform:

ID INT PRIMARY KEY

Name VARCHAR

- JobPlatformJob:

JobPlatformID INT FOREIGN KEY (JobPlatform.ID)

JobID INT FOREIGN KEY (Job.JobID)

- JobCategory:

ID INT PRIMARY KEY

Name VARCHAR

- JobReview:

ID INT PRIMARY KEY

CandidateID INT FOREIGN KEY (Candidates.CandidateID)

InterviewerID INT FOREIGN KEY (Interviewers.InterviewerID)

ReviewText VARCHAR

Rating INT

- Complaint:

ID INT PRIMARY KEY

CandidateID INT FOREIGN KEY (Candidates.CandidateID)

Description VARCHAR

Status VARCHAR

Resolution VARCHAR

3. Implementation:

a. Database Creation:

```
        IF DB_ID('HR_DB') IS NOT NULL
   DROP DATABASE HR_DB
GO

CREATE DATABASE HR_DB
GO



USE HR_DB;



/*   Job      */

-- Drop the existing 'Job' table
DROP TABLE IF EXISTS Job;
-- Recreate the 'Job' table based on your DBML code
CREATE TABLE Job (
    JobID INT PRIMARY KEY,
    Position VARCHAR(255),
    Title VARCHAR(255),
    Type VARCHAR(50),
    Medium VARCHAR(50),
    NumberOfPositions INT
);




/*      Job Openings      */

-- Drop the existing 'JobOpenings' table
DROP TABLE IF EXISTS JobOpenings;
-- Recreate the 'JobOpenings' table based on your DBML code
CREATE TABLE JobOpenings (
    OpeningID INT PRIMARY KEY,
    JobID INT,
    NumberOfPositions INT,
    FOREIGN KEY (JobID) REFERENCES Job(JobID)
);
```

```
/*     Candidates     */


-- Drop the existing 'Candidates' table
DROP TABLE IF EXISTS Candidates;
-- Recreate the 'Candidates' table based on your DBML code
CREATE TABLE Candidates (
    CandidateID INT PRIMARY KEY,
    Name VARCHAR(255),
    Email VARCHAR(255),
    Phone VARCHAR(20),
    ShortProfile TEXT
);
```

```
/*     Documents     */

-- Drop the existing 'Documents' table
DROP TABLE IF EXISTS Documents;
-- Recreate the 'Documents' table based on your DBML code
CREATE TABLE Documents (
    DocumentID INT PRIMARY KEY,
    CandidateID INT,
    CV VARCHAR(255),
    ReferenceLetter VARCHAR(255),
    CoverLetter VARCHAR(255),
    OtherDocuments TEXT,
    FOREIGN KEY (CandidateID) REFERENCES Candidates(CandidateID)
);
```

```
/*     Applications     */


-- Drop the existing 'Applications' table
```

```
DROP TABLE IF EXISTS Applications;
-- Recreate the 'Applications' table based on your DBML code
CREATE TABLE Applications (
    ApplicationID INT PRIMARY KEY,
    CandidateID INT,
    OpeningID INT,
    FOREIGN KEY (CandidateID) REFERENCES Candidates(CandidateID),
    FOREIGN KEY (OpeningID) REFERENCES JobOpenings(OpeningID)
);



/*      Interviews      */


-- Drop the existing 'Interviewers' table
DROP TABLE IF EXISTS Interviewers;
-- Recreate the 'Interviewers' table based on your DBML code
CREATE TABLE Interviewers (
    InterviewerID INT PRIMARY KEY,
    Name VARCHAR(255),
    Department VARCHAR(100),
    Title VARCHAR(100)
);




/*      Interviews      */

-- Drop the existing 'Interviews' table
DROP TABLE IF EXISTS Interviews;
-- Recreate the 'Interviews' table based on your DBML code
CREATE TABLE Interviews (
    InterviewID INT PRIMARY KEY,
    ApplicationID INT,
    Type VARCHAR(50),
    StartTime DATETIME,
    EndTime DATETIME,
    InterviewerID INT,
    FOREIGN KEY (ApplicationID) REFERENCES Applications(ApplicationID),
    FOREIGN KEY (InterviewerID) REFERENCES Interviewers(InterviewerID)
);
```

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```
/*     Test      */


-- Drop the existing 'Tests' table
DROP TABLE IF EXISTS Tests;
-- Recreate the 'Tests' table based on your DBML code
CREATE TABLE Tests (
    TestID INT PRIMARY KEY,
    ApplicationID INT,
    Type VARCHAR(50),
    StartTime DATETIME,
    EndTime DATETIME,
    Answers TEXT,
    Grade DECIMAL(5,2),
    FOREIGN KEY (ApplicationID) REFERENCES Applications(ApplicationID)
);



/*     Background Checks       */

-- Drop the existing 'BackgroundChecks' table
DROP TABLE IF EXISTS BackgroundChecks;
-- Recreate the 'BackgroundChecks' table based on your DBML code
CREATE TABLE BackgroundChecks (
    CheckID INT PRIMARY KEY,
    CandidateID INT,
    CriminalBackground VARCHAR(255),
    EmploymentHistory VARCHAR(255),
    Status VARCHAR(50),
    CheckDate DATE,
    FOREIGN KEY (CandidateID) REFERENCES Candidates(CandidateID)
);


/*     Drug Tests       */


-- Drop the existing 'DrugTests' table
DROP TABLE IF EXISTS DrugTests;
-- Recreate the 'DrugTests' table based on your DBML code
CREATE TABLE DrugTests (
    TestID INT PRIMARY KEY,
    CandidateID INT,
```

```
    TestType VARCHAR(50),
    TestDate DATE,
    Results VARCHAR(50),
    FOREIGN KEY (CandidateID) REFERENCES Candidates(CandidateID)
);



/*      Evaluation       */

-- Drop the existing 'Evaluations' table
DROP TABLE IF EXISTS Evaluations;
-- Recreate the 'Evaluations' table based on your DBML code
CREATE TABLE Evaluations (
    EvaluationID INT PRIMARY KEY,
    ApplicationID INT,
    EvaluationNotes TEXT,
    Result VARCHAR(50),
    FOREIGN KEY (ApplicationID) REFERENCES Applications(ApplicationID)
);



/*    Reimbursements        */


-- Drop the existing 'Reimbursements' table
DROP TABLE IF EXISTS Reimbursements;
-- Recreate the 'Reimbursements' table based on your DBML code
CREATE TABLE Reimbursements (
    ReimbursementID INT PRIMARY KEY,
    ApplicationID INT,
    RequestDate DATE,
    Processed BIT,
    Amount DECIMAL(10,2),
    FOREIGN KEY (ApplicationID) REFERENCES Applications(ApplicationID)
);



/*     Onboarding        */
-- Drop the existing 'Onboarding' table
DROP TABLE IF EXISTS Onboarding;
```

```
-- Recreate the 'Onboarding' table based on your DBML code
CREATE TABLE Onboarding (
    OnboardingID INT PRIMARY KEY,
    CandidateID INT,
    JobID INT,
    StartDate DATE,
    FOREIGN KEY (CandidateID) REFERENCES Candidates(CandidateID),
    FOREIGN KEY (JobID) REFERENCES Job(JobID)
);



/*      StatusFlow      */

-- Drop the existing 'StatusFlow' table
DROP TABLE IF EXISTS StatusFlow;
-- Recreate the 'StatusFlow' table based on your DBML code
CREATE TABLE StatusFlow (
    id INT PRIMARY KEY,
    candidate_id INT,
    status VARCHAR(255),
    timestamp DATETIME,
    FOREIGN KEY (candidate_id) REFERENCES Candidates(CandidateID)
);



/*      JobCategory      */


-- Drop the existing 'JobCategory' table
DROP TABLE IF EXISTS JobCategory;
-- Recreate the 'JobCategory' table based on your DBML code
CREATE TABLE JobCategory (
    id INT PRIMARY KEY,
    name VARCHAR(255)
);


/*      JobCategoryJob      */

-- Drop the existing 'JobCategoryJob' table
DROP TABLE IF EXISTS JobCategoryJob;
-- Recreate the 'JobCategoryJob' table based on your DBML code
```

```
CREATE TABLE JobCategoryJob (
   job_category_id INT,
   job_id INT,
   FOREIGN KEY (job_category_id) REFERENCES JobCategory(id),
   FOREIGN KEY (job_id) REFERENCES Job(JobID)
);

/*    JobPlatform        */

-- Drop the existing 'JobPlatform' table
DROP TABLE IF EXISTS JobPlatform;
-- Recreate the 'JobPlatform' table based on your DBML code
CREATE TABLE JobPlatform (
   id INT PRIMARY KEY,
   name VARCHAR(255)
);



/*      JobPlatformJob      */
-- Drop the existing 'JobPlatformJob' table
DROP TABLE IF EXISTS JobPlatformJob;
-- Recreate the 'JobPlatformJob' table based on your DBML code
CREATE TABLE JobPlatformJob (
   job_platform_id INT,
   job_id INT,
   FOREIGN KEY (job_platform_id) REFERENCES JobPlatform(id),
   FOREIGN KEY (job_id) REFERENCES Job(JobID)
);



/*    JobReview        */

-- Drop the existing 'JobReview' table
DROP TABLE IF EXISTS JobReview;
-- Recreate the 'JobReview' table based on your DBML code
CREATE TABLE JobReview (
   id INT PRIMARY KEY,
   candidate_id INT,
   interviewer_id INT,
   review_text VARCHAR(255),
   rating INT,
   FOREIGN KEY (candidate_id) REFERENCES Candidates(CandidateID),
   FOREIGN KEY (interviewer_id) REFERENCES Interviewers(InterviewerID)
```

```
);
```

```
/*     Complaint      */

-- Drop the existing 'Complaint' table
DROP TABLE IF EXISTS Complaint;
-- Recreate the 'Complaint' table based on your DBML code
CREATE TABLE Complaint (
    id INT PRIMARY KEY,
    candidate_id INT,
    description VARCHAR(255),
    status VARCHAR(255),
    resolution VARCHAR(255),
    FOREIGN KEY (candidate_id) REFERENCES Candidates(CandidateID)
);
```

b. Inserting Data in Tables:

```
USE HR_DB;
```

```
-- Insert dummy data into the Candidates table
INSERT INTO Candidates (CandidateID, Name, Email, Phone, ShortProfile) VALUES
(1, 'Jainam Shah', 'jainam@gmail.com', '1234567890', 'Data Scientist'),
(2, 'Jackie Chan', 'jackie@hotmail.com', '2345678901', 'Data Scientist'),
(3, 'Gal Gadot', 'gal@syr.edu', '3456789012', 'Java Developer'),
(4, 'Margot Robbie', 'margot@gmail.com', '4567890123', 'Software Engineer'),
(5, 'Dikshita Patel', 'dikshita@hotmail.com', '5678901234', 'Frontend Developer'),
(6, 'Janvi Saddi', 'janvi@syr.edu', '6789012345', 'Frontend Developer'),
(7, 'Bhavya Shah', 'bhavya@gmail.com', '7890123456', 'Data Analyst'),
(8, 'Yash Solanki', 'yash@hotmail.com', '8901234567', 'Data Analyst'),
(9, 'Heet Chedda', 'heet@syr.edu', '9012345678', 'Java Developer'),
(10, 'Sahil Shah', 'sahil@gmail.com', '0123456789', 'Data Analyst');
```

```
-- Insert dummy data into the Documents table
```

```
INSERT INTO Documents (DocumentID, CandidateID, CV, ReferenceLetter, CoverLetter,
OtherDocuments) VALUES
(1, 1, 'jainam_cv.pdf', 'jainam_ref_letter.pdf', 'jainam_cover_letter.pdf', 'jainam_other_docs.pdf'),
(2, 2, 'jackie_cv.pdf', 'jackie_ref_letter.pdf', 'jackie_cover_letter.pdf', 'jackie_other_docs.pdf'),
(3, 3, 'gal_cv.pdf', 'gal_ref_letter.pdf', 'gal_cover_letter.pdf', NULL),
(4, 4, 'margot_cv.pdf', 'margot_ref_letter.pdf', 'margot_cover_letter.pdf', NULL),
(5, 5, 'dikshita_cv.pdf', 'dikshita_ref_letter.pdf', 'dikshita_cover_letter.pdf',
'dikshita_other_docs.pdf'),
(6, 6, 'janvi_cv.pdf', 'janvi_ref_letter.pdf', 'janvi_cover_letter.pdf', NULL),
(7, 7, 'bhavya_cv.pdf', 'bhavya_ref_letter.pdf', 'bhavya_cover_letter.pdf', NULL),
(8, 8, 'yash_cv.pdf', 'yash_ref_letter.pdf', 'yash_cover_letter.pdf', 'yash_other_docs.pdf'),
(9, 9, 'heet_cv.pdf', 'heet_ref_letter.pdf', 'heet_cover_letter.pdf', NULL),
(10, 10, 'sahil_cv.pdf', 'sahil_ref_letter.pdf', 'sahil_cover_letter.pdf', 'sahil_other_docs.pdf');


-- Insert dummy data into the JobPlatform table
INSERT INTO JobPlatform (id, name) VALUES
(1, 'LinkedIn'),
(2, 'Glassdoor'),
(3, 'Handshake'),
(4, 'Referral');


-- Insert dummy data into the Job table
INSERT INTO Job (JobID, Position, Title, Type, Medium, NumberOfPositions) VALUES
(1, 'Data Scientist', 'Data Scientist and AI Developer', 'Fulltime', 'Onsite', 3),
(2, 'Data Scientist', 'Data Scientist', 'Fulltime', 'Hybrid', 2),
(3, 'Software Engineer', 'Software Engineer Position', 'Fulltime', 'Remote', 4),
(4, 'Java Developer', 'Java Developer Full Stack', 'Parttime', 'Onsite', 1),
(5, 'Business Analyst', 'Business Analyst and Data Analyst', 'Internship', 'Hybrid', 2),
(6, 'Frontend Developer', 'Frontend Developer(Full Stack)', 'Co-Op', 'Remote', 3),
(7, 'Software Engineer', 'Software Engineer Designer', 'Fulltime', 'Onsite', 2),
(8, 'Marketing Specialist', 'Marketing Specialist', 'Parttime', 'Hybrid', 1),
(9, 'Financial Analyst', 'Financial Analyst Position', 'Fulltime', 'Remote', 5),
(10, 'Human Resources Coordinator', 'HR Coordinator Position', 'Internship', 'Hybrid', 2);


-- Insert dummy data into the JobOpenings table
INSERT INTO JobOpenings (OpeningID, JobID, NumberOfPositions) VALUES
```

```
(1, 1, 3),
(2, 2, 2),
(3, 3, 4),
(4, 4, 1),
(5, 5, 2),
(6, 6, 3),
(7, 7, 2),
(8, 8, 1),
(9, 9, 5),
(10, 10, 2);
```

```
-- Insert dummy data into the StatusFlow table
INSERT INTO StatusFlow (id, candidate_id, status, timestamp) VALUES
(1, 1, 'Under Review', '2024-04-18 08:00:00'),
(2, 2, 'Negotiating', '2024-04-23 08:30:00'),
(3, 3, 'Accepted', '2024-03-30 09:00:00'),
(4, 4, 'Rejected', '2024-01-30 09:30:00'),
(5, 5, 'Rejected', '2023-04-30 10:00:00'),
(6, 6, 'Application Submitted', '2024-04-18 10:30:00'),
(7, 7, 'Under Review', '2024-04-14 11:00:00'),
(8, 8, 'Application Submitted', '2024-04-19 11:30:00'),
(9, 9, 'Under Review', '2024-04-11 12:00:00'),
(10, 10, 'Accepted', '2024-04-09 12:30:00');
```

```
-- Insert dummy data into the Applications table
INSERT INTO Applications (ApplicationID, CandidateID, OpeningID) VALUES
(1, 1, 1),
(2, 2, 2),
(3, 3, 3),
(4, 4, 4),
(5, 5, 5),
(6, 6, 6),
(7, 7, 7),
(8, 8, 8),
(9, 9, 9),
(10, 10, 10);
```

```
-- Insert dummy data into the Tests table
INSERT INTO Tests (TestID, ApplicationID, Type, StartTime, EndTime, Answers, Grade)
VALUES
(1, 1, 'OA', '2024-04-18 09:00:00', '2024-04-18 10:00:00', 'A, B, C, D, A', 85.5),
(2, 2, 'Behavioural MCQ', '2024-04-23 10:00:00', '2024-04-23 11:00:00', 'Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree', 70.0),
(3, 3, 'Aptitude', '2024-03-30 09:00:00', '2024-03-30 10:00:00', '25, 36, 42, 55, 63', 90.5),
(4, 4, 'OA', '2024-01-30 09:30:00', '2024-01-30 10:30:00', 'A, C, D, D, B', 78.0),
(5, 5, 'Behavioural MCQ', '2023-04-30 10:00:00', '2023-04-30 11:00:00', 'Disagree, Strongly Agree, Neutral, Agree, Disagree', 65.5),
(6, 6, 'Aptitude', '2024-04-18 10:30:00', '2024-04-18 11:30:00', '30, 42, 56, 68, 75', 82.0),
(7, 7, 'OA', '2024-04-14 11:00:00', '2024-04-14 12:00:00', 'C, A, B, D, C', 88.5),
(8, 8, 'Behavioural MCQ', '2024-04-19 11:30:00', '2024-04-19 12:30:00', 'Neutral, Agree, Disagree, Strongly Agree, Strongly Disagree', 72.0),
(9, 9, 'Aptitude', '2024-04-11 12:00:00', '2024-04-11 13:00:00', '40, 51, 64, 78, 85', 95.0),
(10, 10, 'OA', '2024-04-09 12:30:00', '2024-04-09 13:30:00', 'B, B, D, A, C', 80.5);
```

```
-- Insert dummy data into the Interviewers table
INSERT INTO Interviewers (InterviewerID, Name, Department, Title) VALUES
(1, 'John Doe', 'Human Resources', 'HR Manager'),
(2, 'Jane Smith', 'Engineering', 'Senior Software Engineer'),
(3, 'David Martinez', 'Operations', 'Operations Manager'),
(4, 'Daniel Taylor', 'Research and Development', 'Data Science Manager'),
(5, 'Sophia Anderson', 'Product Management', 'Product Manager');
```

```
-- Insert dummy data into the Interviews table
INSERT INTO Interviews (InterviewID, ApplicationID, Type, StartTime, EndTime,
InterviewerID) VALUES
(1, 1, 'Onsite', '2024-04-20 09:00:00', '2024-04-20 10:45:00', 1),
(2, 2, 'Online', '2024-04-21 10:00:00', '2024-04-21 11:30:00', 2),
(3, 3, 'Onsite', '2024-04-22 11:00:00', '2024-04-22 12:00:00', 1),
(4, 4, 'Online', '2024-04-23 12:00:00', '2024-04-23 12:20:00', 3),
(5, 5, 'Onsite', '2024-04-24 13:00:00', '2024-04-24 14:00:00', 4),
(6, 6, 'Online', '2024-04-25 14:00:00', '2024-04-25 15:00:00', 5),
(7, 7, 'Onsite', '2024-04-26 15:00:00', '2024-04-26 16:00:00', 2),
(8, 8, 'Online', '2024-04-27 16:00:00', '2024-04-27 17:00:00', 1),
(9, 9, 'Onsite', '2024-04-28 17:00:00', '2024-04-28 18:15:00', 3),
```

```
(10, 10, 'Online', '2024-04-29 18:00:00', '2024-04-29 19:00:00',5);
```

```
INSERT INTO JobReview (id, candidate_id, interviewer_id, review_text, rating) VALUES
(1, 1, 1, 'Good logical skills. Moving onto the next round.', 4),
(2, 2, 2, 'Great interview! Well-prepared and insightful answers.', 5),
(3, 3, 1, 'The interviewer asked irrelevant questions.', 2),
(4, 4, 3, 'The interviewee performed very poorly.', 1),
(5, 5, 4, 'The interviewee needs improvement in communication skills.', 2),
(6, 6, 5, 'Failed to answer critical questions.', 1),
(7, 7, 2, 'Passed the interview with flying colors.', 5),
(8, 8, 1, 'Good logical skills. Moving onto the next round.', 4),
(9, 9, 3, 'Need Improvement in technical skills.', 2),
(10, 10, 5, 'Irrelevant questions were asked during the interview.', 3);
```

```
INSERT INTO Evaluations (EvaluationID, ApplicationID, EvaluationNotes, Result) VALUES
(1, 1, 'Passed the interview. Moving onto the next round.', 'Pass'),
(2, 2, 'Failed the interview. Needs improvement in technical skills.', 'Fail'),
(3, 3, 'Can do better in the next round. Improve communication skills.', 'Pending'),
(4, 4, 'Passed the interview with excellent performance.', 'Pass'),
(5, 5, 'Moving onto the next round. Good problem-solving skills.', 'Pass'),
(6, 6, 'Failed the interview due to lack of experience.', 'Fail'),
(7, 7, 'Needs improvement in coding skills. Waiting on other candidates interview.', 'Pending'),
(8, 8, 'Passed the interview with flying colors.', 'Pass'),
(9, 9, 'Moving onto the next round. Great presentation skills.', 'Pass'),
(10, 10, 'Failed to meet expectations. Pending further review.', 'Pending');
```

```
INSERT INTO Reimbursements (ReimbursementID, ApplicationID, RequestDate, Processed,
Amount) VALUES
(1, 1, '2024-04-18', 1, 200.00),
(2, 2, '2024-04-23', 1, 150.00),
(3, 3, '2024-03-30', 0, 0.00),
(4, 4, '2024-01-30', 1, 100.00),
(5, 5, '2023-04-30', 0, 0.00),
(6, 6, '2024-04-18', 1, 250.00),
(7, 7, '2024-04-14', 1, 180.00),
(8, 8, '2024-04-19', 0, 0.00),
(9, 9, '2024-04-11', 1, 300.00),
(10, 10, '2024-04-09', 1, 220.00);
```

```
INSERT INTO Onboarding (OnboardingID, CandidateID, JobID, StartDate)
VALUES
(1, 1, 1, '2024-06-10'),
(2, 2, 2, '2024-06-10'),
(3, 3, 3, '2024-06-07'),
(4, 4, 4, '2024-07-03'),
(5, 5, 5, '2024-07-10'),
(6, 6, 6, '2024-08-21'),
(7, 7, 7, '2024-06-30'),
(8, 8, 8, '2024-05-24'),
(9, 9, 9, '2024-07-17'),
(10, 10, 10, '2024-06-10');
```

```
INSERT INTO Complaint (id, candidate_id, description, status, resolution)
VALUES
(1, 1, 'Cannot Start Behavioural Questions', 'Open', 'Investigating'),
(2, 2, 'Link not working', 'Open', 'Resolved'),
(3, 3, 'Poor Connection hence could not give interview', 'Open', 'Investigating'),
(4, 4, NULL, 'Open', 'No action required'),
(5, 5, NULL, 'Open', 'No action required'),
(6, 6, 'Link not working', 'Open', 'Investigating'),
(7, 7, 'Cannot Start Behavioural Questions', 'Open', 'Investigating'),
(8, 8, 'Poor Connection hence could not give interview', 'Open', 'Investigating'),
(9, 9, NULL, 'Open', 'No action required'),
(10, 10, NULL, 'Open', 'No action required');
```

```
-- Insert dummy data into the BackgroundChecks table
INSERT INTO BackgroundChecks (CheckID, CandidateID, CriminalBackground,
EmploymentHistory, Status, CheckDate) VALUES
(1, 1, 'Clean', 'Stable', 'Clear', '2024-04-18'),
(2, 2, 'Minor Offense', 'Unstable', 'Pending', '2024-04-23'),
(3, 3, 'Clear', 'Stable', 'Clear', '2024-04-30'),
(4, 4, 'Clean', 'Stable', 'Clear', '2024-04-30'),
(5, 5, 'Clean', 'Stable', 'Clear', '2024-04-30'),
(6, 6, 'Clear', 'Unstable', 'Clear', '2024-04-18'),
(7, 7, 'Clear', 'Stable', 'Clear', '2024-04-14'),
(8, 8, 'Minor Offense', 'Stable', 'Pending', '2024-04-19'),
(9, 9, 'Clear', 'Stable', 'Clear', '2024-04-11'),
(10, 10, 'Clean', 'Stable', 'Clear', '2024-04-09');
```

```
-- Insert dummy data into the DrugTests table
INSERT INTO DrugTests (TestID, CandidateID, TestType, TestDate, Results) VALUES
-- Candidate 1
(1, 1, 'Urine Test', '2024-04-18', 'Negative'),
(2, 1, 'Blood Test', '2024-04-19', 'Negative'),
(3, 1, 'Saliva Test', '2024-04-20', 'Negative'),

-- Candidate 2
(4, 2, 'Urine Test', '2024-04-21', 'Negative'),
(5, 2, 'Blood Test', '2024-04-22', 'Positive'),
(6, 2, 'Saliva Test', '2024-04-23', 'Negative'),

-- Candidate 3
(7, 3, 'Urine Test', '2024-04-24', 'Negative'),
(8, 3, 'Blood Test', '2024-04-25', 'Negative'),
(9, 3, 'Saliva Test', '2024-04-26', 'Positive'),

-- Candidate 4
(10, 4, 'Urine Test', '2024-04-27', 'Negative'),
(11, 4, 'Blood Test', '2024-04-28', 'Negative'),
(12, 4, 'Saliva Test', '2024-04-29', 'Negative'),

-- Candidate 5
(13, 5, 'Urine Test', '2024-04-30', 'Negative'),
(14, 5, 'Blood Test', '2024-05-01', 'Negative'),
(15, 5, 'Saliva Test', '2024-05-02', 'Negative'),

-- Candidate 6
(16, 6, 'Urine Test', '2024-05-03', 'Negative'),
(17, 6, 'Blood Test', '2024-05-04', 'Negative'),
(18, 6, 'Saliva Test', '2024-05-05', 'Negative'),

-- Candidate 7
(19, 7, 'Urine Test', '2024-05-06', 'Negative'),
(20, 7, 'Blood Test', '2024-05-07', 'Negative'),
(21, 7, 'Saliva Test', '2024-05-08', 'Negative'),

-- Candidate 8
(22, 8, 'Urine Test', '2024-05-09', 'Positive'),
(23, 8, 'Blood Test', '2024-05-10', 'Positive'),
(24, 8, 'Saliva Test', '2024-05-11', 'Negative'),

-- Candidate 9
```

```
(25, 9, 'Urine Test', '2024-05-12', 'Positive'),
(26, 9, 'Blood Test', '2024-05-13', 'Positive'),
(27, 9, 'Saliva Test', '2024-05-14', 'Positive'),

-- Candidate 10
(28, 10, 'Urine Test', '2024-05-15', 'Negative'),
(29, 10, 'Blood Test', '2024-05-16', 'Negative'),
(30, 10, 'Saliva Test', '2024-05-17', 'Negative');
```

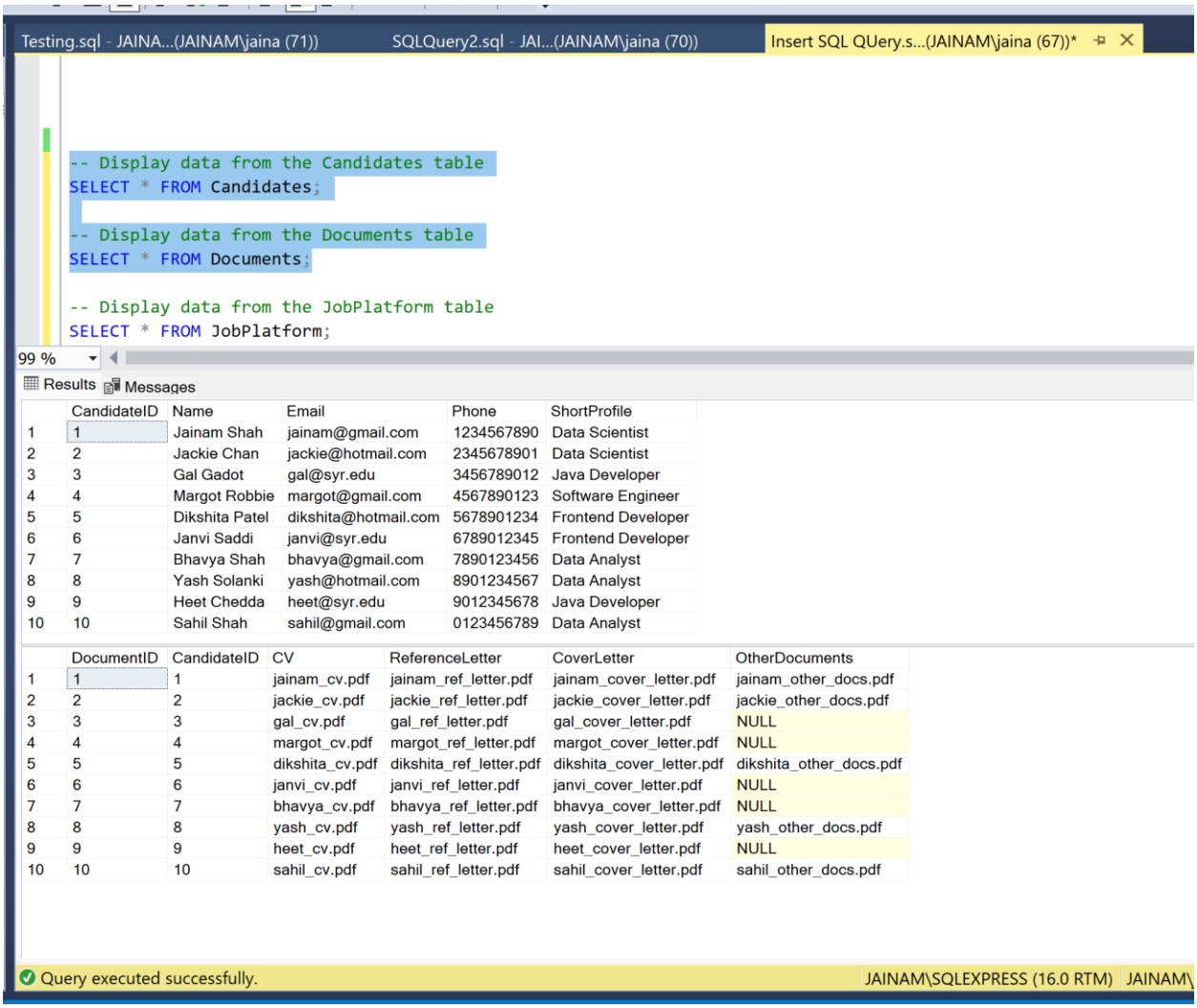
```
-- Insert dummy data into the JobCategory table
INSERT INTO JobCategory (id, name) VALUES
(1, 'Data Science'),
(2, 'Software Development'),
(3, 'Data Analyst'),
(4, 'Java Developer'),
(5, 'Business Analysis'),
(6, 'Human Resource');
```

```
-- Insert dummy data into the JobPlatformJob table
INSERT INTO JobPlatformJob (job_platform_id, job_id) VALUES
(1, 1),
(1, 2),
(3, 3),
(4, 4),
(2, 5),
(2, 6),
(4, 7),
(1, 8),
(1, 9),
(3, 10);
```

```
-- Insert dummy data into the JobCategoryJob table
INSERT INTO JobCategoryJob (job_category_id, job_id) VALUES
(1, 1),
(1, 2),
(2, 3),
(4, 4),
(5, 5),
(2, 6),
```

```
(2, 7),
(5, 8),
(5, 9),
(6, 10);
```

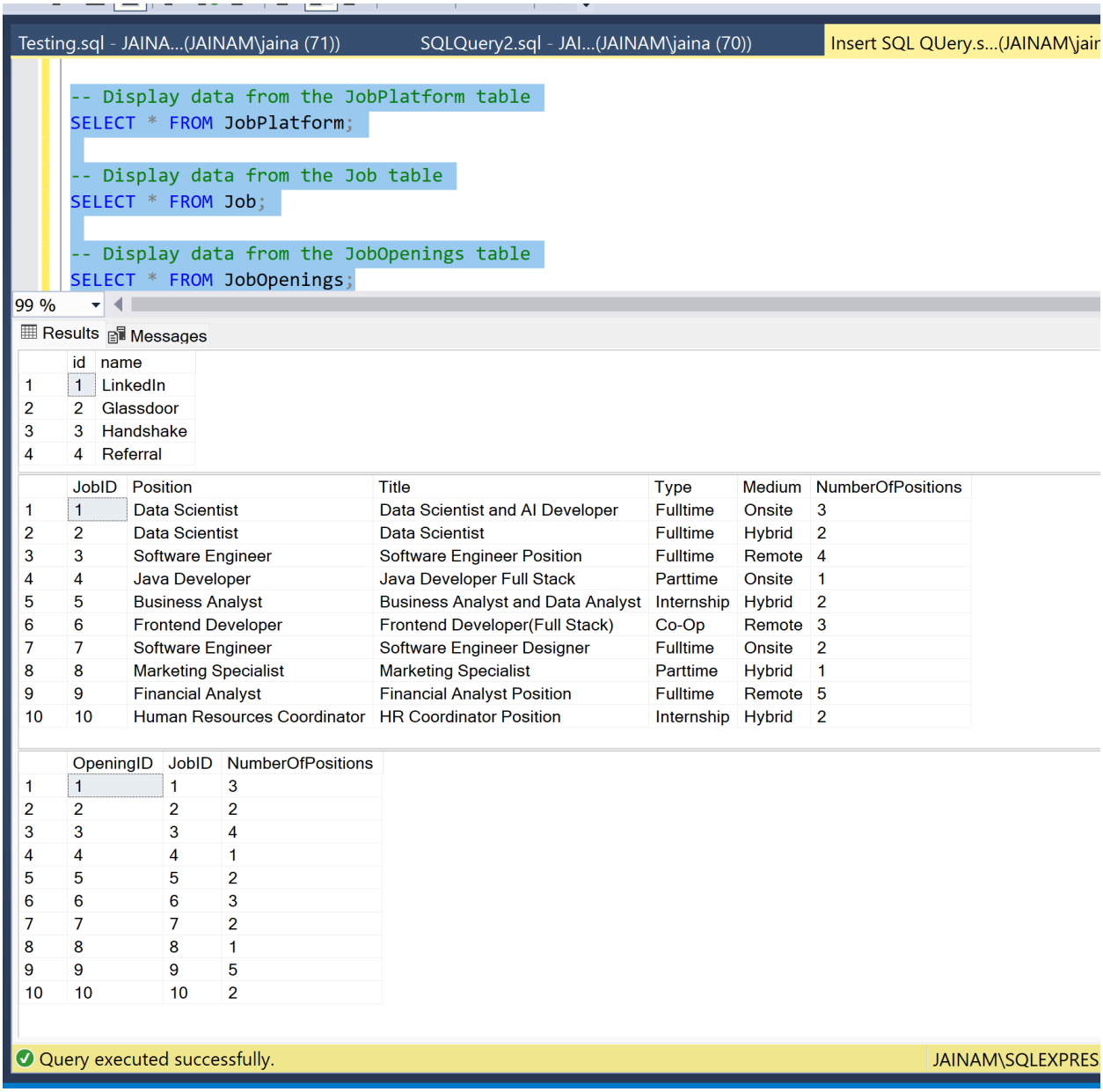
c. Retrieving Data from Tables:



	CandidateID	Name	Email	Phone	ShortProfile
1	1	Jainam Shah	jainam@gmail.com	1234567890	Data Scientist
2	2	Jackie Chan	jackie@hotmail.com	2345678901	Data Scientist
3	3	Gal Gadot	gal@syr.edu	3456789012	Java Developer
4	4	Margot Robbie	margot@gmail.com	4567890123	Software Engineer
5	5	Dikshita Patel	dikshita@hotmail.com	5678901234	Frontend Developer
6	6	Janvi Saddi	janvi@syr.edu	6789012345	Frontend Developer
7	7	Bhavya Shah	bhavya@gmail.com	7890123456	Data Analyst
8	8	Yash Solanki	yash@hotmail.com	8901234567	Data Analyst
9	9	Heet Chedda	heet@syr.edu	9012345678	Java Developer
10	10	Sahil Shah	sahil@gmail.com	0123456789	Data Analyst

	DocumentID	CandidateID	CV	ReferenceLetter	CoverLetter	OtherDocuments
1	1	1	jainam_cv.pdf	jainam_ref_letter.pdf	jainam_cover_letter.pdf	jainam_other_docs.pdf
2	2	2	jackie_cv.pdf	jackie_ref_letter.pdf	jackie_cover_letter.pdf	jackie_other_docs.pdf
3	3	3	gal_cv.pdf	gal_ref_letter.pdf	gal_cover_letter.pdf	NULL
4	4	4	margot_cv.pdf	margot_ref_letter.pdf	margot_cover_letter.pdf	NULL
5	5	5	dikshita_cv.pdf	dikshita_ref_letter.pdf	dikshita_cover_letter.pdf	dikshita_other_docs.pdf
6	6	6	janvi_cv.pdf	janvi_ref_letter.pdf	janvi_cover_letter.pdf	NULL
7	7	7	bhavya_cv.pdf	bhavya_ref_letter.pdf	bhavya_cover_letter.pdf	NULL
8	8	8	yash_cv.pdf	yash_ref_letter.pdf	yash_cover_letter.pdf	yash_other_docs.pdf
9	9	9	heet_cv.pdf	heet_ref_letter.pdf	heet_cover_letter.pdf	NULL
10	10	10	sahil_cv.pdf	sahil_ref_letter.pdf	sahil_cover_letter.pdf	sahil_other_docs.pdf

Fig 2: Display the inserted tables for Candidates and Documents



	id	name
1	1	LinkedIn
2	2	Glassdoor
3	3	Handshake
4	4	Referral

	JobID	Position	Title	Type	Medium	NumberOfPositions
1	1	Data Scientist	Data Scientist and AI Developer	Fulltime	Onsite	3
2	2	Data Scientist	Data Scientist	Fulltime	Hybrid	2
3	3	Software Engineer	Software Engineer Position	Fulltime	Remote	4
4	4	Java Developer	Java Developer Full Stack	Parttime	Onsite	1
5	5	Business Analyst	Business Analyst and Data Analyst	Internship	Hybrid	2
6	6	Frontend Developer	Frontend Developer(Full Stack)	Co-Op	Remote	3
7	7	Software Engineer	Software Engineer Designer	Fulltime	Onsite	2
8	8	Marketing Specialist	Marketing Specialist	Parttime	Hybrid	1
9	9	Financial Analyst	Financial Analyst Position	Fulltime	Remote	5
10	10	Human Resources Coordinator	HR Coordinator Position	Internship	Hybrid	2

	OpeningID	JobID	NumberOfPositions
1	1	1	3
2	2	2	2
3	3	3	4
4	4	4	1
5	5	5	2
6	6	6	3
7	7	7	2
8	8	8	1
9	9	9	5
10	10	10	2

Fig 3: Display JobPlatform, Jobs and JobOpening Tables

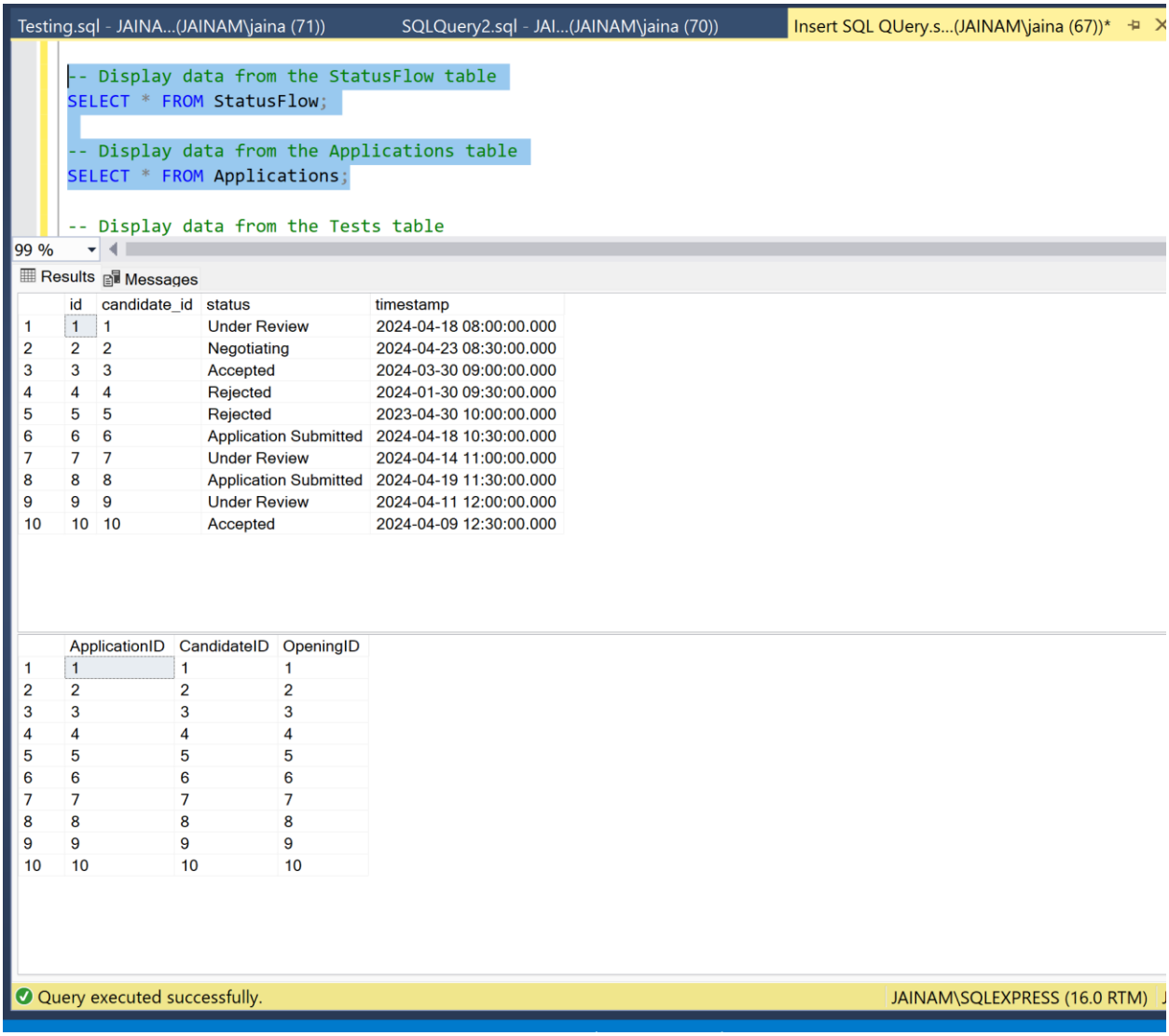


Fig 4: Display tables StatusFlow and Applications

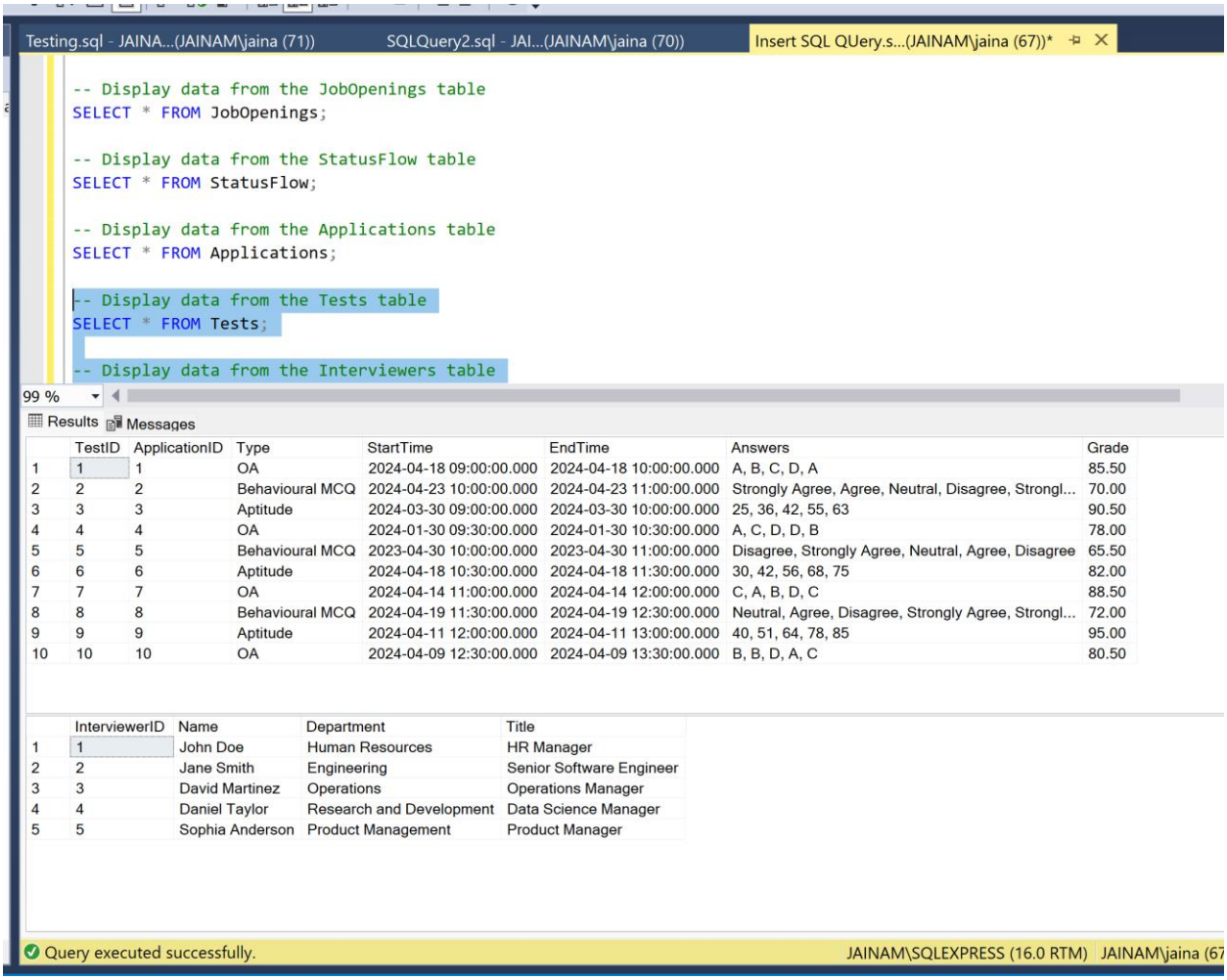
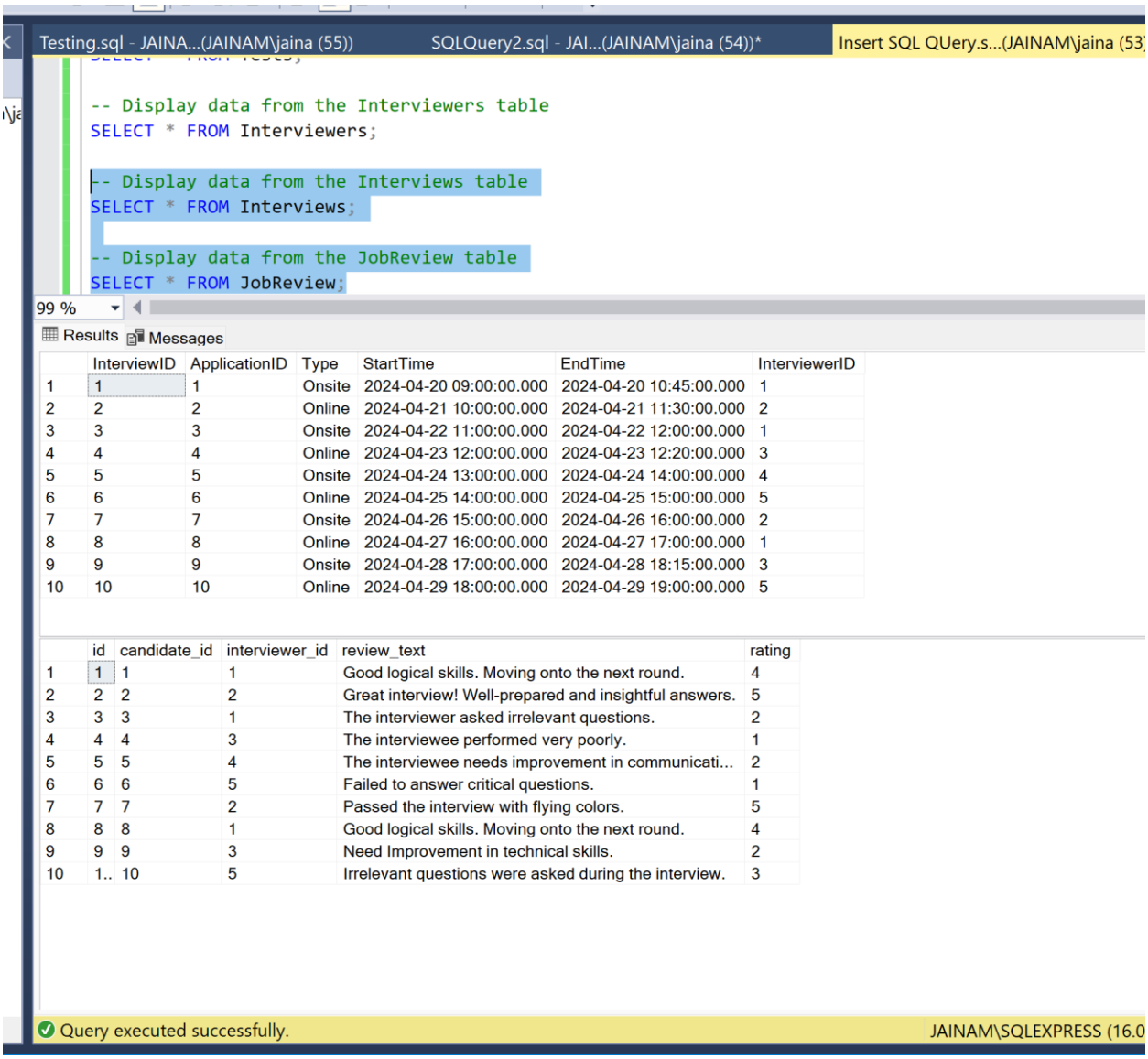


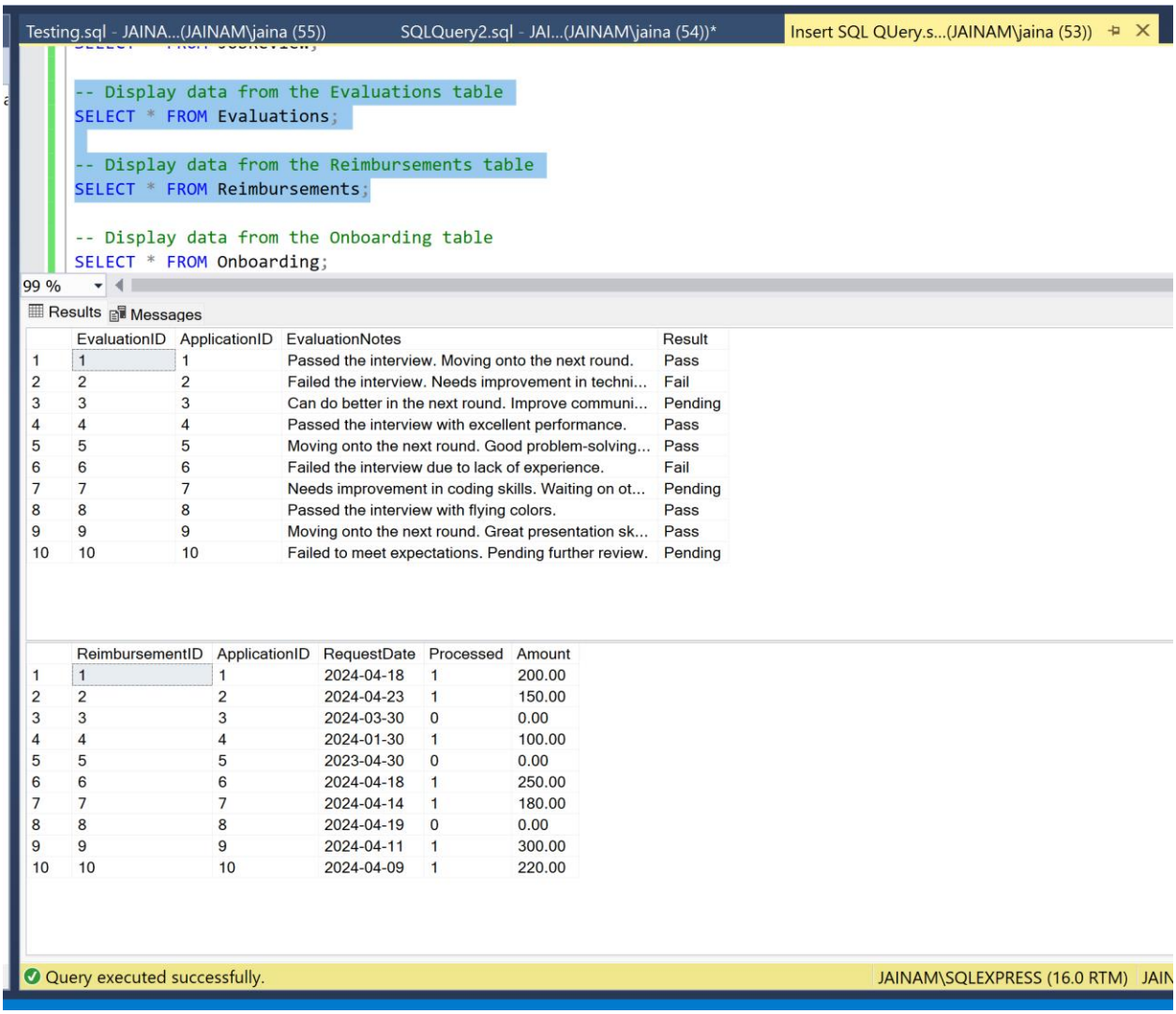
Fig 5: Tests and Interviewers



	InterviewID	ApplicationID	Type	StartTime	EndTime	InterviewerID
1	1	1	Onsite	2024-04-20 09:00:00.000	2024-04-20 10:45:00.000	1
2	2	2	Online	2024-04-21 10:00:00.000	2024-04-21 11:30:00.000	2
3	3	3	Onsite	2024-04-22 11:00:00.000	2024-04-22 12:00:00.000	1
4	4	4	Online	2024-04-23 12:00:00.000	2024-04-23 12:20:00.000	3
5	5	5	Onsite	2024-04-24 13:00:00.000	2024-04-24 14:00:00.000	4
6	6	6	Online	2024-04-25 14:00:00.000	2024-04-25 15:00:00.000	5
7	7	7	Onsite	2024-04-26 15:00:00.000	2024-04-26 16:00:00.000	2
8	8	8	Online	2024-04-27 16:00:00.000	2024-04-27 17:00:00.000	1
9	9	9	Onsite	2024-04-28 17:00:00.000	2024-04-28 18:15:00.000	3
10	10	10	Online	2024-04-29 18:00:00.000	2024-04-29 19:00:00.000	5

	id	candidate_id	interviewer_id	review_text	rating
1	1	1	1	Good logical skills. Moving onto the next round.	4
2	2	2	2	Great interview! Well-prepared and insightful answers.	5
3	3	3	1	The interviewer asked irrelevant questions.	2
4	4	4	3	The interviewee performed very poorly.	1
5	5	5	4	The interviewee needs improvement in communicati...	2
6	6	6	5	Failed to answer critical questions.	1
7	7	7	2	Passed the interview with flying colors.	5
8	8	8	1	Good logical skills. Moving onto the next round.	4
9	9	9	3	Need Improvement in technical skills.	2
10	1..	10	5	Irrelevant questions were asked during the interview.	3

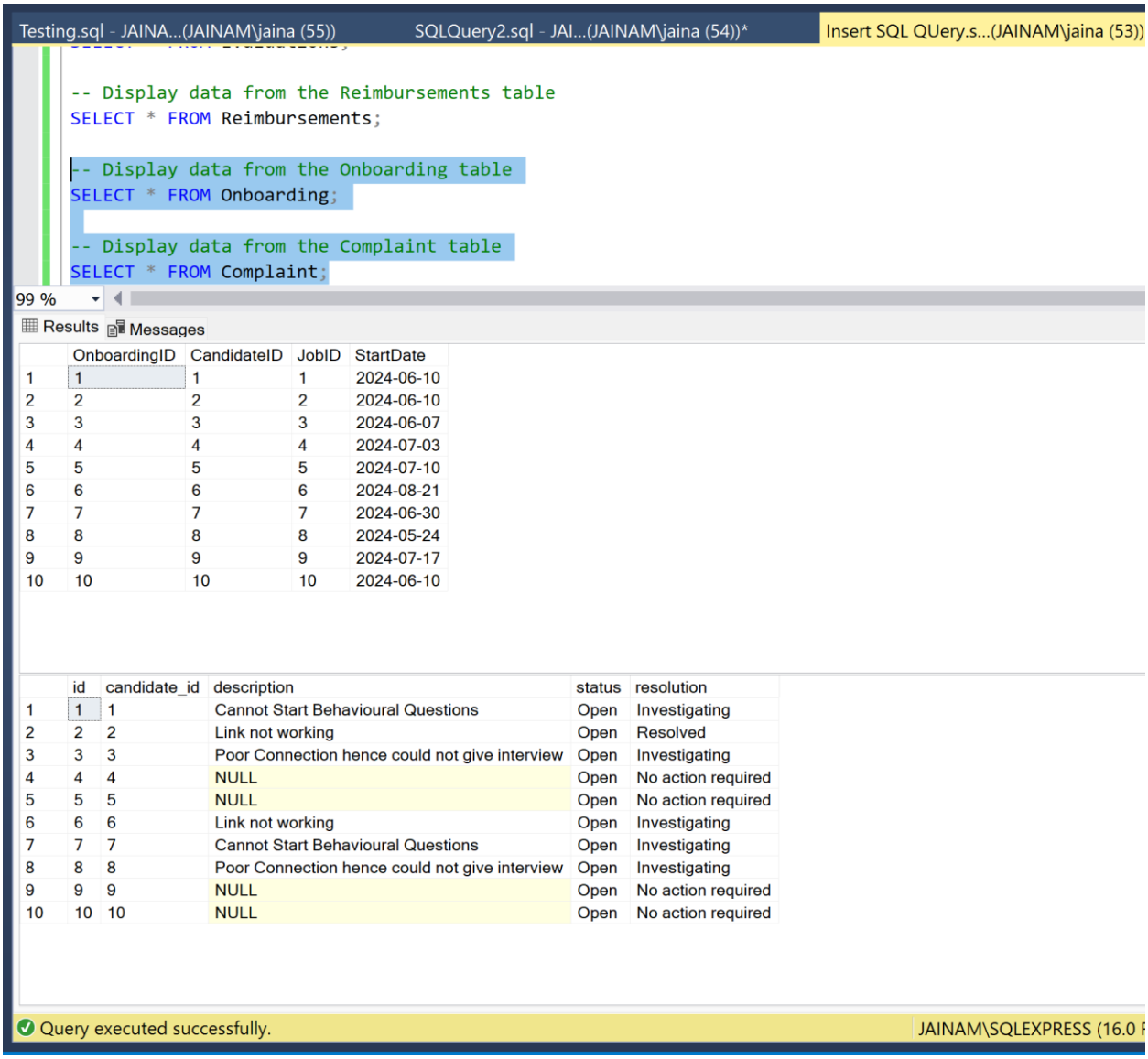
Fig 6: Interviews and Job Reviews



	EvaluationID	ApplicationID	EvaluationNotes	Result
1	1	1	Passed the interview. Moving onto the next round.	Pass
2	2	2	Failed the interview. Needs improvement in techni...	Fail
3	3	3	Can do better in the next round. Improve communi...	Pending
4	4	4	Passed the interview with excellent performance.	Pass
5	5	5	Moving onto the next round. Good problem-solving...	Pass
6	6	6	Failed the interview due to lack of experience.	Fail
7	7	7	Needs improvement in coding skills. Waiting on ot...	Pending
8	8	8	Passed the interview with flying colors.	Pass
9	9	9	Moving onto the next round. Great presentation sk...	Pass
10	10	10	Failed to meet expectations. Pending further review.	Pending

	ReimbursementID	ApplicationID	RequestDate	Processed	Amount
1	1	1	2024-04-18	1	200.00
2	2	2	2024-04-23	1	150.00
3	3	3	2024-03-30	0	0.00
4	4	4	2024-01-30	1	100.00
5	5	5	2023-04-30	0	0.00
6	6	6	2024-04-18	1	250.00
7	7	7	2024-04-14	1	180.00
8	8	8	2024-04-19	0	0.00
9	9	9	2024-04-11	1	300.00
10	10	10	2024-04-09	1	220.00

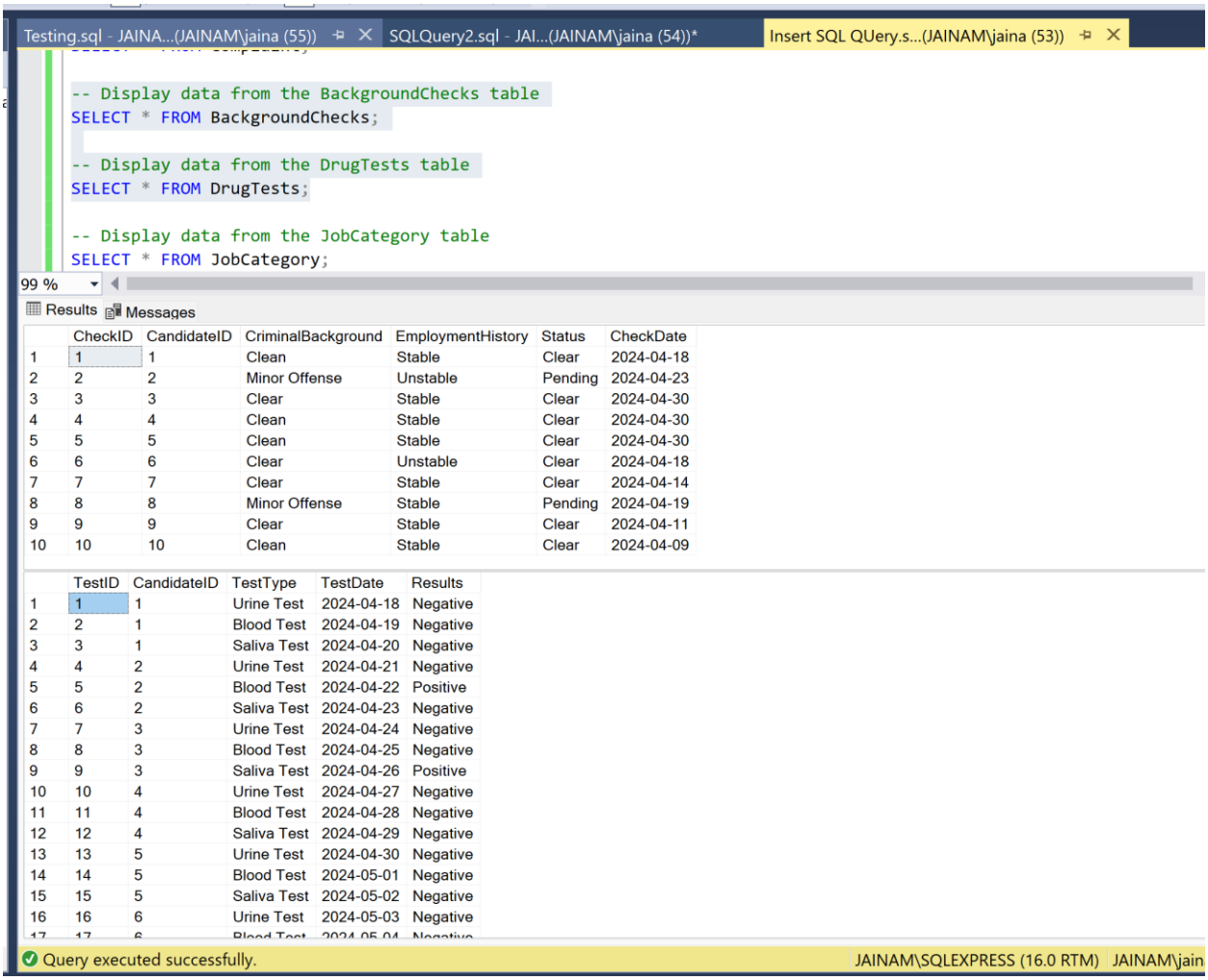
Fig 7: Evaluation and Reimbursements



	OnboardingID	CandidateID	JobID	StartDate
1	1	1	1	2024-06-10
2	2	2	2	2024-06-10
3	3	3	3	2024-06-07
4	4	4	4	2024-07-03
5	5	5	5	2024-07-10
6	6	6	6	2024-08-21
7	7	7	7	2024-06-30
8	8	8	8	2024-05-24
9	9	9	9	2024-07-17
10	10	10	10	2024-06-10

	id	candidate_id	description	status	resolution
1	1	1	Cannot Start Behavioural Questions	Open	Investigating
2	2	2	Link not working	Open	Resolved
3	3	3	Poor Connection hence could not give interview	Open	Investigating
4	4	4	NULL	Open	No action required
5	5	5	NULL	Open	No action required
6	6	6	Link not working	Open	Investigating
7	7	7	Cannot Start Behavioural Questions	Open	Investigating
8	8	8	Poor Connection hence could not give interview	Open	Investigating
9	9	9	NULL	Open	No action required
10	10	10	NULL	Open	No action required

Fig 8: Display Onboarding and Complaint



	CheckID	CandidateID	CriminalBackground	EmploymentHistory	Status	CheckDate
1	1	1	Clean	Stable	Clear	2024-04-18
2	2	2	Minor Offense	Unstable	Pending	2024-04-23
3	3	3	Clear	Stable	Clear	2024-04-30
4	4	4	Clean	Stable	Clear	2024-04-30
5	5	5	Clean	Stable	Clear	2024-04-30
6	6	6	Clear	Unstable	Clear	2024-04-18
7	7	7	Clear	Stable	Clear	2024-04-14
8	8	8	Minor Offense	Stable	Pending	2024-04-19
9	9	9	Clear	Stable	Clear	2024-04-11
10	10	10	Clean	Stable	Clear	2024-04-09

	TestID	CandidateID	TestType	TestDate	Results
1	1	1	Urine Test	2024-04-18	Negative
2	2	1	Blood Test	2024-04-19	Negative
3	3	1	Saliva Test	2024-04-20	Negative
4	4	2	Urine Test	2024-04-21	Negative
5	5	2	Blood Test	2024-04-22	Positive
6	6	2	Saliva Test	2024-04-23	Negative
7	7	3	Urine Test	2024-04-24	Negative
8	8	3	Blood Test	2024-04-25	Negative
9	9	3	Saliva Test	2024-04-26	Positive
10	10	4	Urine Test	2024-04-27	Negative
11	11	4	Blood Test	2024-04-28	Negative
12	12	4	Saliva Test	2024-04-29	Negative
13	13	5	Urine Test	2024-04-30	Negative
14	14	5	Blood Test	2024-05-01	Negative
15	15	5	Saliva Test	2024-05-02	Negative
16	16	6	Urine Test	2024-05-03	Negative

Fig 9: Background check and DrugTest

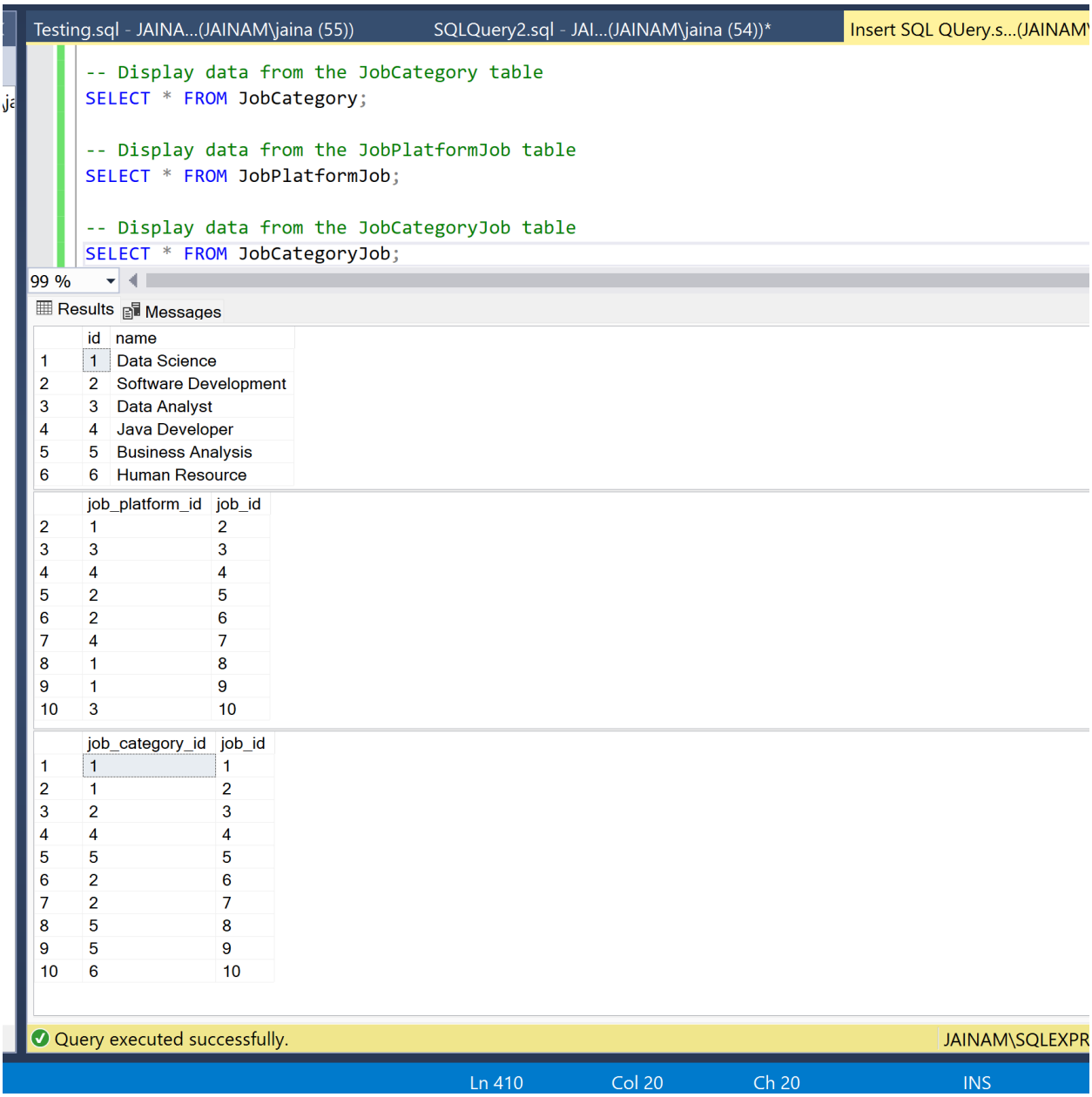


Fig 10: Display Job Category, Platform and Job Category Jobs

4. Testing:

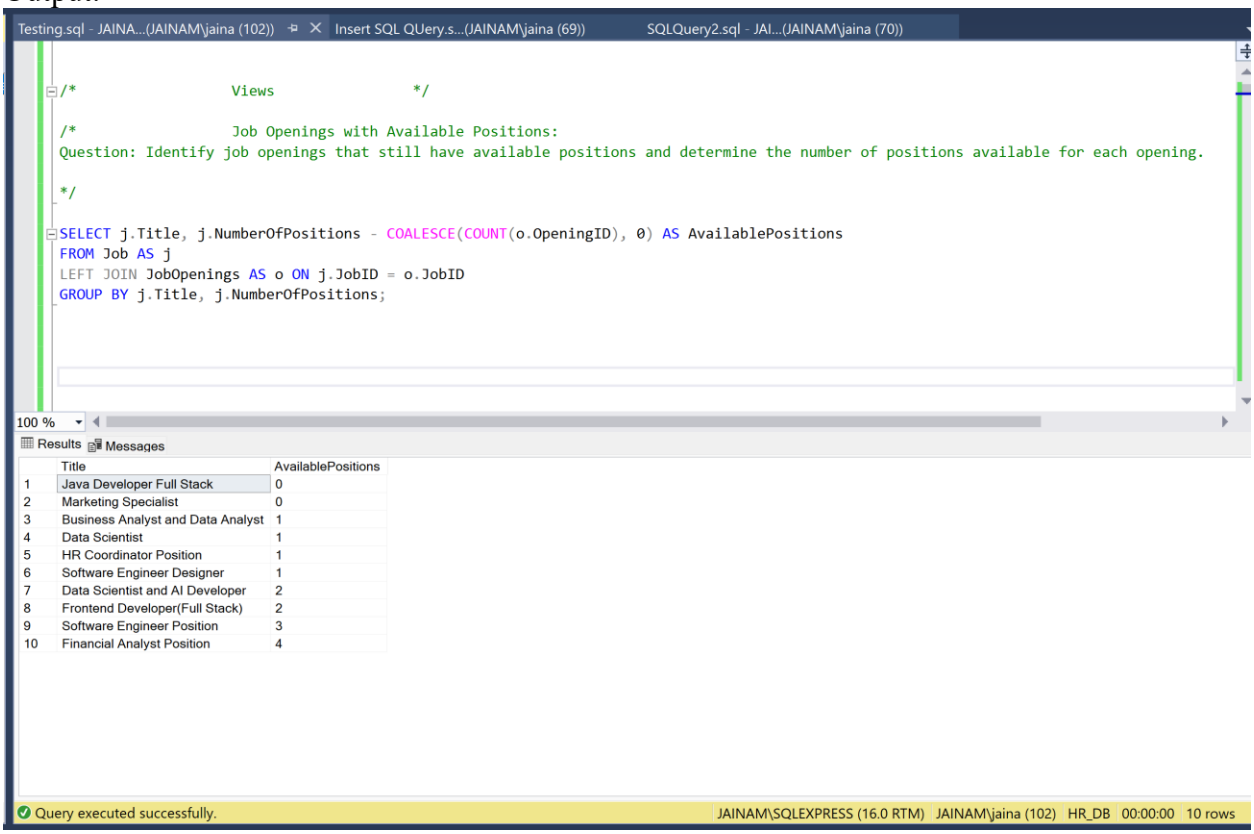
i. Views

1) Job Openings with Available Positions:
Objective: Identify job openings that still have available positions and determine the number of positions available for each opening.

Query:

```
SELECT j.Title, j.NumberOfPositions - COALESCE(COUNT(o.OpeningID), 0) AS
AvailablePositions
FROM Job AS j
LEFT JOIN JobOpenings AS o ON j.JobID = o.JobID
GROUP BY j.Title, j.NumberOfPositions;
```

Output:



	Title	AvailablePositions
1	Java Developer Full Stack	0
2	Marketing Specialist	0
3	Business Analyst and Data Analyst	1
4	Data Scientist	1
5	HR Coordinator Position	1
6	Software Engineer Designer	1
7	Data Scientist and AI Developer	2
8	Frontend Developer(Full Stack)	2
9	Software Engineer Position	3
10	Financial Analyst Position	4

Fig 11: Job Openings Available Positions

Explanation:

This query retrieves the title of job openings along with the number of available positions for each opening. It achieves this by joining the "Job" table with the "JobOpenings" table using a left join to ensure all job titles are included, even if there are no corresponding openings. The COALESCE function is used to handle cases where there are no openings for a job, ensuring that the subtraction operation does not result in NULL values.

2) Candidates by Job Category:
Objective: Determine the distribution of candidates across different job categories and identify which job category is the most popular among candidates.

Query:

```
SELECT jc.name AS JobCategory, COUNT(*) AS CandidateCount
FROM Candidates AS c
JOIN JobCategoryJob AS jcj ON c.CandidateID = jcj.job_category_id
JOIN JobCategory AS jc ON jcj.job_category_id = jc.id
GROUP BY jc.name;
```

Output:

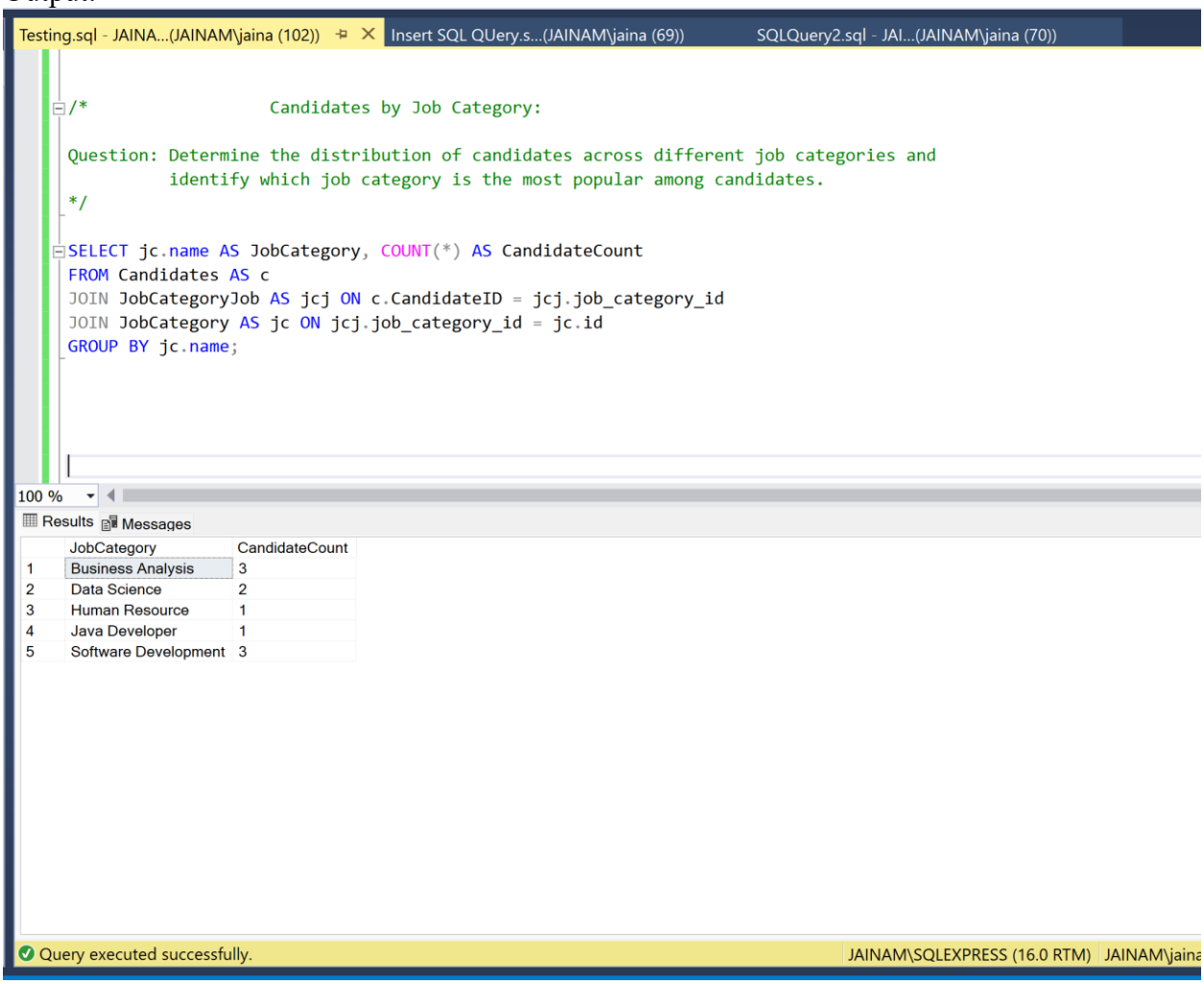


Fig 12: Candidates Count by Job Category

Explanation: This query calculates the count of candidates in each job category by joining the "Candidates" table with the "JobCategoryJob" and "JobCategory" tables. It then groups the results by job category and counts the number of candidates in each category.

3) Interviews by Interviewer:

Objective: Track the performance of interviewers by counting the number of interviews each one has conducted, and identify the top interviewers based on their interview count.

Query:

```
SELECT i.Name AS Interviewer, COUNT(*) AS InterviewCount
FROM Interviews AS iv
JOIN Interviewers AS i ON iv.InterviewerID = i.InterviewerID
GROUP BY i.Name
ORDER BY COUNT(*) DESC;
```

Output:

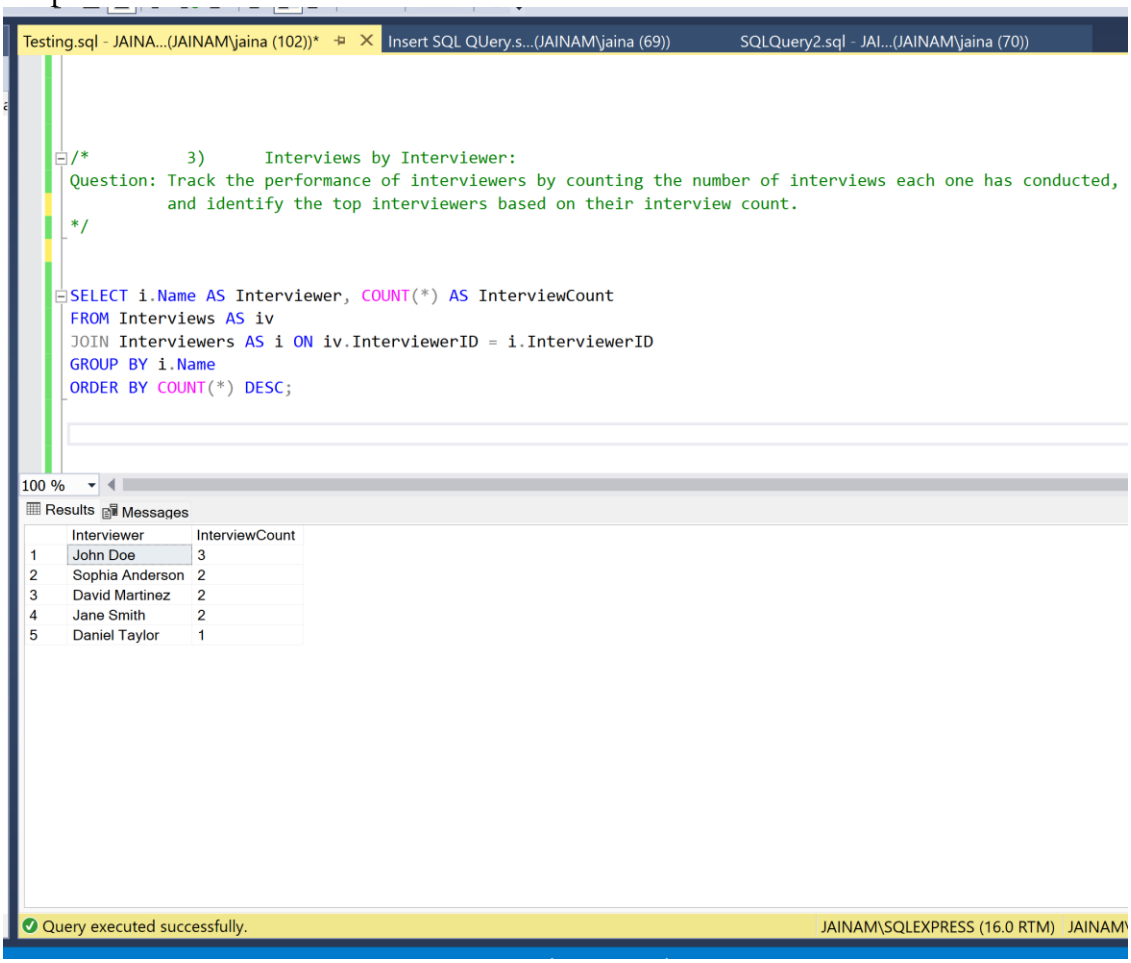


Fig 13: InterviewsByInterviewer

Explanation:
This query retrieves the count of interviews conducted by each interviewer by joining the "Interviews" table with the "Interviewers" table. It then groups the results by interviewer name and orders them in descending order based on the interview count.

4) Evaluation Results by Interview Type:

Objective: Assess the evaluation results (pass, fail, pending) for different interview types (onsite, online) and identify which interview type has the highest pass rate.

Query:

```
SELECT e.Result,
    COUNT(CASE WHEN e.Result = 'Pass' THEN 1 END) AS PassCount,
    COUNT(CASE WHEN e.Result = 'Fail' THEN 1 END) AS FailCount,
    COUNT(CASE WHEN e.Result = 'Pending' THEN 1 END) AS PendingCount
FROM Evaluations AS e
JOIN Applications AS a ON e.ApplicationID = a.ApplicationID
GROUP BY e.Result;
```

Output:

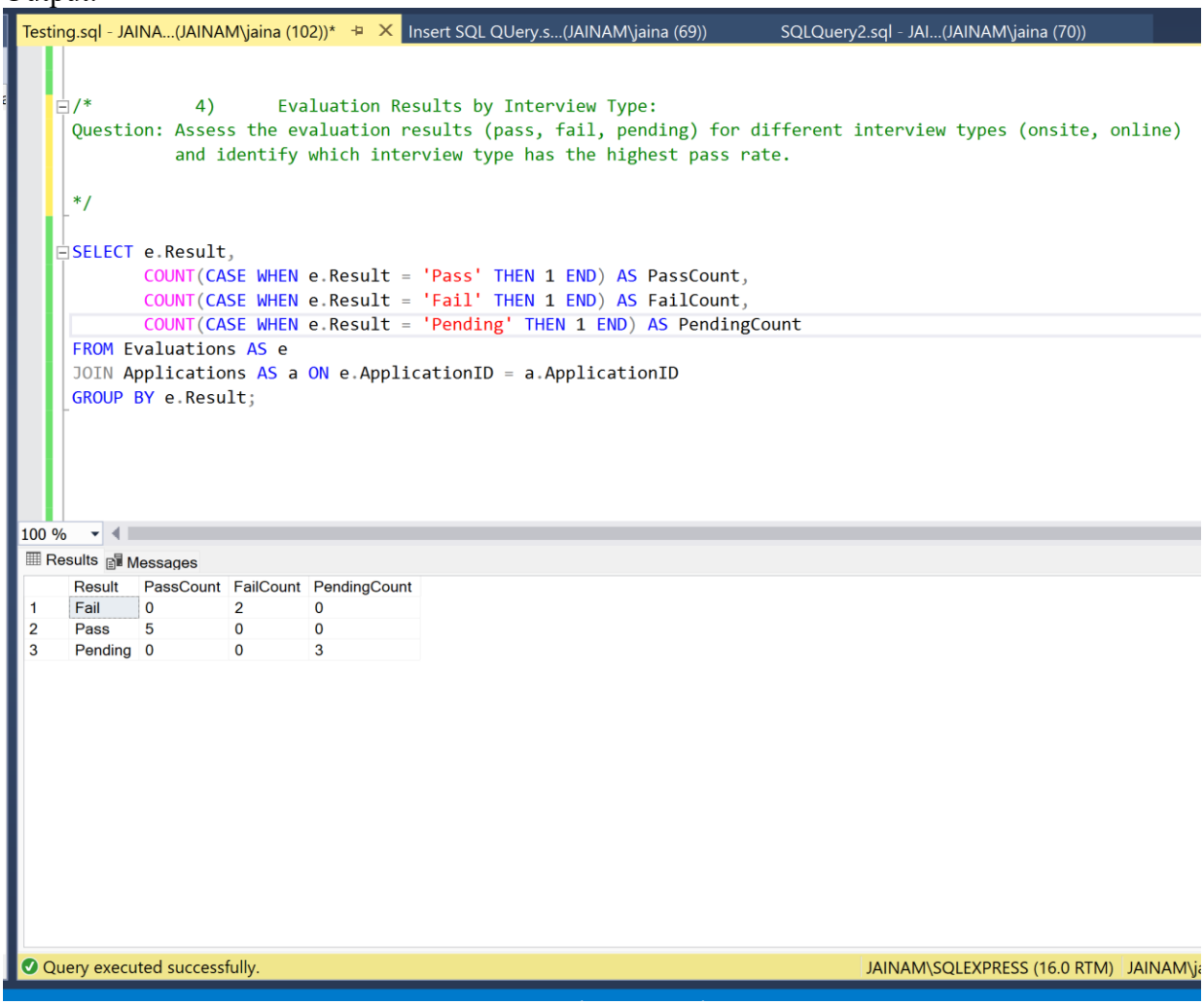


Fig 14: EvaluationResultsByInterviewType

Explanation:

This query calculates the count of evaluation results (pass, fail, pending) for each interview type (onsite, online) by joining the "Evaluations" table with the "Applications" table. It then groups the results by interview type and computes the count of each evaluation result.

5) Background Check Status by Candidate:
Objective: Monitor the background check status (clear, pending) for each candidate and determine how many candidates have pending background checks.

Query:

```
SELECT c.Name AS CandidateName, bc.Status AS BackgroundCheckStatus
FROM Candidates AS c
JOIN BackgroundChecks AS bc ON c.CandidateID = bc.CandidateID;
```

Output:

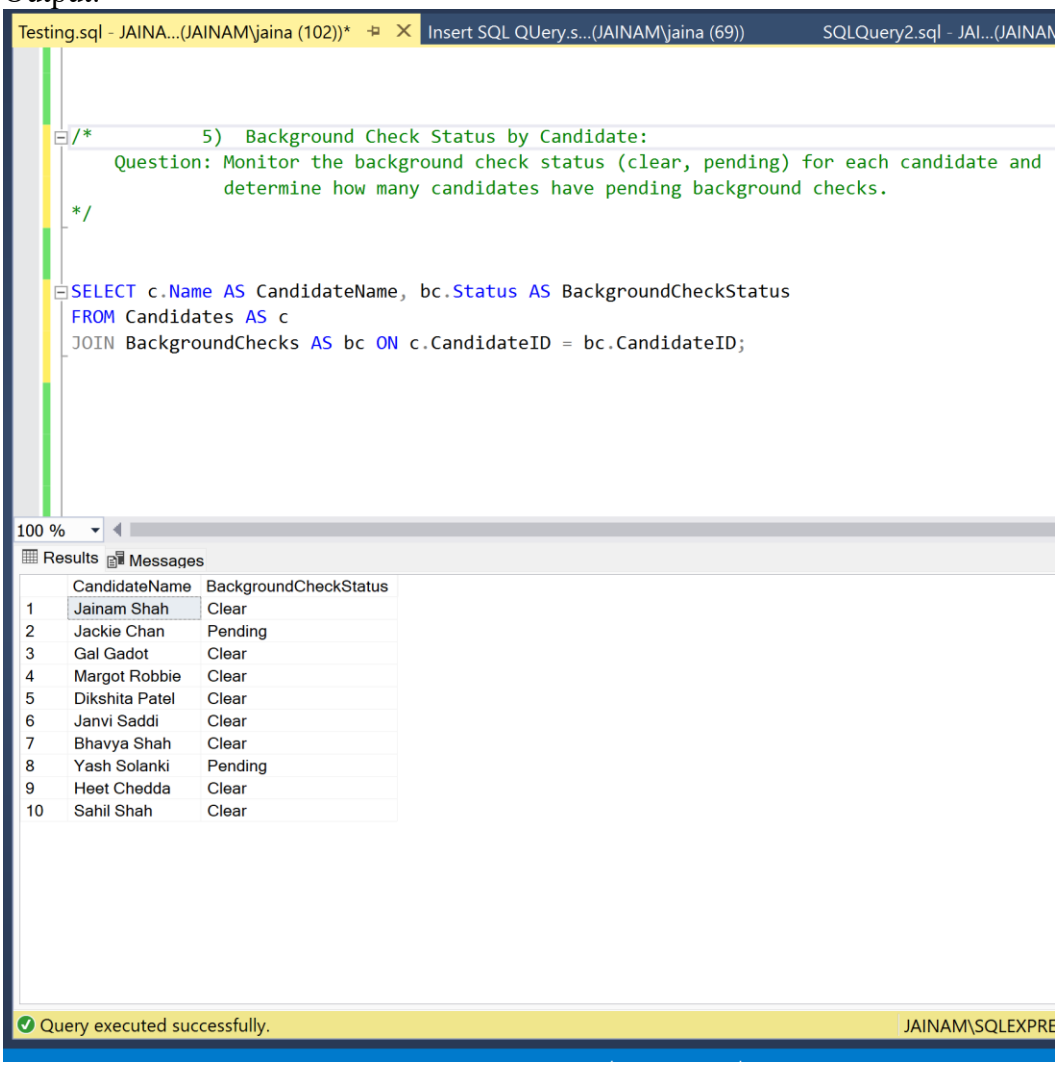


Fig 15: BackgroundCheckStatusByCandidate

Explanation:
This query retrieves the background check status for each candidate by joining the "Candidates" table with the "BackgroundChecks" table. It selects the candidate name and their corresponding background check status.

ii. Stored Procedure:

i. Update Candidate Information

Objective: Create a stored procedure to update the information of a candidate in the Candidates table.

Query:

```
CREATE PROCEDURE UpdateCandidateInformation
    @CandidateID INT,
    @Name NVARCHAR(100),
    @Email NVARCHAR(100),
    @Phone NVARCHAR(20),
    @ShortProfile NVARCHAR(100)
AS
BEGIN
    UPDATE Candidates
    SET Name = @Name,
        Email = @Email,
        Phone = @Phone,
        ShortProfile = @ShortProfile
    WHERE CandidateID = @CandidateID;
END;

EXEC UpdateCandidateInformation
    @CandidateID = 9,
    @Name = 'Robert',
    @Email = 'robert66@gmail.com',
    @Phone = '3159527506',
    @ShortProfile = 'Software Engineer';
```

Output:

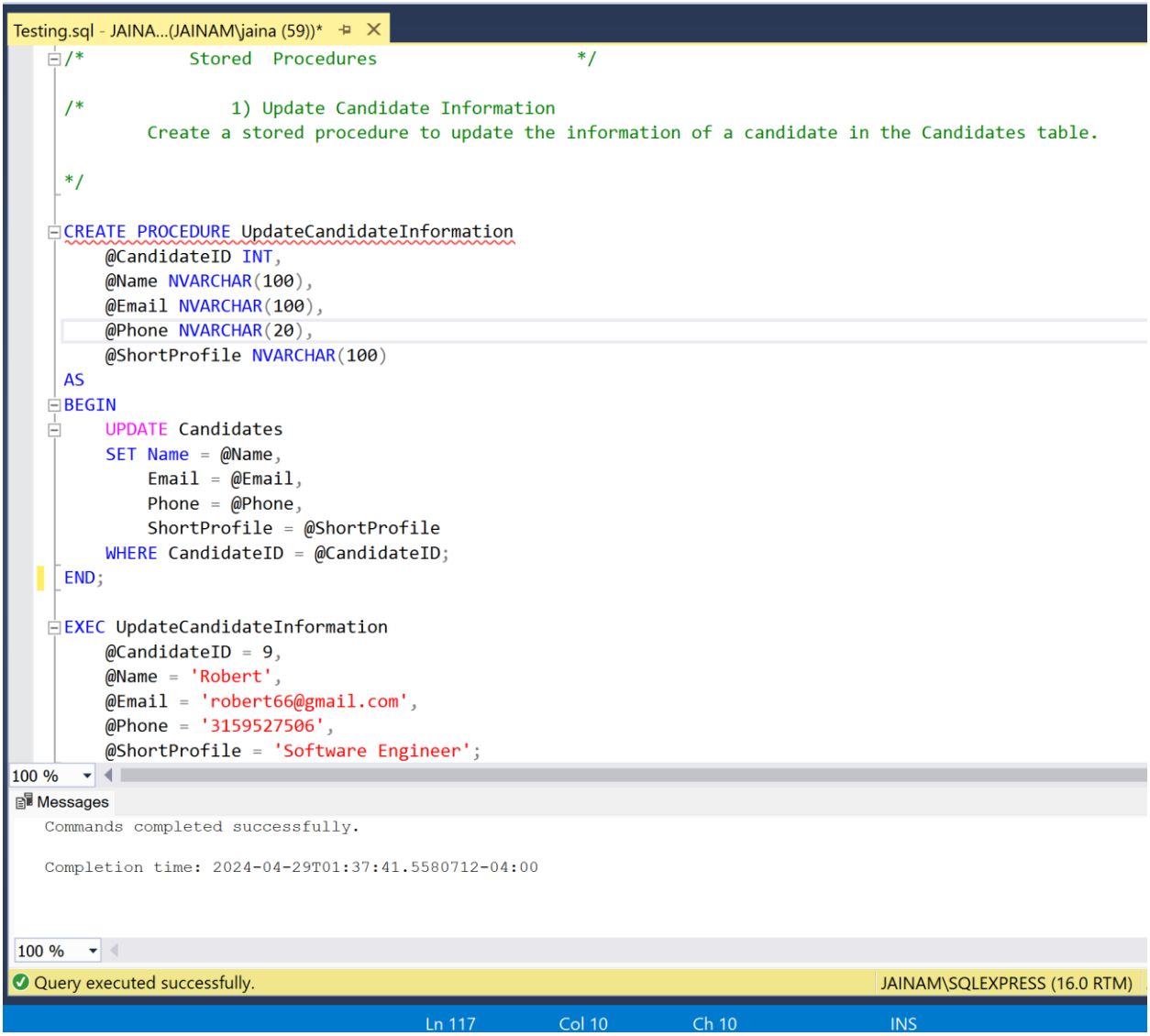


Fig 16: UpdateCandidateInformation

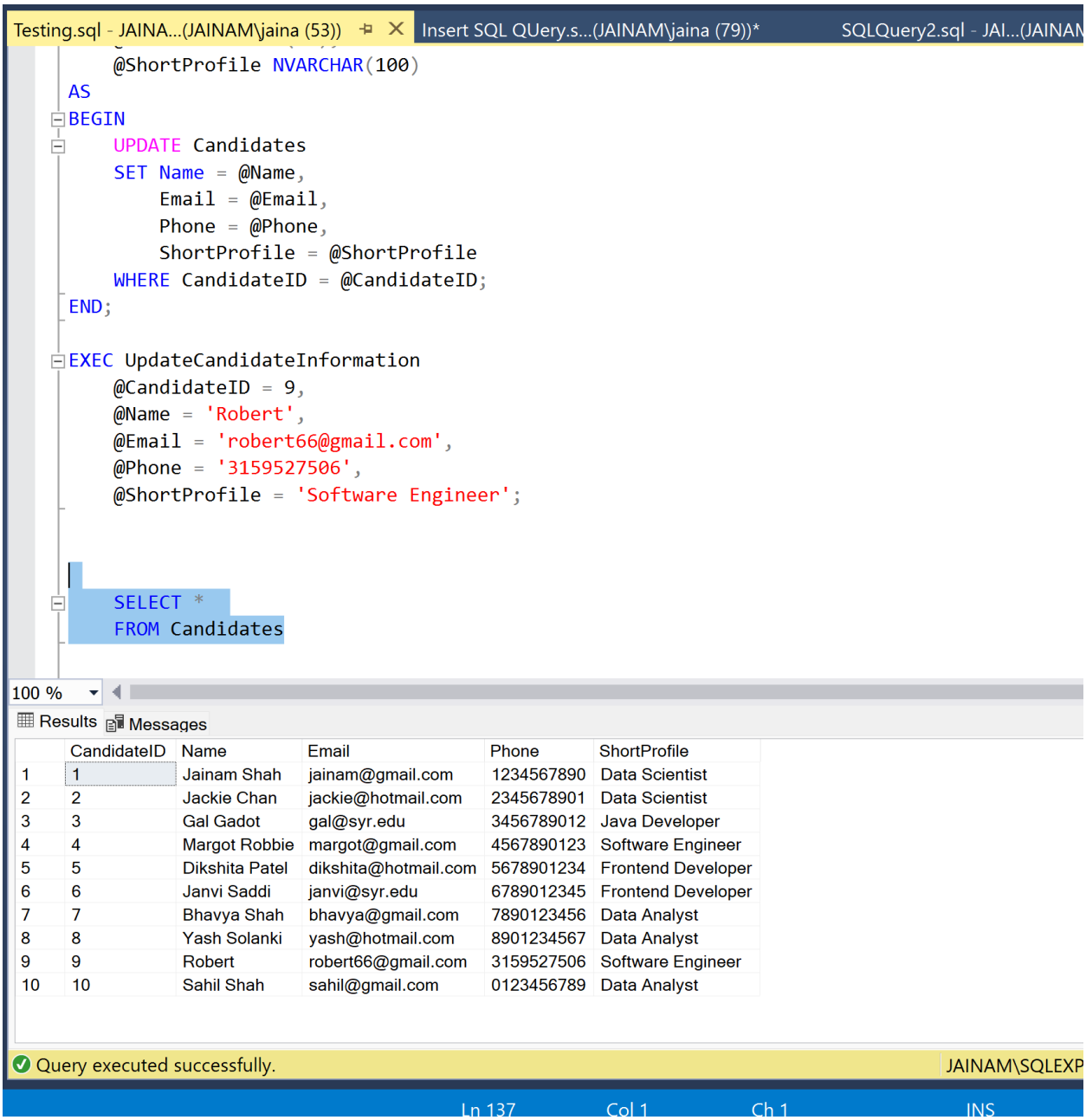


Fig 17: Candidate Name Robert has been updated using Stored Procedure

Explanation:
This stored procedure takes parameters such as CandidateID, Name, Email, Phone, and ShortProfile. It updates the candidate information in the Candidates table based on the provided CandidateID.

ii. UpdateInterviewDetails

Objective: Update the details of a specific interview for a candidate.

Output:

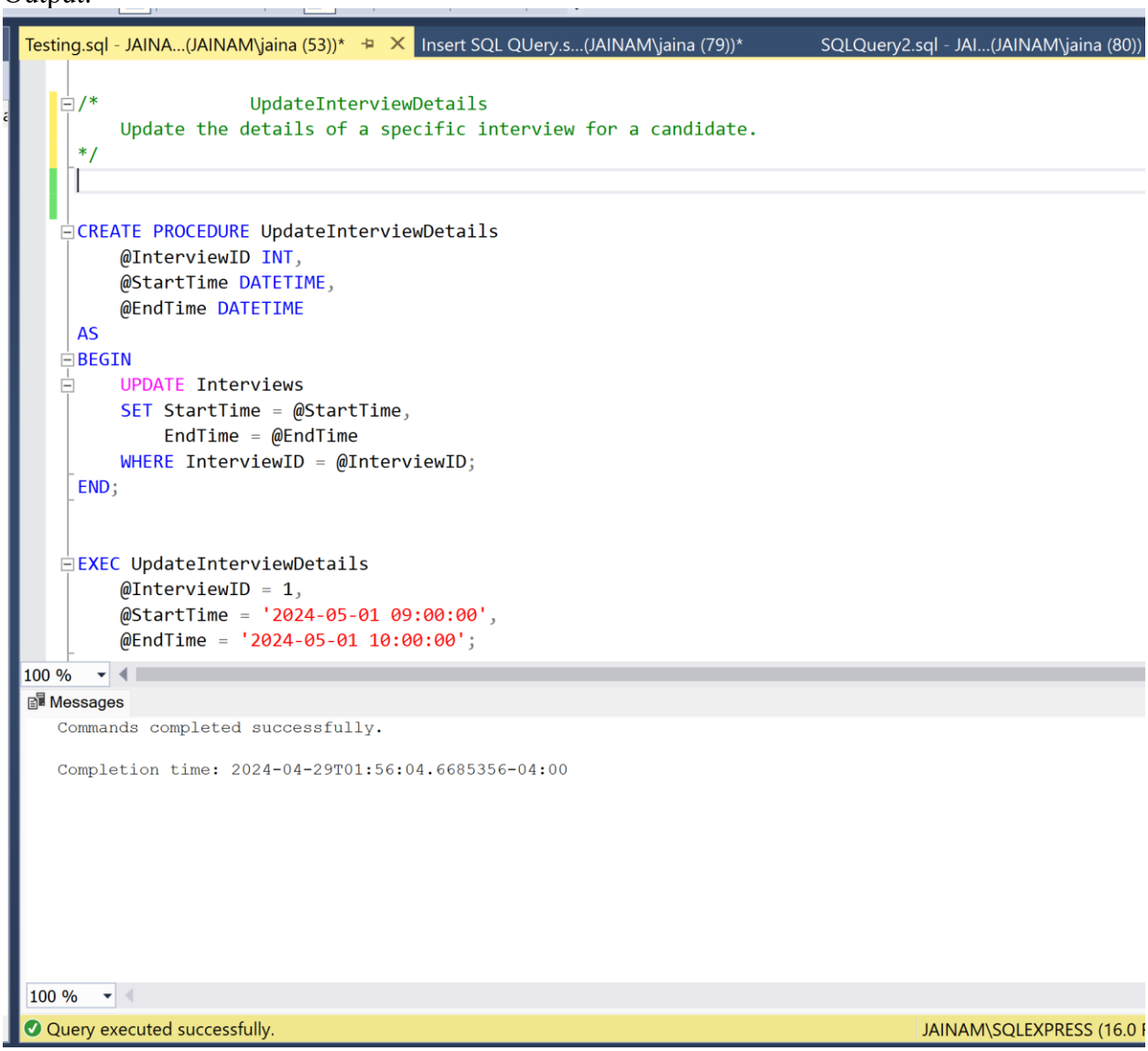
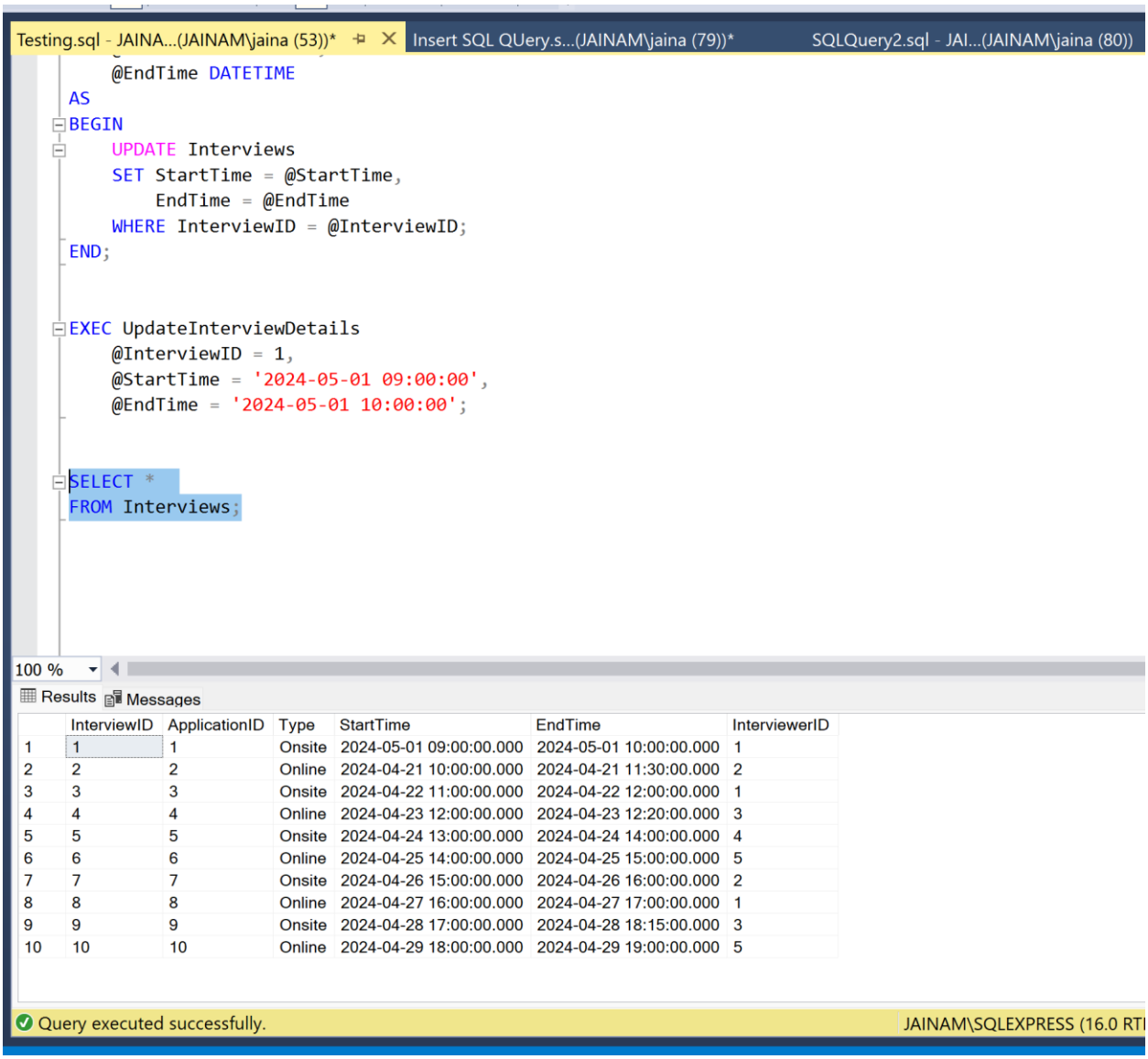


Fig 18: Update the details of a specific interview for a candidate.



	InterviewID	ApplicationID	Type	StartTime	EndTime	InterviewerID
1	1	1	Onsite	2024-05-01 09:00:00.000	2024-05-01 10:00:00.000	1
2	2	2	Online	2024-04-21 10:00:00.000	2024-04-21 11:30:00.000	2
3	3	3	Onsite	2024-04-22 11:00:00.000	2024-04-22 12:00:00.000	1
4	4	4	Online	2024-04-23 12:00:00.000	2024-04-23 12:20:00.000	3
5	5	5	Onsite	2024-04-24 13:00:00.000	2024-04-24 14:00:00.000	4
6	6	6	Online	2024-04-25 14:00:00.000	2024-04-25 15:00:00.000	5
7	7	7	Onsite	2024-04-26 15:00:00.000	2024-04-26 16:00:00.000	2
8	8	8	Online	2024-04-27 16:00:00.000	2024-04-27 17:00:00.000	1
9	9	9	Onsite	2024-04-28 17:00:00.000	2024-04-28 18:15:00.000	3
10	10	10	Online	2024-04-29 18:00:00.000	2024-04-29 19:00:00.000	5

Fig 19: Using Stored Procedure Changed endtime from 10:45 to 10:00

Explanation:
This stored procedure takes in the InterviewID of the interview that needs to be updated, as well as the new start and end times for the interview. It then performs an update operation on the Interviews table, setting the StartTime and EndTime columns to the new values provided in the parameters, for the interview with the specified InterviewID.

iii. RetrieveBackgroundCheckStatus
Objective: This stored procedure aims to retrieve the background check status for a specific candidate.

Query:

```
CREATE PROCEDURE RetrieveBackgroundCheckStatus
   @CandidateID INT
AS
BEGIN
   SELECT CandidateID, CriminalBackground, EmploymentHistory, Status, CheckDate
   FROM BackgroundChecks
   WHERE CandidateID = @CandidateID;
END;
```

```
EXEC RetrieveBackgroundCheckStatus @CandidateID = 4;
```

Output:

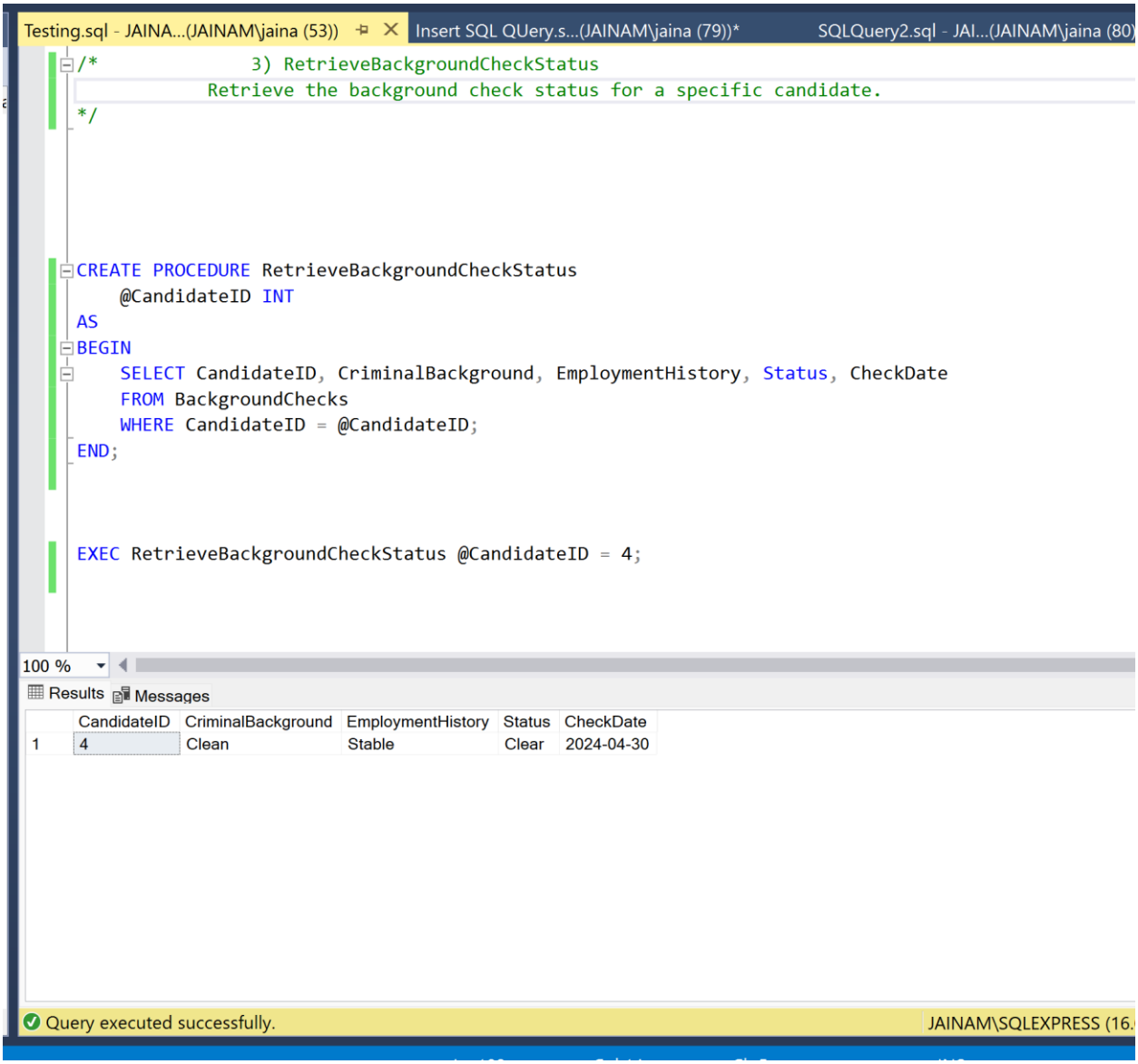


Fig 20: SQL Query for Retrieving Background Check Status

Explanation:
This stored procedure accepts an input parameter @CandidateID which specifies the candidate for whom the background check status is to be retrieved. It selects the CandidateID, CriminalBackground, EmploymentHistory, Status, and CheckDate columns from the BackgroundChecks table. The WHERE clause filters the records based on the provided @CandidateID.

iv. Update Reimbursement Status

Objective: Update the reimbursement status of a specific application.

Query:

```
CREATE PROCEDURE UpdateReimbursementStatus
    @ApplicationID INT,
    @Processed BIT,
    @Amount DECIMAL(10, 2)
AS
BEGIN
    UPDATE Reimbursements
    SET Processed = @Processed,
        Amount = @Amount
    WHERE ApplicationID = @ApplicationID;
END;


EXEC UpdateReimbursementStatus @ApplicationID = 1, @Processed = 1, @Amount = 250.00;

SELECT *
FROM Reimbursements;
```

Output:

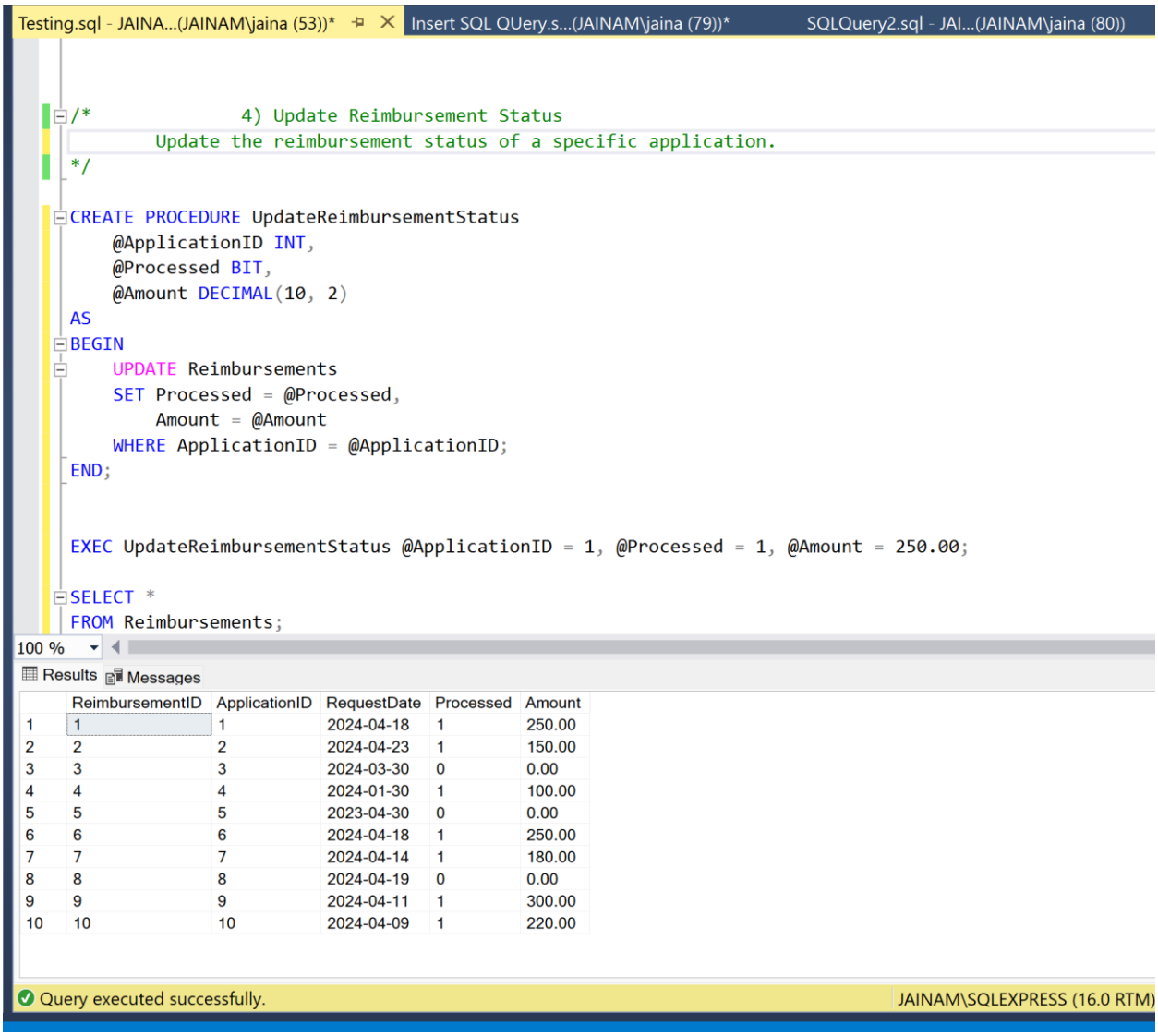


Fig 21: UpdateReimbursementStatus for ApplicationID Amount from 200 to 250

Explanation:
This stored procedure updates the reimbursement status of a specific application in the Reimbursements table. It takes three parameters: ApplicationID, Processed, and Amount. It then updates the Processed and Amount fields for the specified ApplicationID.

v. GenerateMonthlyReport

Objective: Generating a monthly report summarizing various metrics such as the number of applications, interviews conducted, evaluations, and background checks for each month.

Query:

```
CREATE PROCEDURE GenerateMonthlyReport
    @Month INT,
    @Year INT
AS
BEGIN
    SELECT
        MONTH(iv.StartTime) AS Month,
        YEAR(iv.StartTime) AS Year,
        COUNT(DISTINCT a.ApplicationID) AS NumberOfApplications,
        COUNT(DISTINCT iv.InterviewID) AS NumberOfInterviews,
        COUNT(DISTINCT e.EvaluationID) AS NumberOfEvaluations,
        COUNT(DISTINCT bc.CheckID) AS NumberOfBackgroundChecks
    FROM Interviews iv
    LEFT JOIN Applications a ON iv.ApplicationID = a.ApplicationID
    LEFT JOIN Evaluations e ON a.ApplicationID = e.ApplicationID
    LEFT JOIN BackgroundChecks bc ON a.CandidateID = bc.CandidateID
    WHERE MONTH(iv.StartTime) = @Month AND YEAR(iv.StartTime) = @Year
    GROUP BY MONTH(iv.StartTime), YEAR(iv.StartTime);
END

EXEC GenerateMonthlyReport @Month = 4, @Year = 2024;
```

Output:

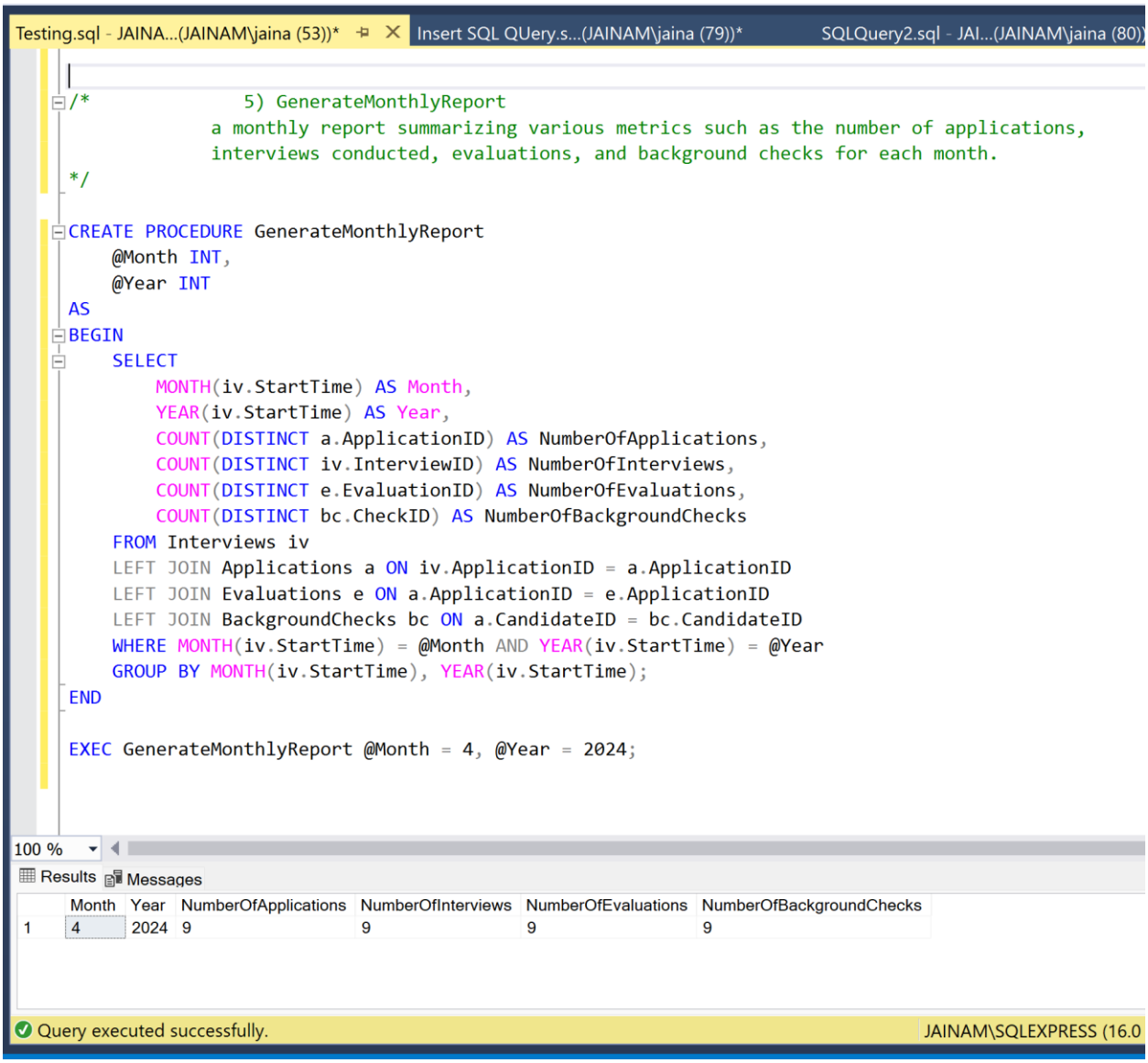


Fig 22: Displaying Stored procedure for Monthly report Generation

Explanation: This stored procedure is the most important in the entire database as it gives the summary month by month on creating a monthly report, tallying applications, interviews, evaluations, and background checks for a given month and year. It accepts @Month and @Year as inputs. It retrieves data from relevant tables, counts distinct IDs, and organizes results by month and year.

iii) Functions:

i. FormatPhoneNumber

Objective: The objective of this function is to format a phone number in the format XXX-XXX-XXXX.

Query:

```
-- Create the FormatPhoneNumber function
CREATE FUNCTION FormatPhoneNumber(@PhoneNumber NVARCHAR(20))
RETURNS NVARCHAR(20)
AS
BEGIN
   DECLARE @FormattedPhoneNumber NVARCHAR(20);
   -- Remove any non-numeric characters from the input phone number
   SET @PhoneNumber = REPLACE(@PhoneNumber, '-', '');

   -- Add dashes to the phone number in the format XXX-XXX-XXXX
   SET @FormattedPhoneNumber = LEFT(@PhoneNumber, 3) + '-' +
SUBSTRING(@PhoneNumber, 4, 3) + '-' + RIGHT(@PhoneNumber, 4);

   RETURN @FormattedPhoneNumber;
END;
GO
-- Update the phone numbers for all candidates using the FormatPhoneNumber function
UPDATE Candidates
SET Phone = dbo.FormatPhoneNumber(Phone);
-- Execute the function with a sample phone number
SELECT *
FROM Candidates;
```

Output:

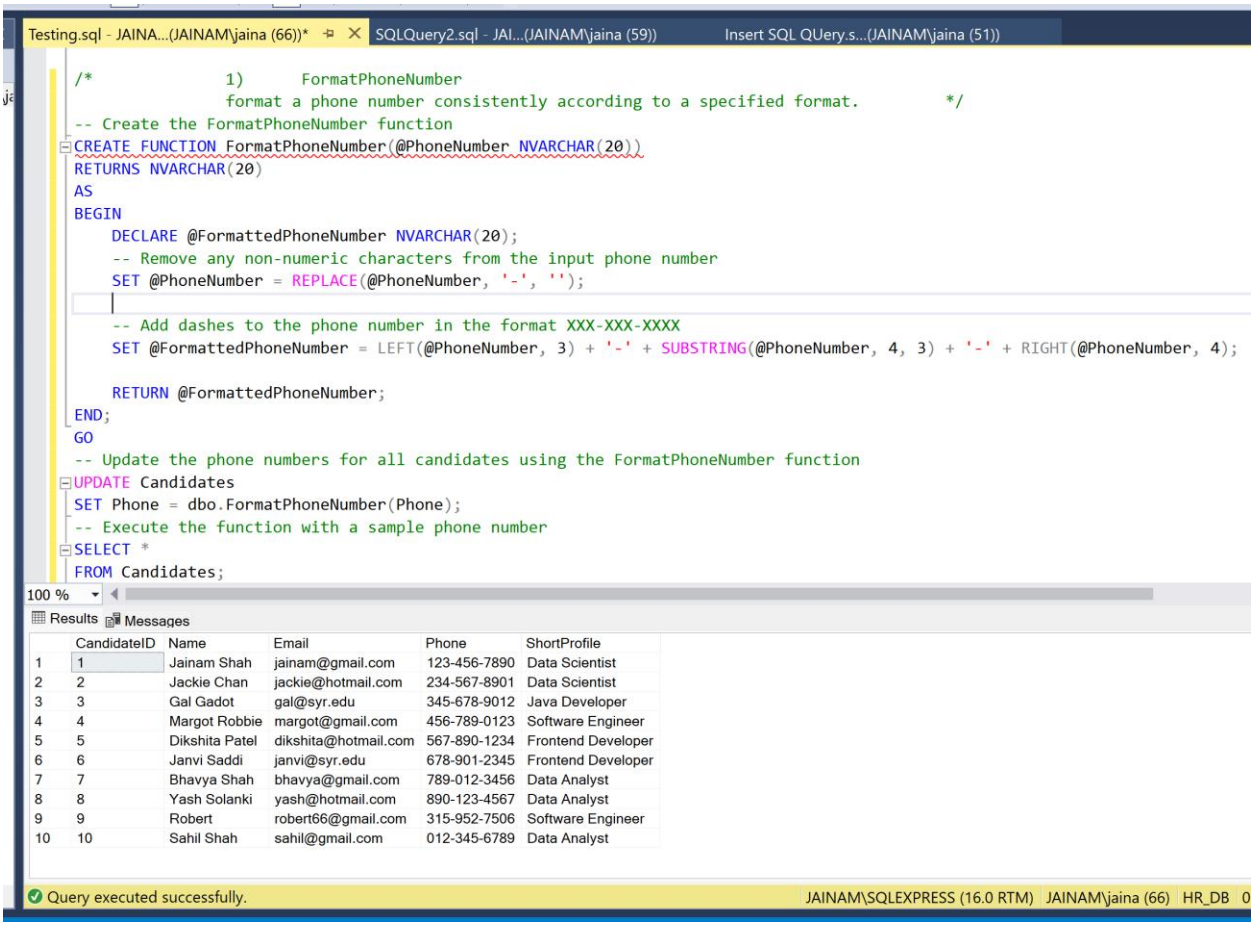


Fig 23: FormatPhoneNumber in format XXX-XXX-XXXX

Explanation:
The function takes a phone number as input and removes any non-numeric characters using the REPLACE function. It then constructs the formatted phone number by concatenating the appropriate substrings with dashes in between. Finally, it returns the formatted phone number.

ii. GenerateUsername

Objective:

This function generates a username based on the candidate's name and a random number.

Query:

```
/*                                  2) GenerateUsername
                                Generates a username based on the candidate's name and a random
number.
*/
CREATE FUNCTION GenerateUsername
   (@FullName NVARCHAR(100))
RETURNS NVARCHAR(100)
AS
BEGIN
   DECLARE @Username NVARCHAR(100);

   -- Check if the full name contains a space character
   IF CHARINDEX(' ', @FullName) > 0
   BEGIN
      DECLARE @FirstName NVARCHAR(50);
      DECLARE @LastName NVARCHAR(50);

      -- Extract first name and last name from the full name
      SET @FirstName = LEFT(@FullName, CHARINDEX(' ', @FullName) - 1);
      SET @LastName = SUBSTRING(@FullName, CHARINDEX(' ', @FullName) + 1,
LEN(@FullName) - CHARINDEX(' ', @FullName));

      -- Concatenate the first three letters of the first name and last name
      SET @Username = LEFT(@FirstName, 3) + LEFT(@LastName, 3);
   END
   ELSE
   BEGIN
      -- If the full name does not contain a space, use the entire name as the username
      SET @Username = @FullName;
   END

   RETURN @Username;
END;


SELECT Name, Email, Phone, ShortProfile, dbo.GenerateUsername(Name) AS
GeneratedUsername
```

```
FROM Candidates;
```

Output:

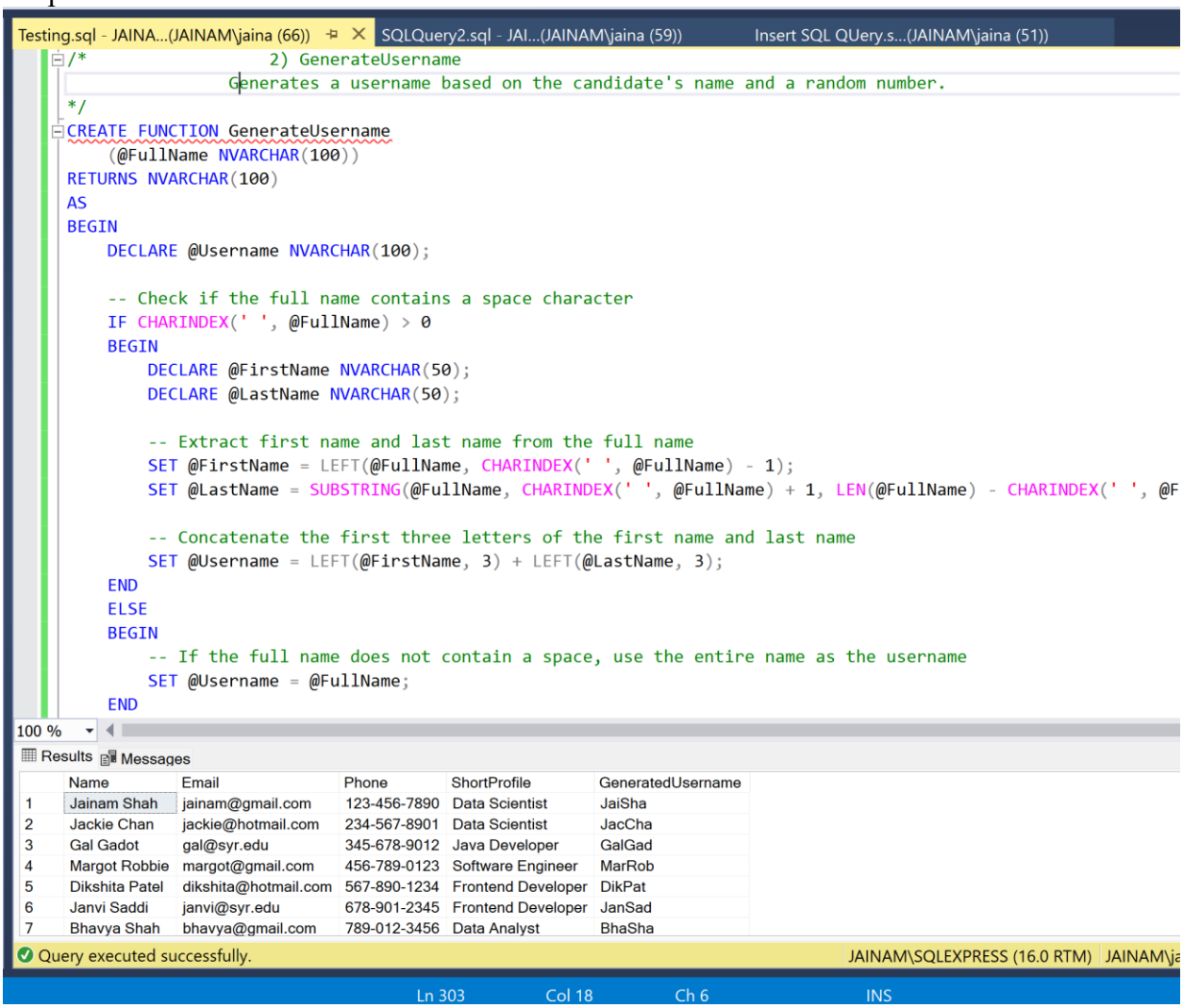


Fig 24: Function for generating Username

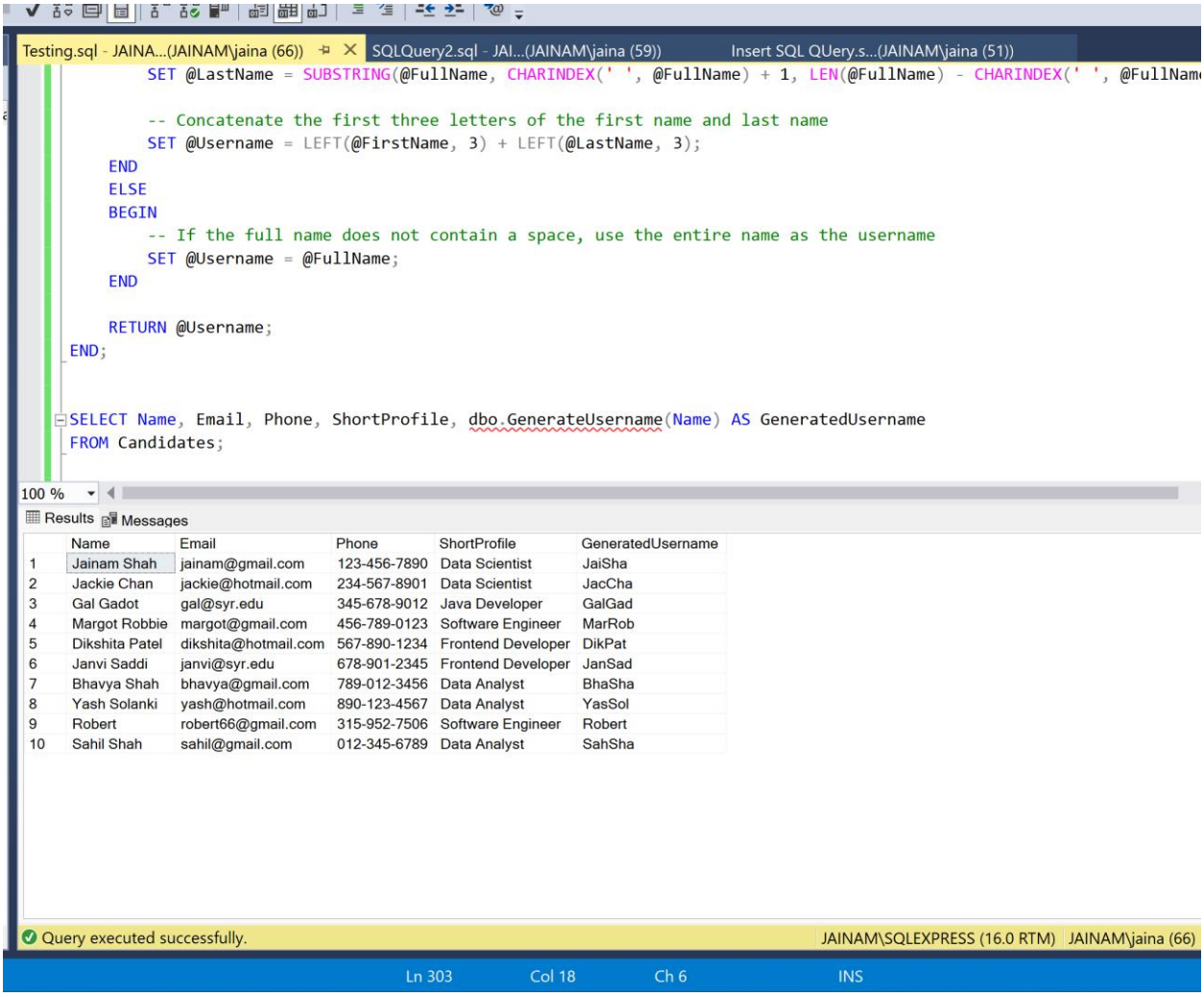


Fig 25: Displaying Generated Username using Function and logic for first and last name

Explanation:

This function first checks if the full name contains a space character. If it does, it extracts the first three letters of the first name and last name to generate the username. If the full name does not contain a space, it uses the entire name as the username. So making sure if the person enters either full name or just first name both scenarios are being taken care off.

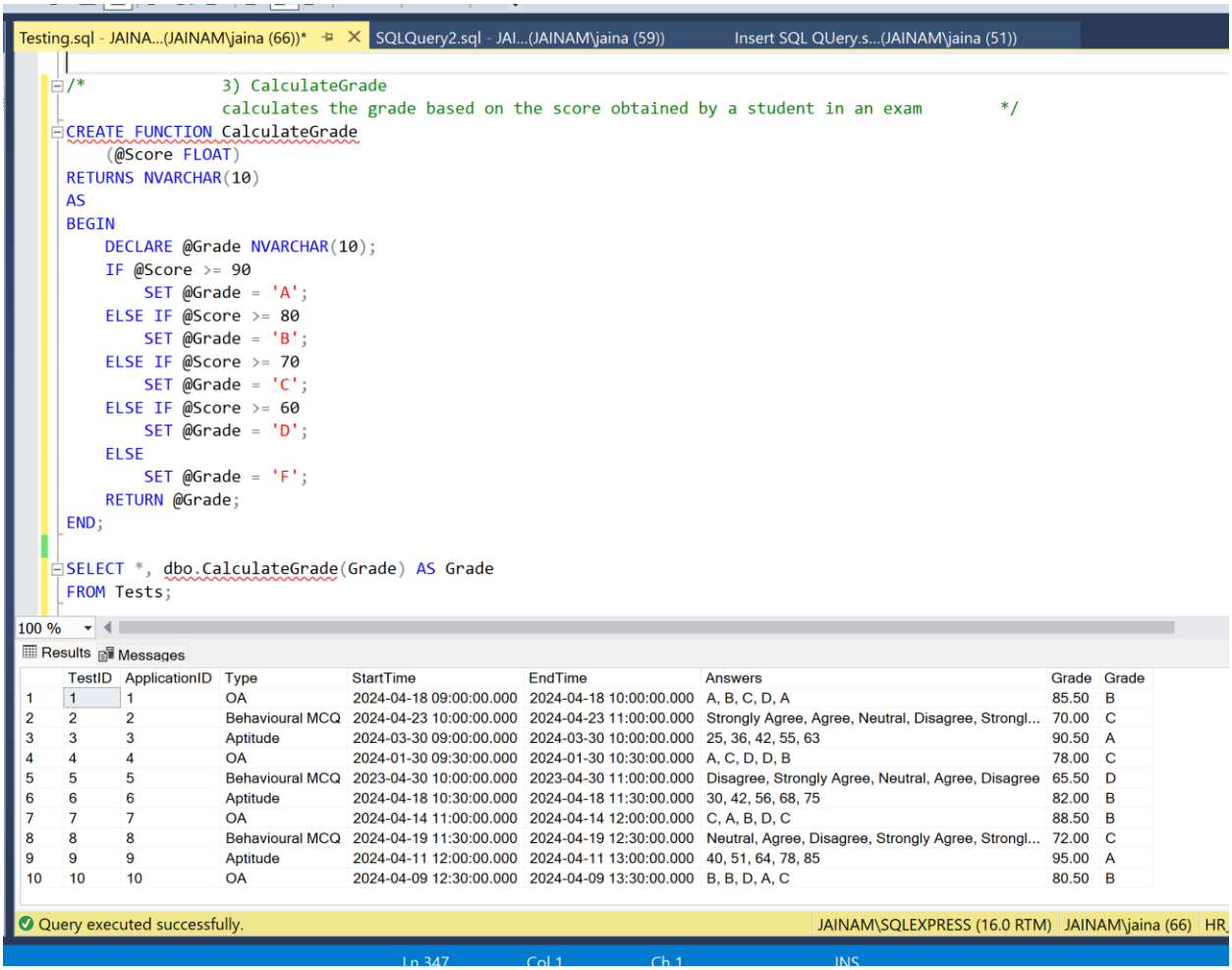
iii. CalculateGrade

Objective: Calculates the grade based on the score obtained by a student in an exam

Query:

```
CREATE FUNCTION CalculateGrade
   (@Score FLOAT)
RETURNS NVARCHAR(10)
AS
BEGIN
   DECLARE @Grade NVARCHAR(10);
   IF @Score >= 90
      SET @Grade = 'A';
   ELSE IF @Score >= 80
      SET @Grade = 'B';
   ELSE IF @Score >= 70
      SET @Grade = 'C';
   ELSE IF @Score >= 60
      SET @Grade = 'D';
   ELSE
      SET @Grade = 'F';
   RETURN @Grade;
END;

SELECT *, dbo.CalculateGrade(Grade) AS Grade
FROM Tests;
```

Output:



	TestID	ApplicationID	Type	StartTime	EndTime	Answers	Grade	Grade
1	1	1	OA	2024-04-18 09:00:00.000	2024-04-18 10:00:00.000	A, B, C, D, A	85.50	B
2	2	2	Behavioural MCQ	2024-04-23 10:00:00.000	2024-04-23 11:00:00.000	Strongly Agree, Agree, Neutral, Disagree, Strongl...	70.00	C
3	3	3	Aptitude	2024-03-30 09:00:00.000	2024-03-30 10:00:00.000	25, 36, 42, 55, 63	90.50	A
4	4	4	OA	2024-01-30 09:30:00.000	2024-01-30 10:30:00.000	A, C, D, D, B	78.00	C
5	5	5	Behavioural MCQ	2023-04-30 10:00:00.000	2023-04-30 11:00:00.000	Disagree, Strongly Agree, Neutral, Agree, Disagree	65.50	D
6	6	6	Aptitude	2024-04-18 10:30:00.000	2024-04-18 11:30:00.000	30, 42, 56, 68, 75	82.00	B
7	7	7	OA	2024-04-14 11:00:00.000	2024-04-14 12:00:00.000	C, A, B, D, C	88.50	B
8	8	8	Behavioural MCQ	2024-04-19 11:30:00.000	2024-04-19 12:30:00.000	Neutral, Agree, Disagree, Strongly Agree, Strongl...	72.00	C
9	9	9	Aptitude	2024-04-11 12:00:00.000	2024-04-11 13:00:00.000	40, 51, 64, 78, 85	95.00	A
10	10	10	OA	2024-04-09 12:30:00.000	2024-04-09 13:30:00.000	B, B, D, A, C	80.50	B

Fig 26: Calculate the grade based on the score

Explanation:
This query will calculate the grade for each test based on the score ('Grade' column) and display it in the result set alongside other test details.

iv. GenerateEmployeeID

Objective: Generates an employee ID based on the first three letters of the first name and the last three letters of the last name, along with a sequence number.

Query:

Output:

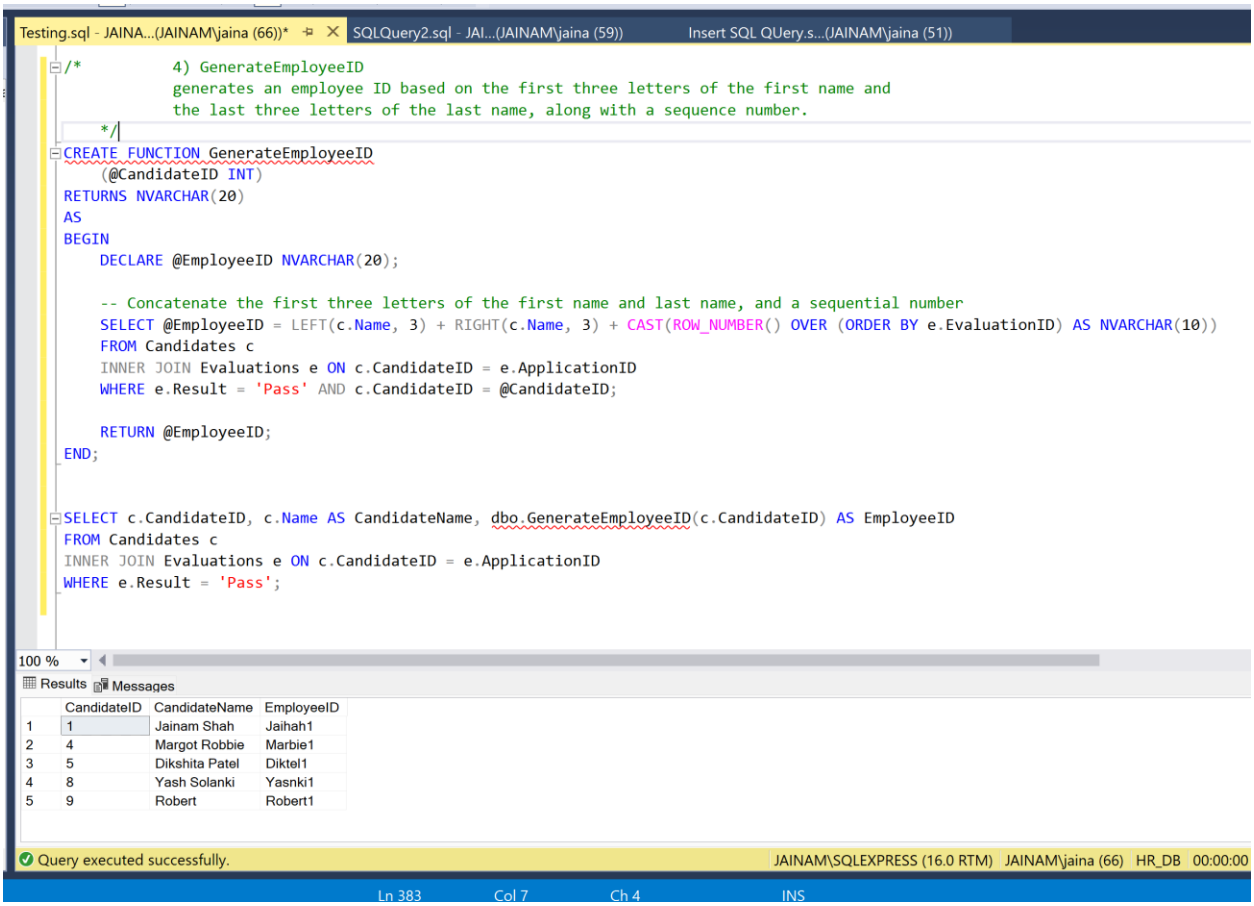


Fig 27: Generates an employee ID

Explanation:

This function takes the CandidateID as input and retrieves the candidate's name from the Candidates table. It then joins the Candidates table with the Evaluations table to filter only the evaluations where the result is 'Pass' for the specified candidate. Finally, it concatenates the first three letters of the candidate's name, the last three letters of the candidate's name, and a sequential number generated by the ROW_NUMBER() function as the employee ID.

v. CheckBackgroundCheckStatus

Objective: To check the status of a candidate's background check.

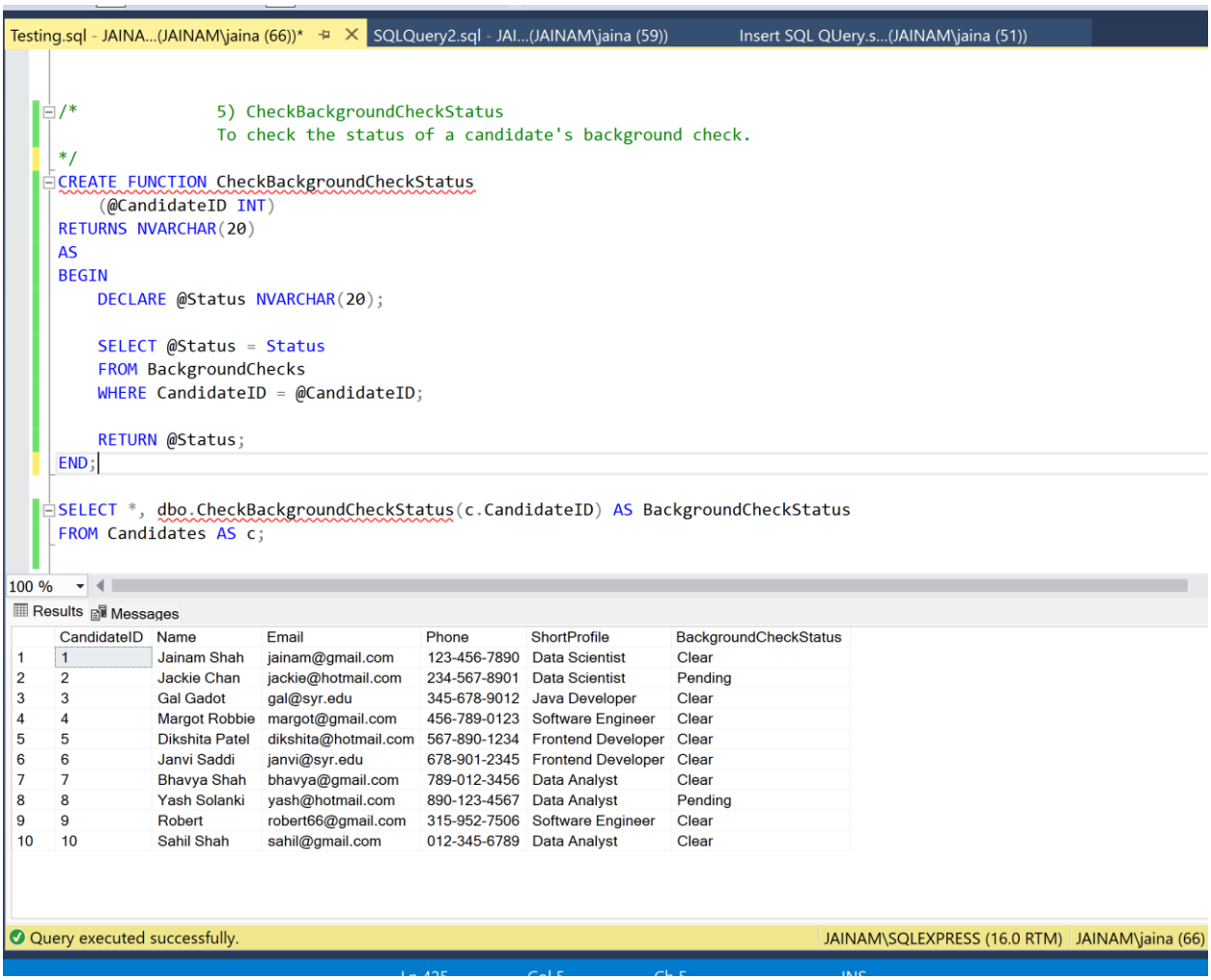
Query:

```
CREATE FUNCTION CheckBackgroundCheckStatus
   (@CandidateID INT)
RETURNS NVARCHAR(20)
AS
BEGIN
   DECLARE @Status NVARCHAR(20);

   SELECT @Status = Status
   FROM BackgroundChecks
   WHERE CandidateID = @CandidateID;

   RETURN @Status;
END;
```

```
SELECT *, dbo.CheckBackgroundCheckStatus(c.CandidateID) AS BackgroundCheckStatus
FROM Candidates AS c;
```

Output:

Fig :



	CandidateID	Name	Email	Phone	ShortProfile	BackgroundCheckStatus
1	1	Jainam Shah	jainam@gmail.com	123-456-7890	Data Scientist	Clear
2	2	Jackie Chan	jackie@hotmail.com	234-567-8901	Data Scientist	Pending
3	3	Gal Gadot	gal@syr.edu	345-678-9012	Java Developer	Clear
4	4	Margot Robbie	margot@gmail.com	456-789-0123	Software Engineer	Clear
5	5	Dikshita Patel	dikshita@hotmail.com	567-890-1234	Frontend Developer	Clear
6	6	Janvi Saddi	janvi@syr.edu	678-901-2345	Frontend Developer	Clear
7	7	Bhavya Shah	bhavya@gmail.com	789-012-3456	Data Analyst	Clear
8	8	Yash Solanki	yash@hotmail.com	890-123-4567	Data Analyst	Pending
9	9	Robert	robert66@gmail.com	315-952-7506	Software Engineer	Clear
10	10	Sahil Shah	sahil@gmail.com	012-345-6789	Data Analyst	Clear

Fig 28: Display CheckBackgroundCheckStatus

Explanation:

This function takes a CandidateID as input and retrieves the background check status for that candidate from the BackgroundChecks table. It then returns the status.

iv) Triggers:

a) OnEvaluationInsertTrigger
Objective: Update the candidate's status based on the evaluation result.

Query:

```
CREATE TRIGGER OnEvaluationInsertTrigger
ON Evaluations
AFTER INSERT
AS
BEGIN
   SET NOCOUNT ON;

   DECLARE @ApplicationID INT;
   DECLARE @Result NVARCHAR(10);

   SELECT @ApplicationID = inserted.ApplicationID,
        @Result = inserted.Result
   FROM inserted;

   UPDATE StatusFlow
   SET status = CASE
                WHEN @Result = 'Pass' THEN 'Accepted'
                WHEN @Result = 'Fail' THEN 'Rejected'
                ELSE 'Pending'
              END
   WHERE candidate_id = @ApplicationID;
```

END;

Output:

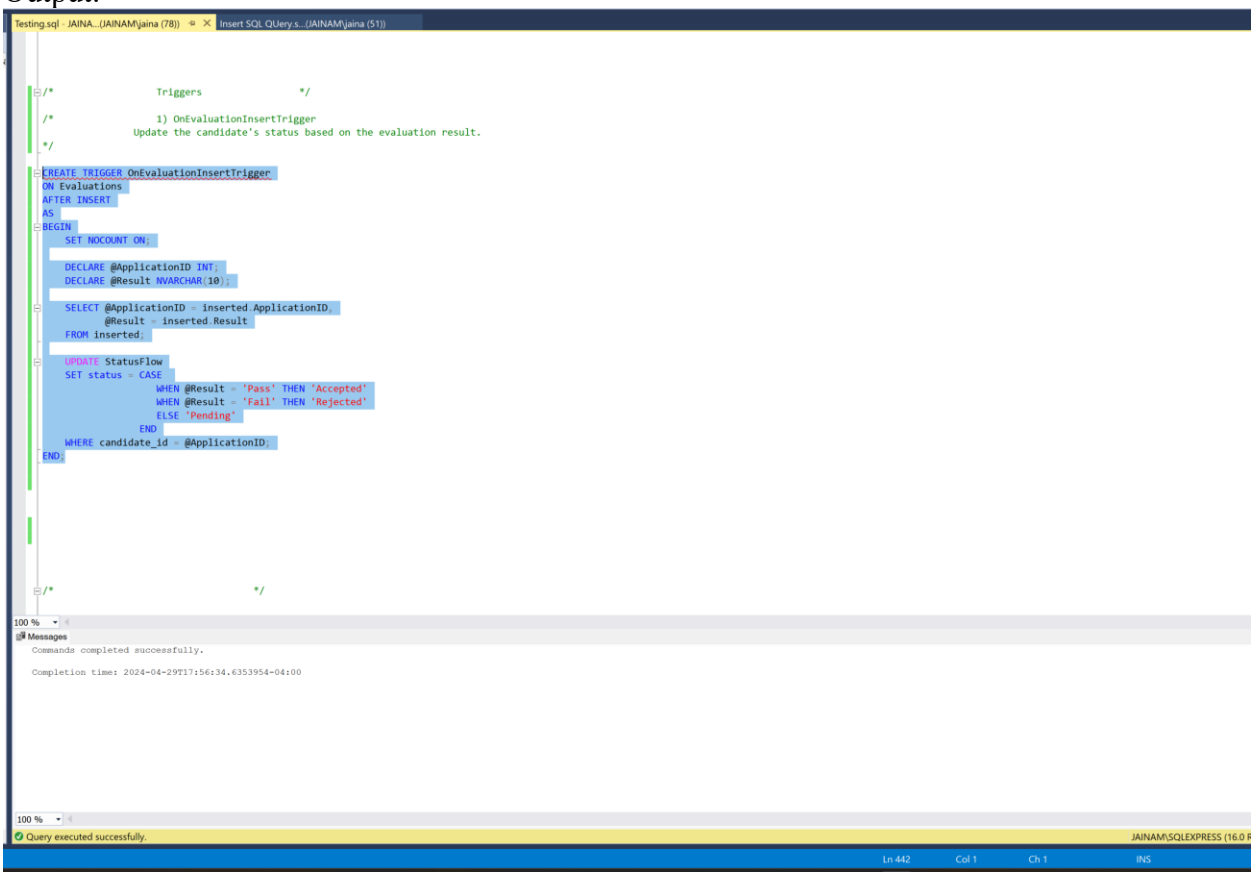


Fig 29: OnEvaluationInsertTrigger

Explanation: This trigger fires after an insertion into the Evaluations table. It retrieves the ApplicationID and Result of the newly inserted evaluation. Based on the evaluation result, it updates the status of the candidate in the StatusFlow table. If the result is 'Pass', the status is set to 'Accepted', if 'Fail', the status is set to 'Rejected', and otherwise, it remains 'Pending'.

b) OnInterviewInsertTrigger
Objective: Update the status flow of the candidate based on interview scheduling.

Query:

```
CREATE TRIGGER OnInterviewInsertTrigger
ON Interviews
AFTER INSERT
AS
BEGIN
   SET NOCOUNT ON;

   DECLARE @ApplicationID INT;
   DECLARE @Status NVARCHAR(50);

   SELECT @ApplicationID = inserted.ApplicationID
   FROM inserted;

   SET @Status = 'Interview Scheduled';

   INSERT INTO StatusFlow (candidate_id, status, timestamp)
   VALUES (@ApplicationID, @Status, GETDATE());
END;
```

Output:

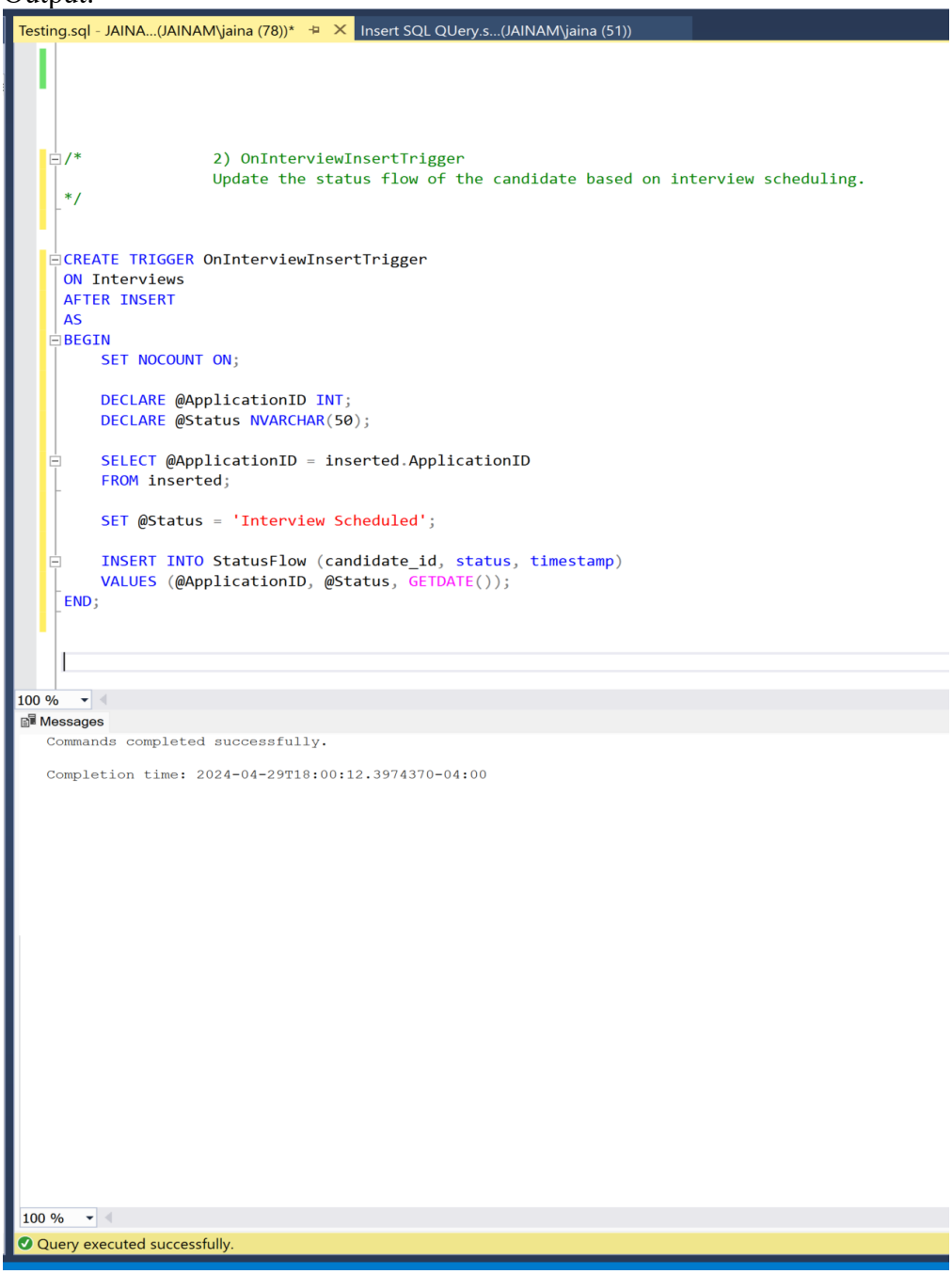


Fig 30: OnInterviewInsertTrigger

Explanation:

This trigger fires after an insertion into the Interviews table. It updates the StatusFlow table by adding a new record indicating that an interview has been scheduled for the corresponding candidate.

c) OnDrugTestInsertTrigger

Objective: Update the candidate's status based on the result of the drug test.

Query:

```
CREATE TRIGGER OnDrugTestInsertTrigger
ON DrugTests
AFTER INSERT
AS
BEGIN
   SET NOCOUNT ON;

   DECLARE @CandidateID INT;
   DECLARE @TestResult NVARCHAR(50);
   DECLARE @NewStatus NVARCHAR(50);

   SELECT @CandidateID = inserted.CandidateID,
        @TestResult = inserted.Results
   FROM inserted;

   IF @TestResult = 'Negative'
      SET @NewStatus = 'Cleared';
   ELSE
      SET @NewStatus = 'Pending Further Review';

   UPDATE StatusFlow
   SET status = @NewStatus
   WHERE candidate_id = @CandidateID;
END;
```

Output:

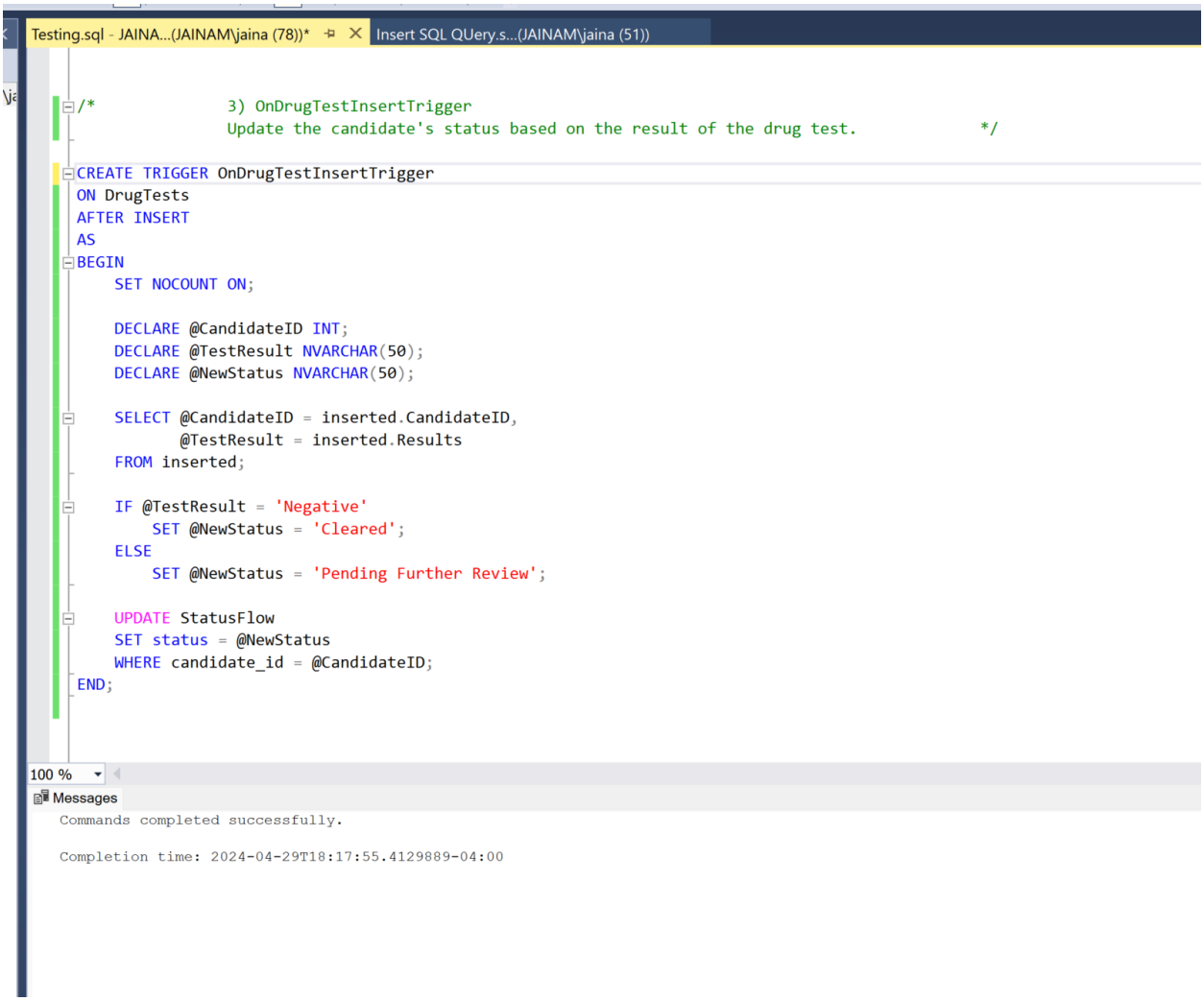


Fig 31: OnDrugTestInsertTrigger

Explanation:

This trigger executes after an insertion into the DrugTests table. It updates the StatusFlow table based on the drug test result of the candidate. If the result is negative, the status is updated to "Cleared"; otherwise, it is set to "Pending Further Review".

d) OnBackgroundCheckInsertTrigger

Objective: Update the candidate's status based on the result of the background check.

Query:

```
CREATE TRIGGER OnBackgroundCheckInsertTrigger
ON BackgroundChecks
AFTER INSERT
AS
BEGIN
   SET NOCOUNT ON;

   DECLARE @CandidateID INT;
   DECLARE @CheckResult NVARCHAR(50);
   DECLARE @NewStatus NVARCHAR(50);

   SELECT @CandidateID = inserted.CandidateID,
        @CheckResult = inserted.Status
   FROM inserted;

   IF @CheckResult = 'Clear'
      SET @NewStatus = 'Cleared';
   ELSE
      SET @NewStatus = 'Pending Further Review';

   UPDATE StatusFlow
   SET status = @NewStatus
   WHERE candidate_id = @CandidateID;
END;
```

Output:

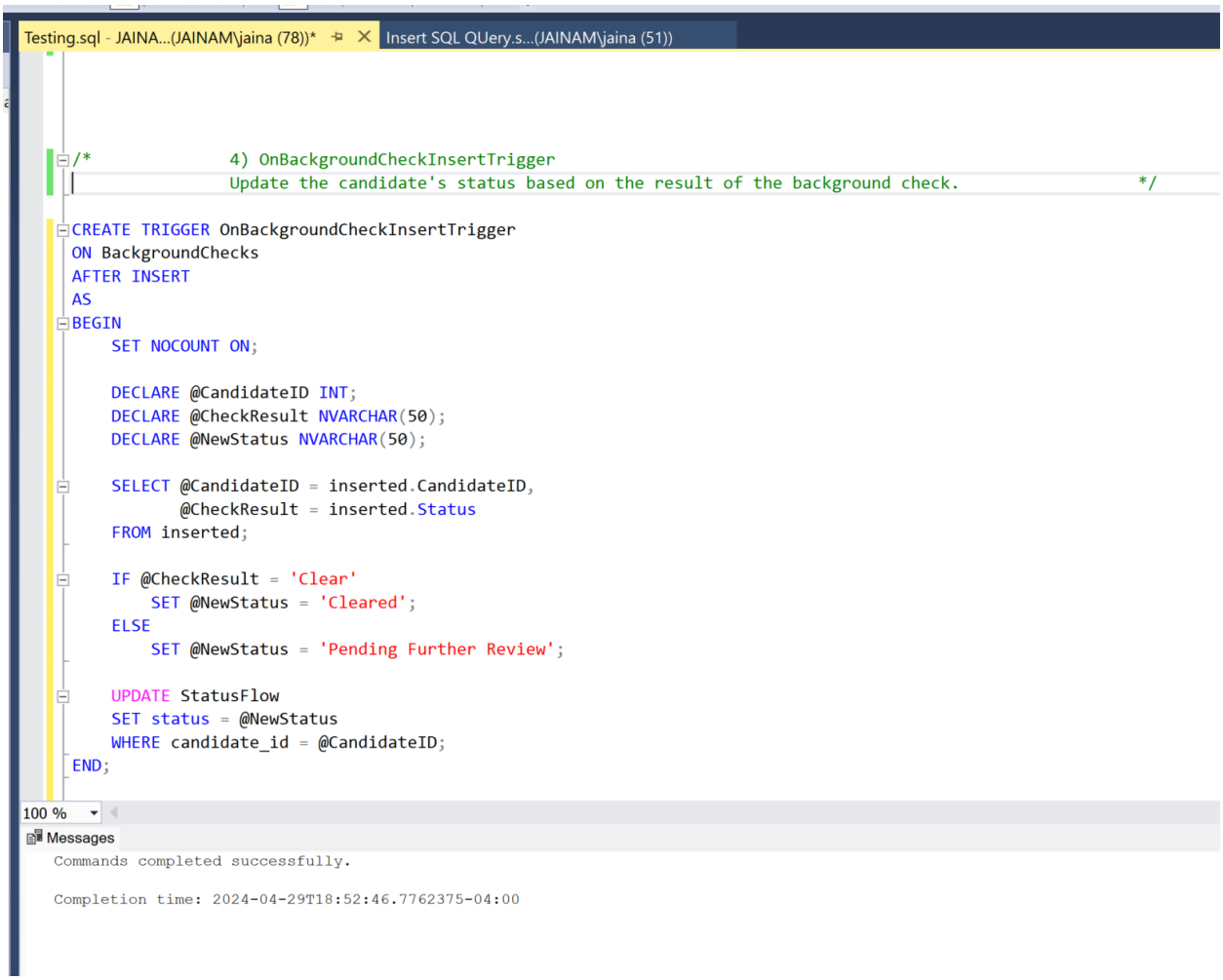


Fig 32: OnBackgroundCheckInsertTrigger

Explanation:
This trigger fires after an insertion into the BackgroundChecks table. It updates the StatusFlow table based on the background check result of the candidate. If the result is 'Clear', the status is updated to 'Cleared'; otherwise, it is set to 'Pending Further Review'.

e) OnJobPlatformJobInsertTrigger

Objective: Maintain consistency between job platforms and job listings upon insertion.

Query:

```
CREATE TRIGGER OnJobPlatformJobInsertTrigger
ON JobPlatformJob
AFTER INSERT
AS
BEGIN
   SET NOCOUNT ON;

   DECLARE @JobID INT;
   DECLARE @JobPlatformID INT;

   SELECT @JobID = inserted.job_id,
        @JobPlatformID = inserted.job_platform_id
   FROM inserted;

   IF NOT EXISTS (
      SELECT 1
      FROM Job
      WHERE JobID = @JobID
   )
   BEGIN
      DELETE FROM JobPlatformJob
      WHERE job_id = @JobID AND job_platform_id = @JobPlatformID;
      RAISERROR('Job ID does not exist. Entry in JobPlatformJob table deleted.', 16, 1);
   END;
END;
```

Output:

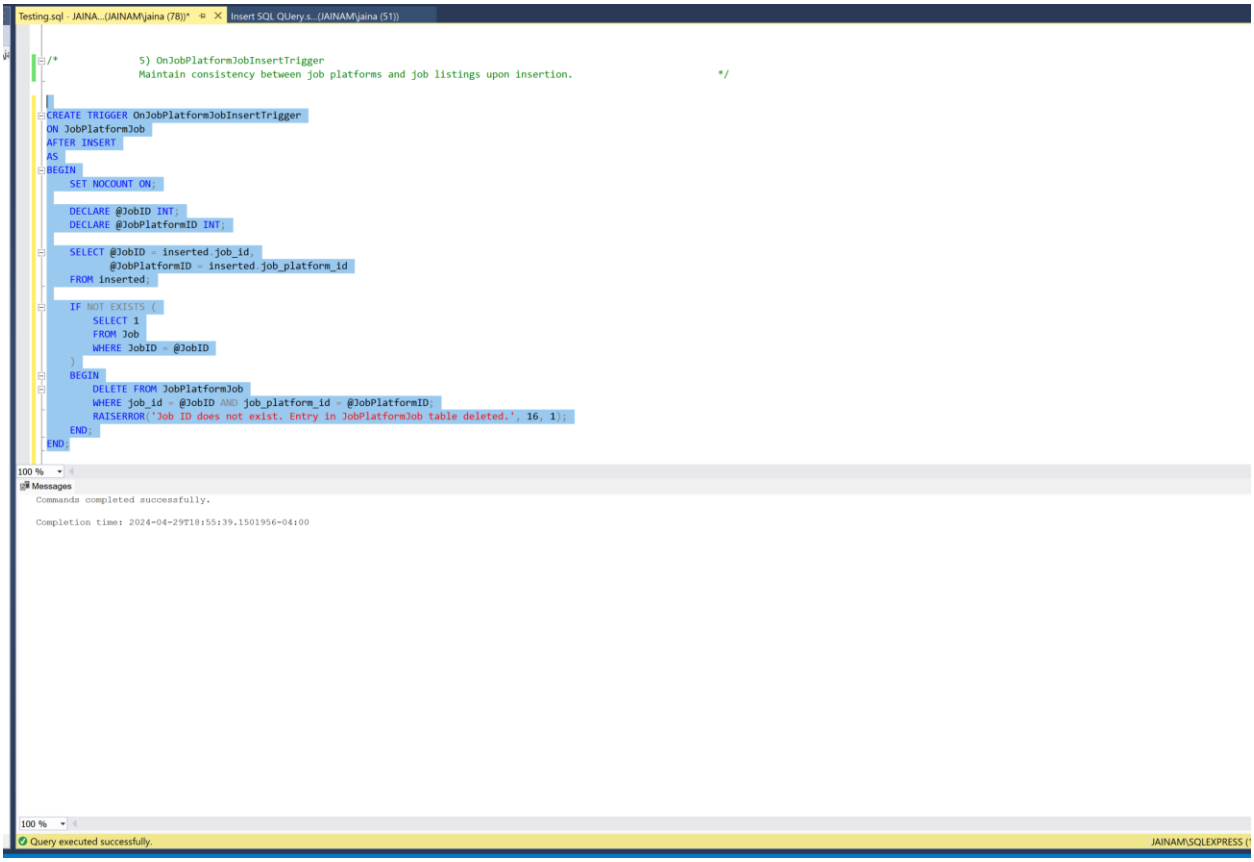


Fig 33: OnJobPlatformJobInsertTrigger

Explanation:

This trigger fires after an insertion into the JobPlatformJob table. It ensures consistency between job platforms and job listings by checking if the job ID exists in the Job table. If the job ID does not exist, it deletes the corresponding entry from the JobPlatformJob table and raises an error.

v) Transactions:

a. Hiring a Candidate:

Objective: To officially hire a candidate after successful completion of evaluations, interviews, and background checks.

Query:

```
BEGIN TRANSACTION HireCandidate;

UPDATE StatusFlow
SET status = 'Hired'
WHERE candidate_id IN (
   SELECT DISTINCT C.CandidateID
   FROM Candidates C
   INNER JOIN Applications A ON C.CandidateID = A.CandidateID
   LEFT JOIN Evaluations E ON A.ApplicationID = E.ApplicationID
   LEFT JOIN Interviews I ON A.ApplicationID = I.ApplicationID
   LEFT JOIN BackgroundChecks BC ON C.CandidateID = BC.CandidateID
   WHERE E.Result = 'Pass' -- Candidate passed evaluations
   AND I.InterviewID IS NOT NULL -- Candidate has been interviewed
   AND BC.Status = 'Clear' -- Candidate's background check is clear
);

COMMIT TRANSACTION HireCandidate;

-- Displaying the details of candidates who have been hired
SELECT c.CandidateID, c.Name, c.Email, c.Phone, StatusFlow.status
FROM StatusFlow
JOIN Candidates c ON StatusFlow.candidate_id = c.CandidateID
WHERE StatusFlow.status = 'Hired';
```

Output:

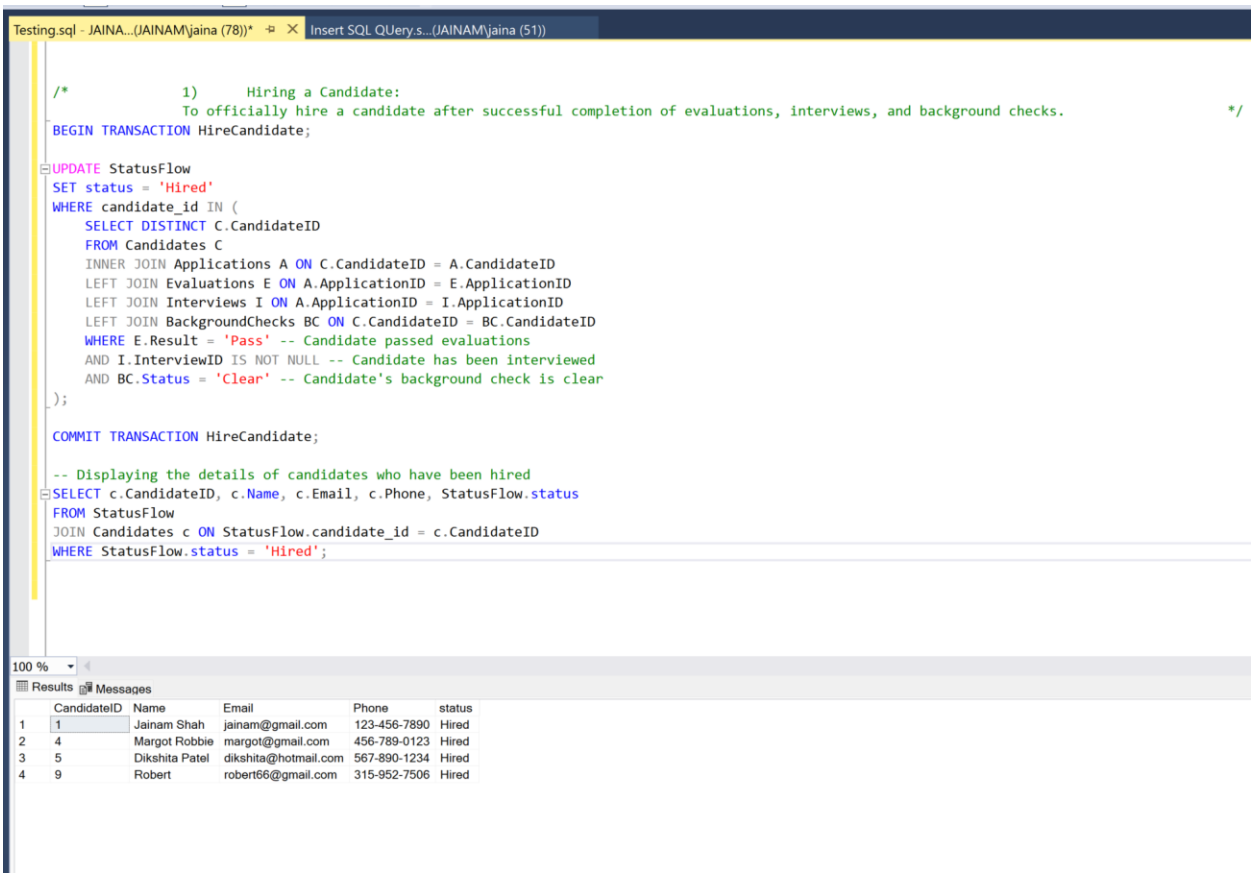


Fig 32: Transaction for Hiring a Candidate

Explanation:

This SQL transaction updates the status of candidates to 'Hired' in the StatusFlow table if they have passed evaluations, participated in interviews, and cleared background checks. It selects candidates based on successful evaluations, existing interviews, and clear background check statuses. The BEGIN TRANSACTION and COMMIT TRANSACTION statements ensure that all updates occur atomically, either all updates succeed or none of them do, maintaining data integrity.

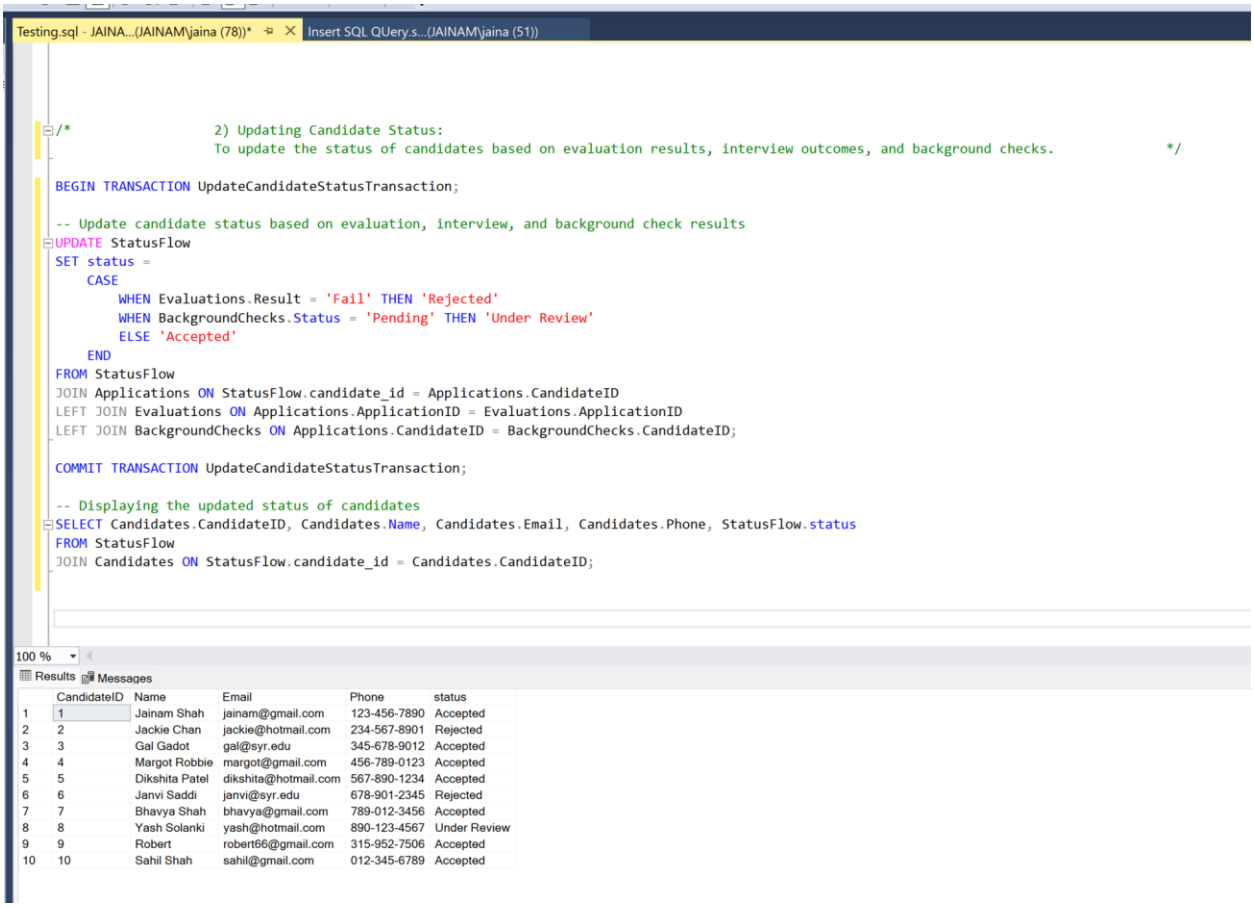
b. Updating Candidate Status:

Objective: To update the status of candidates based on evaluation results, interview outcomes, and background checks.

Query:

```
BEGIN TRANSACTION UpdateCandidateStatusTransaction;

-- Update candidate status based on evaluation, interview, and background check results
UPDATE StatusFlow
SET status =
   CASE
      WHEN Evaluations.Result = 'Fail' THEN 'Rejected'
      WHEN BackgroundChecks.Status = 'Pending' THEN 'Under Review'
      ELSE 'Accepted'
   END
FROM StatusFlow
JOIN Applications ON StatusFlow.candidate_id = Applications.CandidateID
LEFT JOIN Evaluations ON Applications.ApplicationID = Evaluations.ApplicationID
LEFT JOIN BackgroundChecks ON Applications.CandidateID =
BackgroundChecks.CandidateID;

COMMIT TRANSACTION UpdateCandidateStatusTransaction;

-- Displaying the updated status of candidates
SELECT Candidates.CandidateID, Candidates.Name, Candidates.Email, Candidates.Phone,
StatusFlow.status
FROM StatusFlow
JOIN Candidates ON StatusFlow.candidate_id = Candidates.CandidateID;
```

Output:



	CandidateID	Name	Email	Phone	status
1	1	Jainam Shah	jainam@gmail.com	123-456-7890	Accepted
2	2	Jackie Chan	jackie@hotmail.com	234-567-8901	Rejected
3	3	Gal Gadot	gal@syr.edu	345-678-9012	Accepted
4	4	Margot Robbie	margot@gmail.com	456-789-0123	Accepted
5	5	Dikshita Patel	dikshita@hotmail.com	567-890-1234	Accepted
6	6	Janvi Saddi	janvi@syr.edu	678-901-2345	Rejected
7	7	Bhavya Shah	bhavya@gmail.com	789-012-3456	Accepted
8	8	Yash Solanki	yash@hotmail.com	890-123-4567	Under Review
9	9	Robert	robert66@gmail.com	315-952-7506	Accepted
10	10	Sahil Shah	sahil@gmail.com	012-345-6789	Accepted

Fig 33: UpdateCandidateStatusTransactionFlow

Explanation:
This SQL transaction updates the status of candidates in the StatusFlow table based on the results of evaluations, interviews, and background checks. It uses a CASE statement to determine the new status.

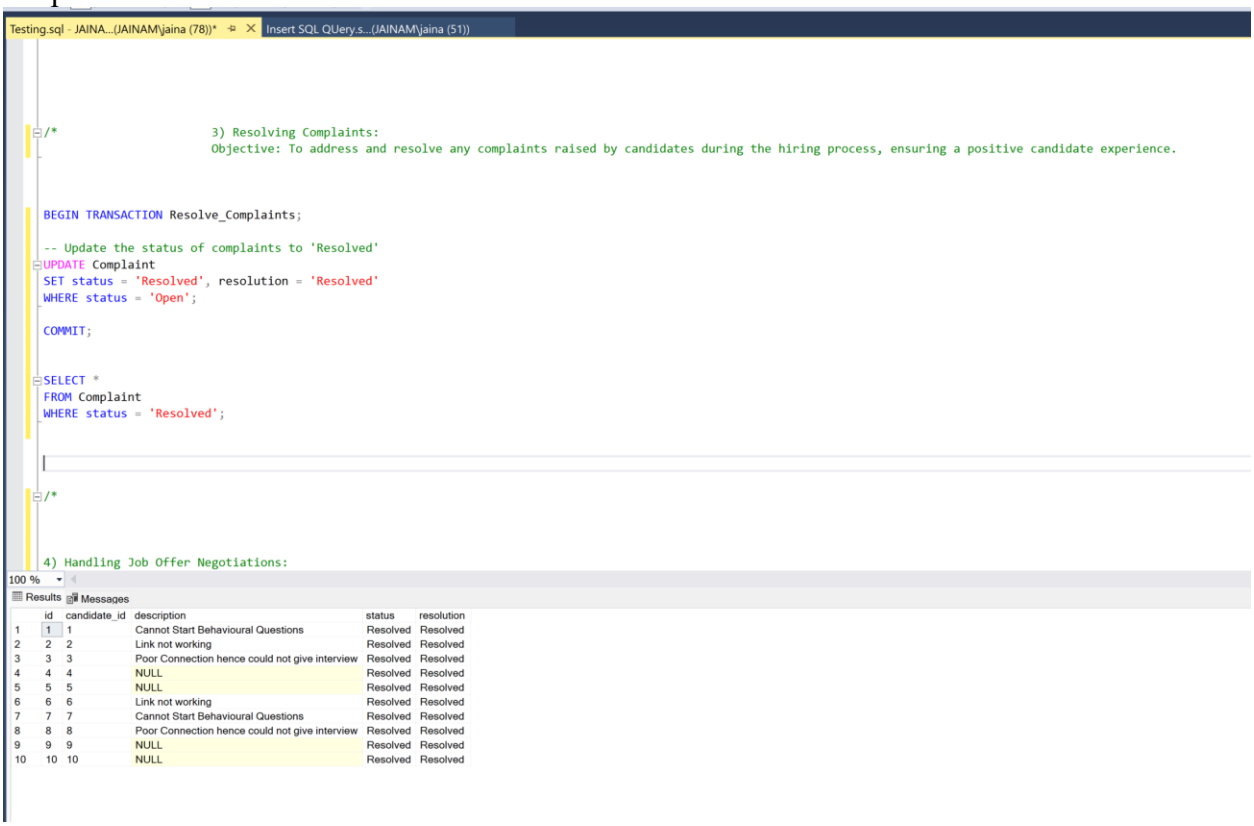
c. Resolving Complaints:

Objective: To address and resolve any complaints raised by candidates during the hiring process, ensuring a positive candidate experience.

Query:

```
BEGIN TRANSACTION Resolve_Complaints;

-- Update the status of complaints to 'Resolved'
UPDATE Complaint
SET status = 'Resolved', resolution = 'Resolved'
WHERE status = 'Open';

COMMIT;
SELECT *
FROM Complaint
WHERE status = 'Resolved';
```

Output:



	id	candidate_id	description	status	resolution
1	1	1	Cannot Start Behavioural Questions	Resolved	Resolved
2	2	2	Link not working	Resolved	Resolved
3	3	3	Poor Connection hence could not give interview	Resolved	Resolved
4	4	4	NULL	Resolved	Resolved
5	5	5	NULL	Resolved	Resolved
6	6	6	Link not working	Resolved	Resolved
7	7	7	Cannot Start Behavioural Questions	Resolved	Resolved
8	8	8	Poor Connection hence could not give interview	Resolved	Resolved
9	9	9	NULL	Resolved	Resolved
10	10	10	NULL	Resolved	Resolved

Fig 34: Transaction for Resolving Complaints:

Explanation:

This transaction ensures that all complaints raised by candidates during the hiring process are addressed and resolved, contributing to a positive candidate experience

d. Handling Job Offer Negotiations:

Objective: To negotiate job offers with candidates, including salary, benefits, and start date.

Query:

```
BEGIN TRANSACTION;

-- Update the status of candidates who are negotiating job offers
UPDATE StatusFlow
SET status = 'Negotiating'
WHERE candidate_id IN (
   SELECT ApplicationID
   FROM Evaluations
   WHERE Result = 'Pass'
);

-- Display the updated status of candidates who are negotiating job offers
SELECT Candidates.CandidateID, Candidates.Name, Candidates.Email, StatusFlow.Status
FROM StatusFlow
JOIN Candidates ON StatusFlow.candidate_id = Candidates.CandidateID
WHERE StatusFlow.status = 'Negotiating';

COMMIT TRANSACTION;
```

Output:

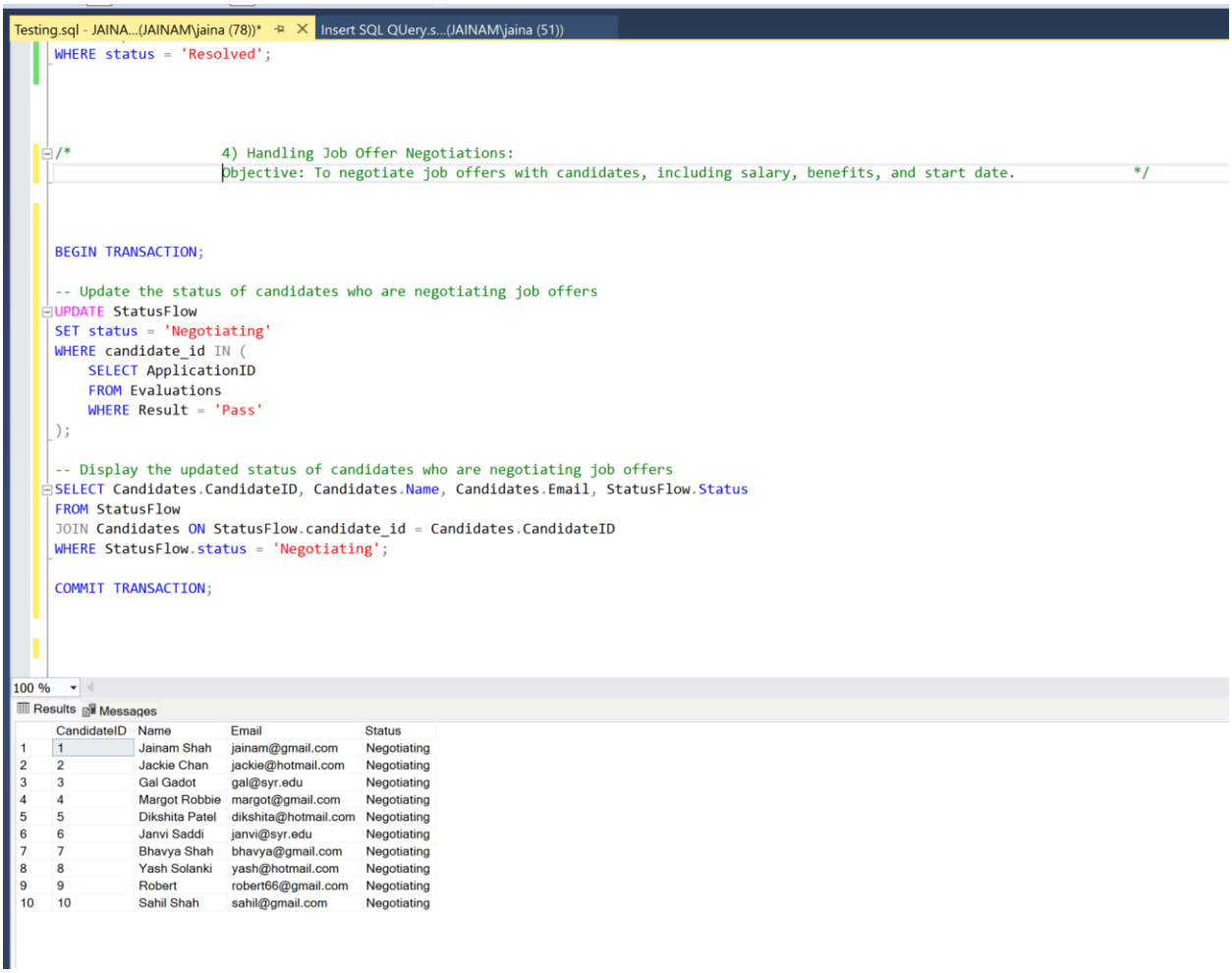


Fig 35: Handling Job Offer Negotiations

Explanation:
This query now updates the status of candidates to 'Negotiating' only if they have passed the evaluation process. Then it displays the details of those candidates whose status has been updated.

e. Closing Job Openings:

Objective: To close job openings once positions have been filled, updating the job status accordingly.

Query:

```
BEGIN TRANSACTION;
DELETE FROM JobOpenings
WHERE NumberOfPositions = 0;
COMMIT TRANSACTION;
-- Display job openings after closing
SELECT *
FROM JobOpenings; /* Since No. of Positions are not filled yet it wont display as 0 yet */
```

Output:

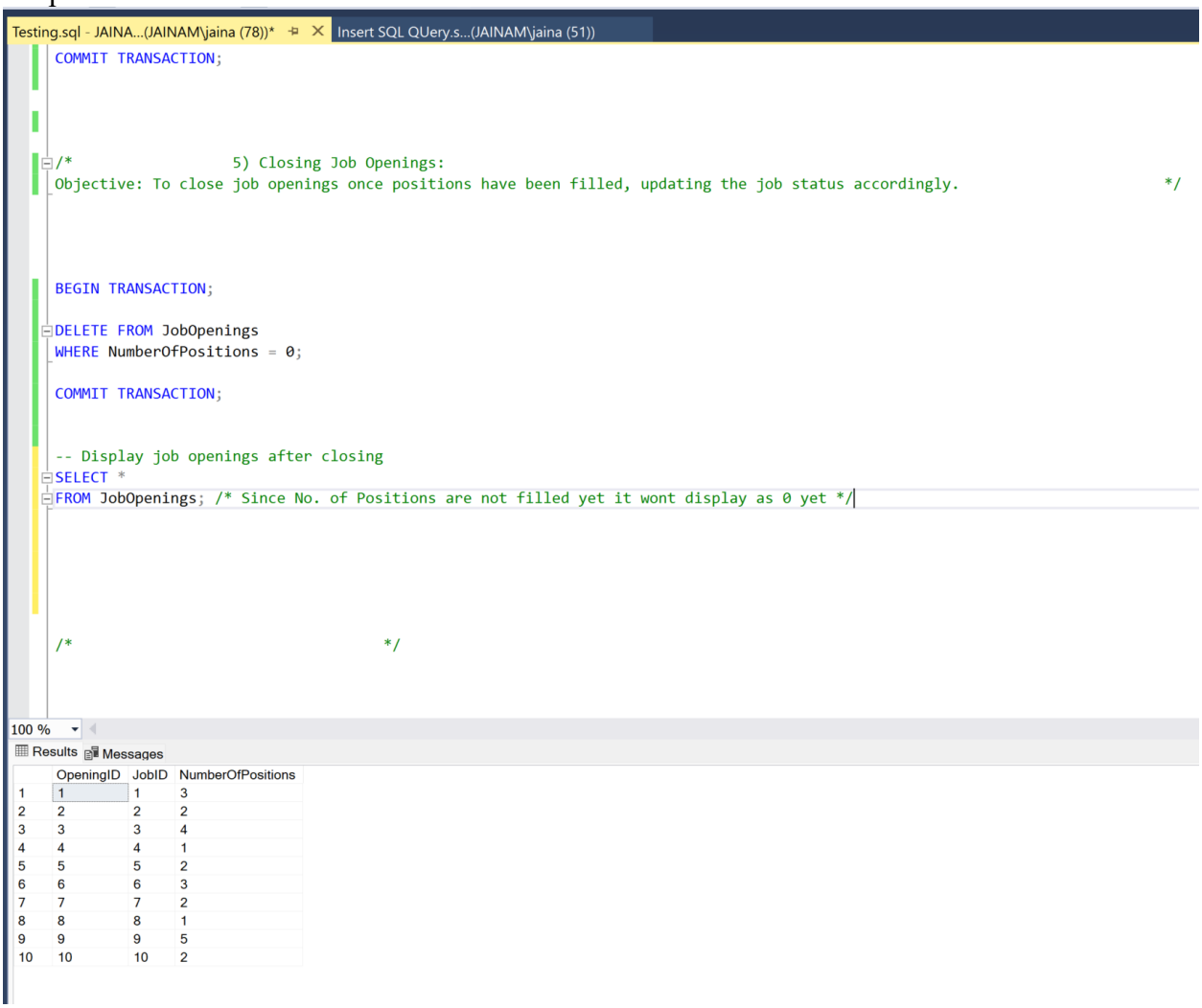


Fig 36: Closing Job Openings:

Explanation:

This transaction updates the Status column in the JobOpenings table to 'Closed' where the number of positions is zero, indicating that all positions for that job opening have been filled

vi)Scripts:

1. Granting Permissions for Interviewers

Objective: Grant specific permissions to interviewers for accessing and updating interview.

Query:

```
-- Create a new role named 'Interviewers'
CREATE ROLE Interviewers;

-- Grant SELECT permission on the Interviews table to the 'Interviewers' role
GRANT SELECT ON Interviews TO Interviewers;

-- Grant INSERT permission on the Interviews table to the 'Interviewers' role
GRANT INSERT ON Interviews TO Interviewers;

-- Grant UPDATE permission on the Interviews table to the 'Interviewers' role
GRANT UPDATE ON Interviews TO Interviewers;
```

Output:

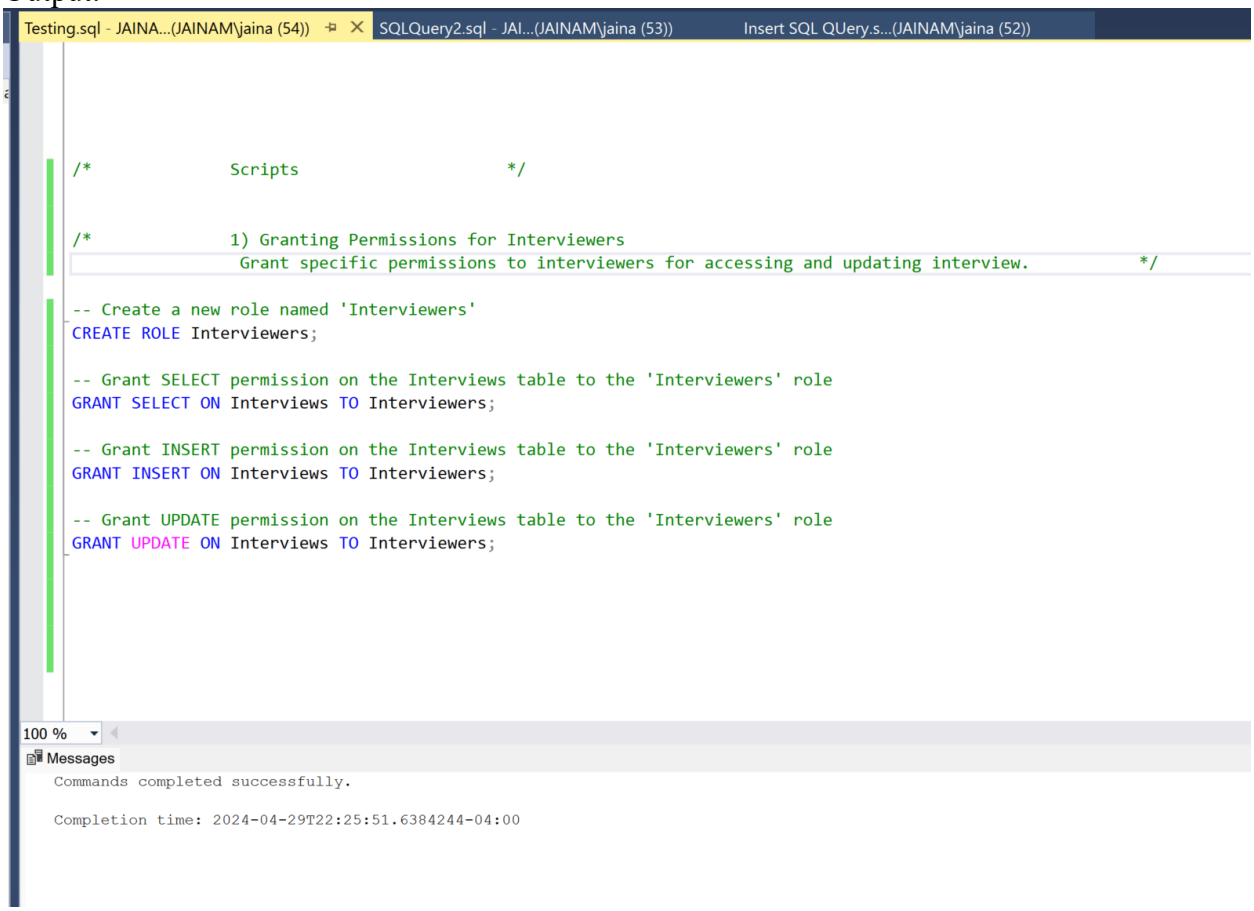


Fig 37: SQL Permissions Granting for Interviewers

Explanation:

This SQL query grants SELECT, INSERT, and UPDATE permissions on the Interviews table to a database role named Interviewers. This allows interviewers to view, add, and modify interview records as needed.

2. Creating a Role for HR Managers

Objective: Establish a custom database role named HRManager within the HR_DB database, granting appropriate permissions for HR managers to manage candidate data.

Query:

```
-- Create a new role named 'HRManager'
CREATE ROLE HRManager;


-- Grant EXECUTE permission on the UpdateCandidateInformation stored procedure to the 'HRManager' role
GRANT EXECUTE ON UpdateCandidateInformation TO HRManager;

-- Grant EXECUTE permission on the UpdateInterviewDetails stored procedure to the 'HRManager' role
GRANT EXECUTE ON UpdateInterviewDetails TO HRManager;

-- Grant EXECUTE permission on the RetrieveBackgroundCheckStatus stored procedure to the 'HRManager' role
GRANT EXECUTE ON RetrieveBackgroundCheckStatus TO HRManager;

-- Grant EXECUTE permission on the UpdateReimbursementStatus stored procedure to the 'HRManager' role
GRANT EXECUTE ON UpdateReimbursementStatus TO HRManager;

-- Grant EXECUTE permission on the GenerateMonthlyReport stored procedure to the 'HRManager' role
GRANT EXECUTE ON GenerateMonthlyReport TO HRManager;
```

Output:

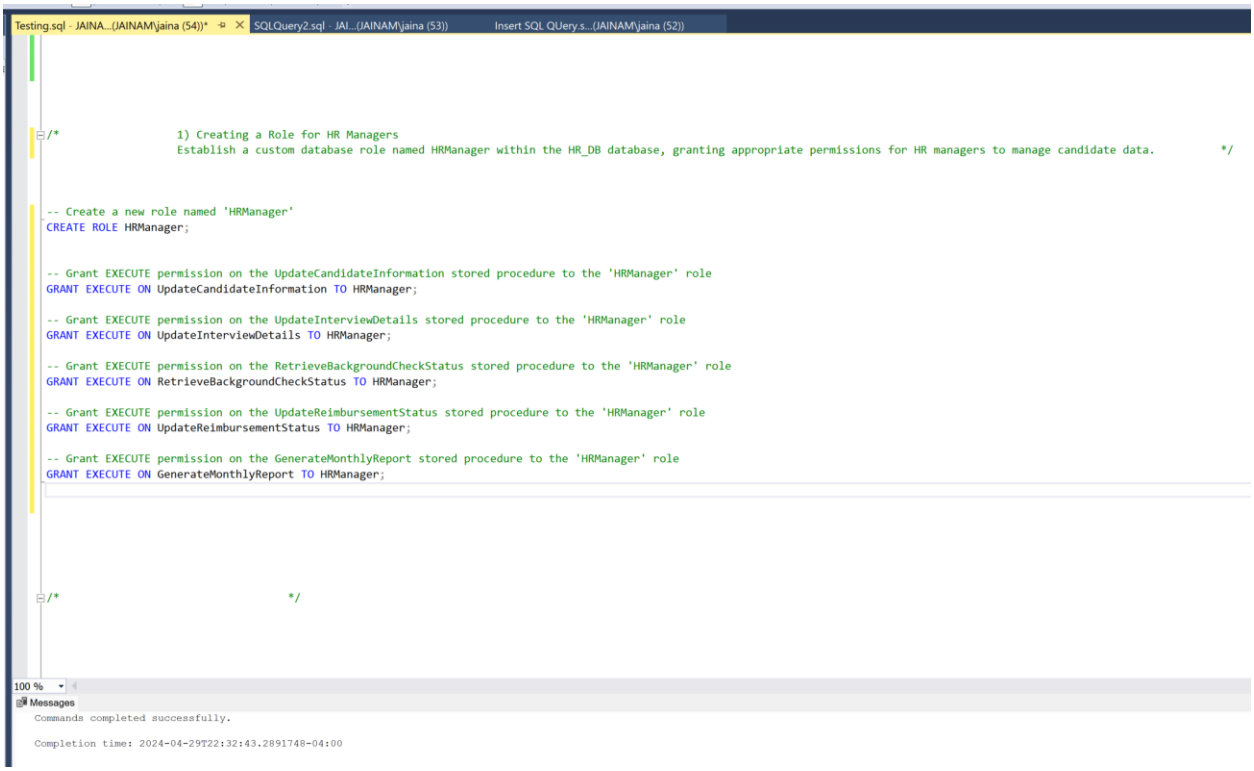


Fig 38: HRManager_Role_Permissions

Explanation:

This SQL script creates a new database role named 'HRManager' within the HR_DB database. It grants SELECT, INSERT, UPDATE, and DELETE permissions on the Candidates table, SELECT permissions on other relevant tables such as Documents, Applications, Tests, and Evaluations, and also grants EXECUTE permission on any stored procedures related to candidate management. This role is designed to provide HR managers with the necessary permissions to manage candidate data effectively.

3. Setting Permissions for Document Access:

Objective: Permissions for accessing and updating documents uploaded by candidates.

Query:

```
/*                          -- Create a new role named 'HRManager'
                            CREATE ROLE HRManager;          this part has already
been done in the previous so no need to run this but yeah incase no need for the above script then
run to create HR Manager before proceeding */
-- Grant SELECT permission on the Documents table to the HRManager role
GRANT SELECT ON Documents TO HRManager;
```

```
-- Grant UPDATE permission on the Documents table to the HRManager role
GRANT UPDATE ON Documents TO HRManager;
```

Output:

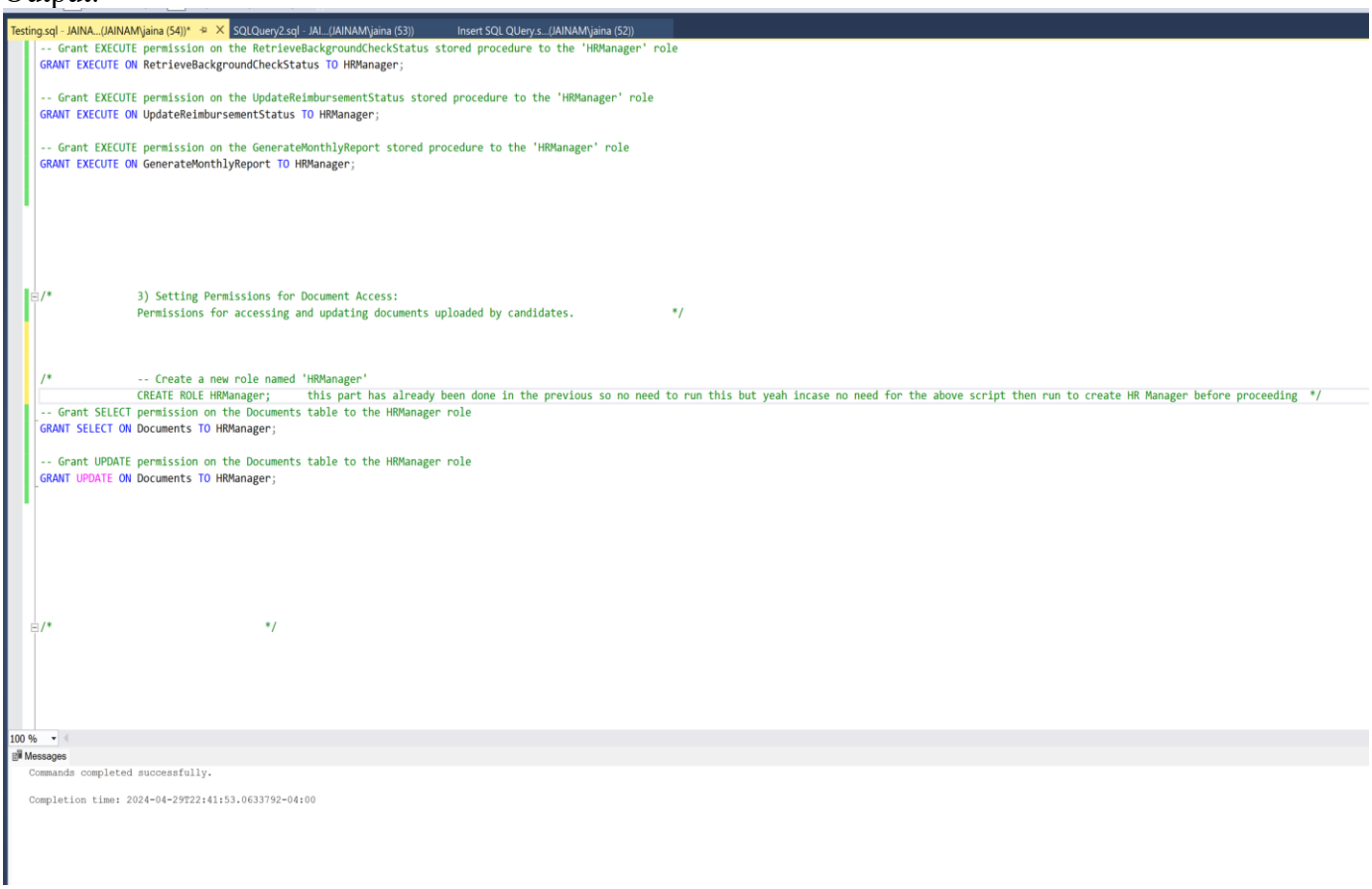


Fig 39: Setting Permissions for Document Access

Explanation:
This script grants the HRManager role both SELECT and UPDATE permissions on the Documents table, allowing HR managers to access and update documents uploaded by candidates as needed within the HR_DB database.

4. Creating a Role for Compliance Officers:

Objective: Granting permissions to monitor and manage compliance-related data such as background checks and drug tests.

Query:

```
-- Create a new database role named ComplianceOfficer
CREATE ROLE ComplianceOfficer;

-- Grant SELECT permission on the BackgroundChecks table to the ComplianceOfficer role
GRANT SELECT ON BackgroundChecks TO ComplianceOfficer;

-- Grant SELECT permission on the DrugTests table to the ComplianceOfficer role
GRANT SELECT ON DrugTests TO ComplianceOfficer;
```

Output:

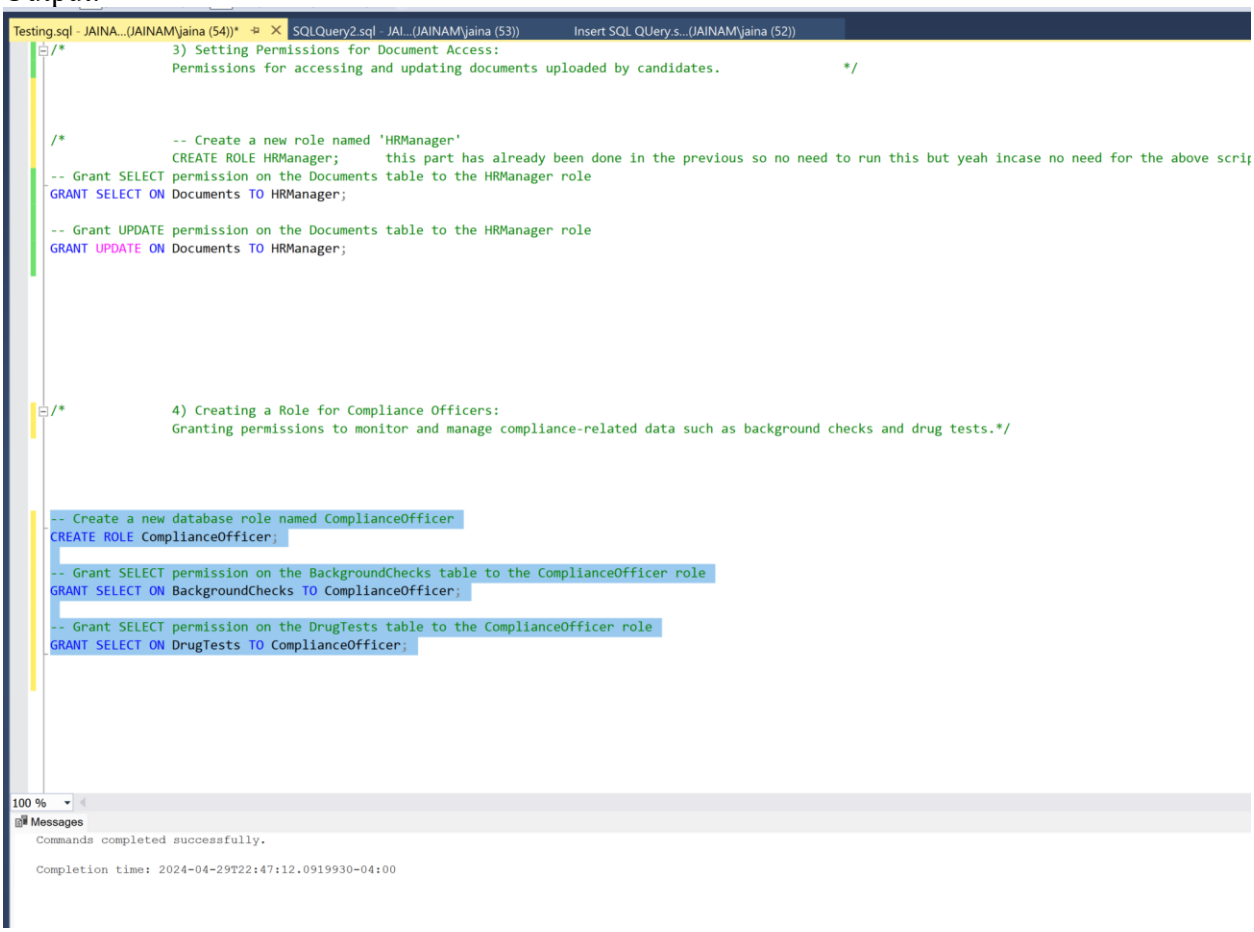


Fig 40: Creating a Role for Compliance Officers

Explanation:

This script creates a new database role named ComplianceOfficer within the HR_DB database. It then grants SELECT permissions on the BackgroundChecks and DrugTests tables to the ComplianceOfficer role, allowing compliance officers to monitor and manage compliance-related data effectively.

vii) Business Report

I. MonthlyApplicationTrendsReport

Objective: Generate a report summarizing the monthly trends in job applications.

Query:

```
SELECT
    YEAR(StatusFlow.timestamp) AS Year,
    MONTH(StatusFlow.timestamp) AS Month,
    COUNT(*) AS NumberOfApplications
FROM
    StatusFlow
INNER JOIN
    Applications ON StatusFlow.candidate_id = Applications.CandidateID
GROUP BY
    YEAR(StatusFlow.timestamp),
    MONTH(StatusFlow.timestamp)
ORDER BY
    YEAR(StatusFlow.timestamp) DESC,
    MONTH(StatusFlow.timestamp) DESC;
```

Output:

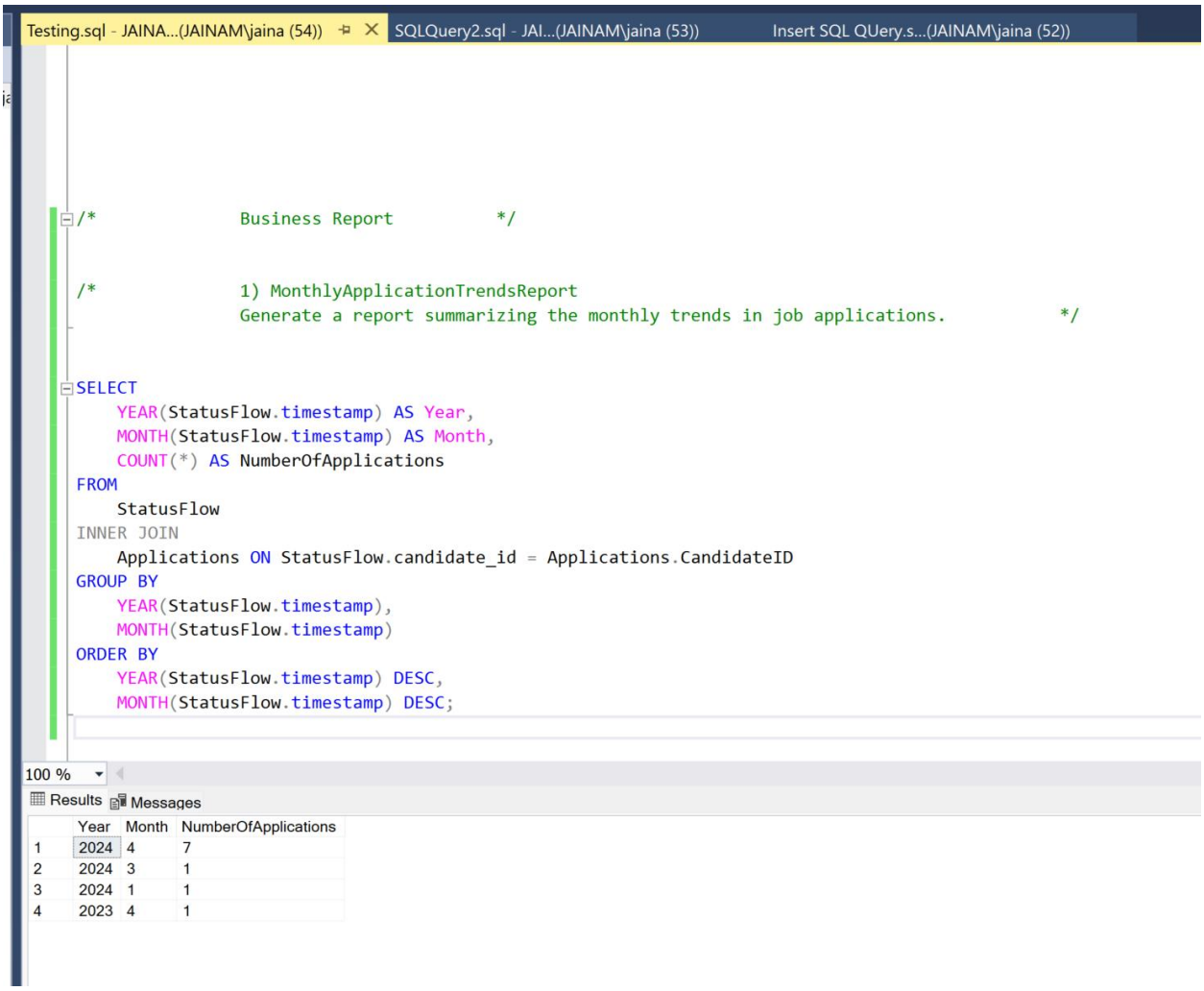


Fig 41: MonthlyApplicationTrendsFigure

Explanation:
This query retrieves the count of job applications for each month and year by joining the StatusFlow and Applications tables based on the candidate ID. It groups the data by year and month, providing insights into the monthly trends of job applications over time.

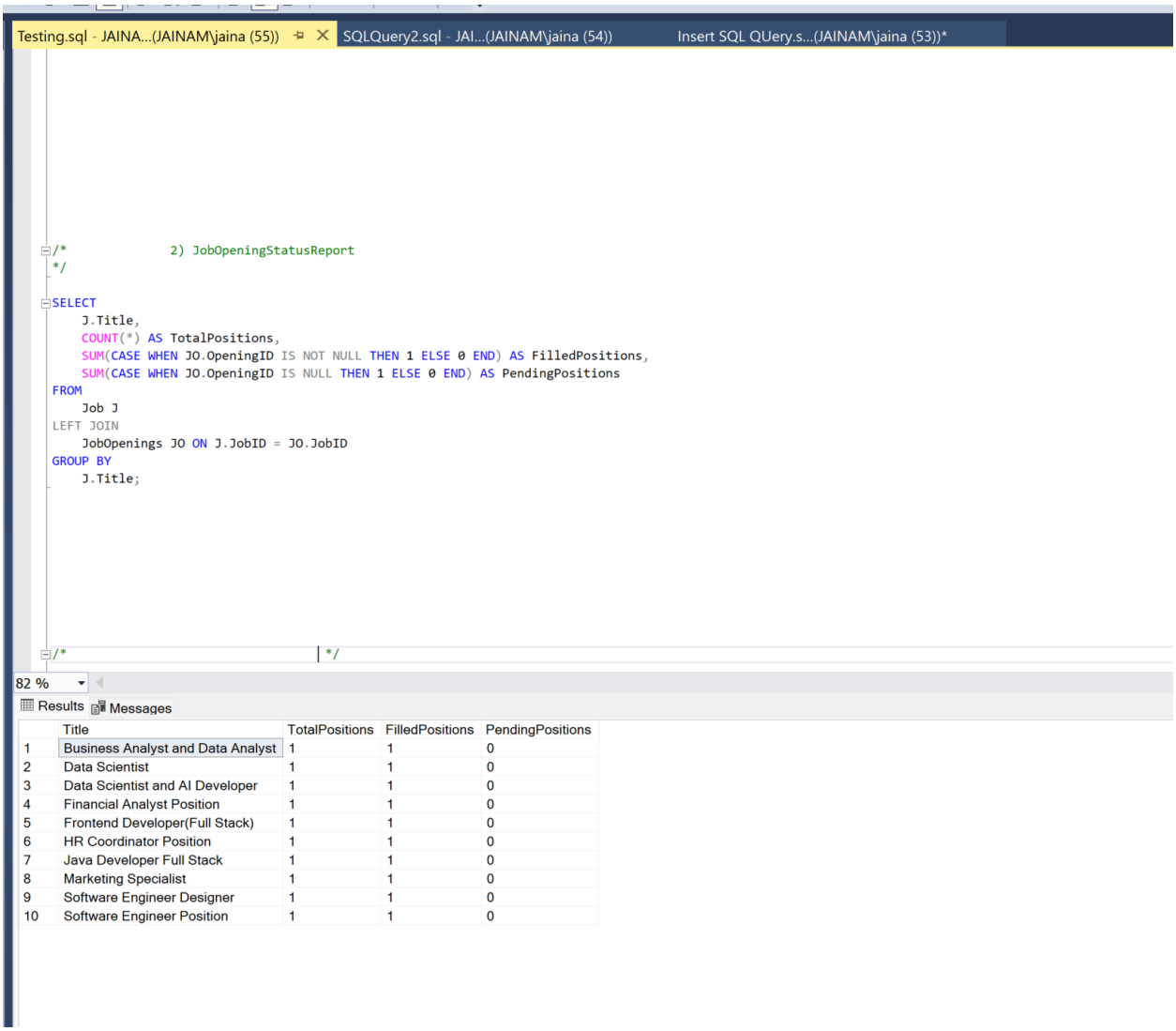
II. JobOpeningStatusReport

Objective: Track the status of job openings, including the number of positions filled and pending.

Query:

```
SELECT
    J.Title,
    COUNT(*) AS TotalPositions,
    SUM(CASE WHEN JO.OpeningID IS NOT NULL THEN 1 ELSE 0 END) AS
FilledPositions,
    SUM(CASE WHEN JO.OpeningID IS NULL THEN 1 ELSE 0 END) AS PendingPositions
FROM
    Job J
LEFT JOIN
    JobOpenings JO ON J.JobID = JO.JobID
GROUP BY
    J.Title;
```

Output:



	Title	TotalPositions	FilledPositions	PendingPositions
1	Business Analyst and Data Analyst	1	1	0
2	Data Scientist	1	1	0
3	Data Scientist and AI Developer	1	1	0
4	Financial Analyst Position	1	1	0
5	Frontend Developer(Full Stack)	1	1	0
6	HR Coordinator Position	1	1	0
7	Java Developer Full Stack	1	1	0
8	Marketing Specialist	1	1	0
9	Software Engineer Designer	1	1	0
10	Software Engineer Position	1	1	0

Fig 42: JobOpeningStatusReport

Explanation:

This query retrieves the title of each job along with the total number of positions, the number of filled positions, and the number of pending positions. It uses a LEFT JOIN between the Job table and the JobOpenings table to ensure that all jobs are included in the result, even if they have no openings. The SUM and CASE statements are used to calculate the count of filled and pending positions based on the NumberOfPositionsFilled column in the JobOpenings table.

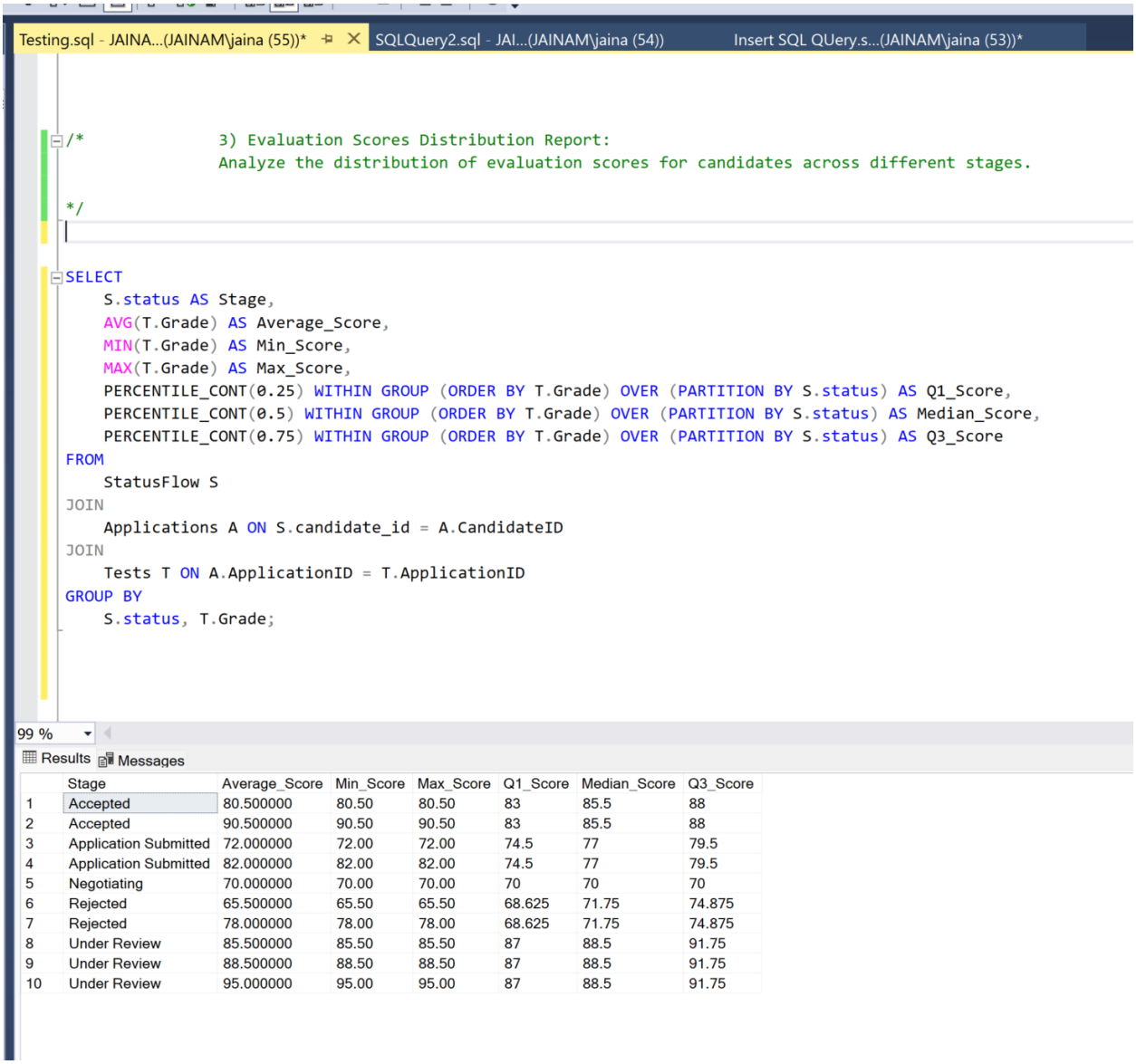
III. Evaluation Scores Distribution Report:

Objective: Analyze the distribution of evaluation scores for candidates across different stages.

Query:

```
SELECT
    S.status AS Stage,
    AVG(T.Grade) AS Average_Score,
    MIN(T.Grade) AS Min_Score,
    MAX(T.Grade) AS Max_Score,
    PERCENTILE_CONT(0.25) WITHIN GROUP (ORDER BY T.Grade) OVER (PARTITION
BY S.status) AS Q1_Score,
    PERCENTILE_CONT(0.5) WITHIN GROUP (ORDER BY T.Grade) OVER (PARTITION
BY S.status) AS Median_Score,
    PERCENTILE_CONT(0.75) WITHIN GROUP (ORDER BY T.Grade) OVER (PARTITION
BY S.status) AS Q3_Score
FROM
    StatusFlow S
JOIN
    Applications A ON S.candidate_id = A.CandidateID
JOIN
    Tests T ON A.ApplicationID = T.ApplicationID
GROUP BY
    S.status, T.Grade;
```

Output:



	Stage	Average_Score	Min_Score	Max_Score	Q1_Score	Median_Score	Q3_Score
1	Accepted	80.500000	80.50	80.50	83	85.5	88
2	Accepted	90.500000	90.50	90.50	83	85.5	88
3	Application Submitted	72.000000	72.00	72.00	74.5	77	79.5
4	Application Submitted	82.000000	82.00	82.00	74.5	77	79.5
5	Negotiating	70.000000	70.00	70.00	70	70	70
6	Rejected	65.500000	65.50	65.50	68.625	71.75	74.875
7	Rejected	78.000000	78.00	78.00	68.625	71.75	74.875
8	Under Review	85.500000	85.50	85.50	87	88.5	91.75
9	Under Review	88.500000	88.50	88.50	87	88.5	91.75
10	Under Review	95.000000	95.00	95.00	87	88.5	91.75

Fig 43: Evaluation Scores Distribution Report

Explanation:
This query retrieves the average, minimum, maximum, first quartile (Q1), median, and third quartile (Q3) scores for evaluation tests at different stages of the application process.
It joins the StatusFlow, Applications, and Tests tables based on candidate IDs and application IDs to get the relevant data. The PERCENTILE_CONT function is used to calculate quartile scores within each stage.
The results are grouped by the stage and Grade of the application process.

IV. Maximum Test Score Report:

Objective: Display the maximum score achieved for a specific test across all candidates.

Query:

```
        SELECT
   Type AS Test_Type,
   MAX(Grade) AS Maximum_Score
FROM Tests
GROUP BY Type;
```

Output:

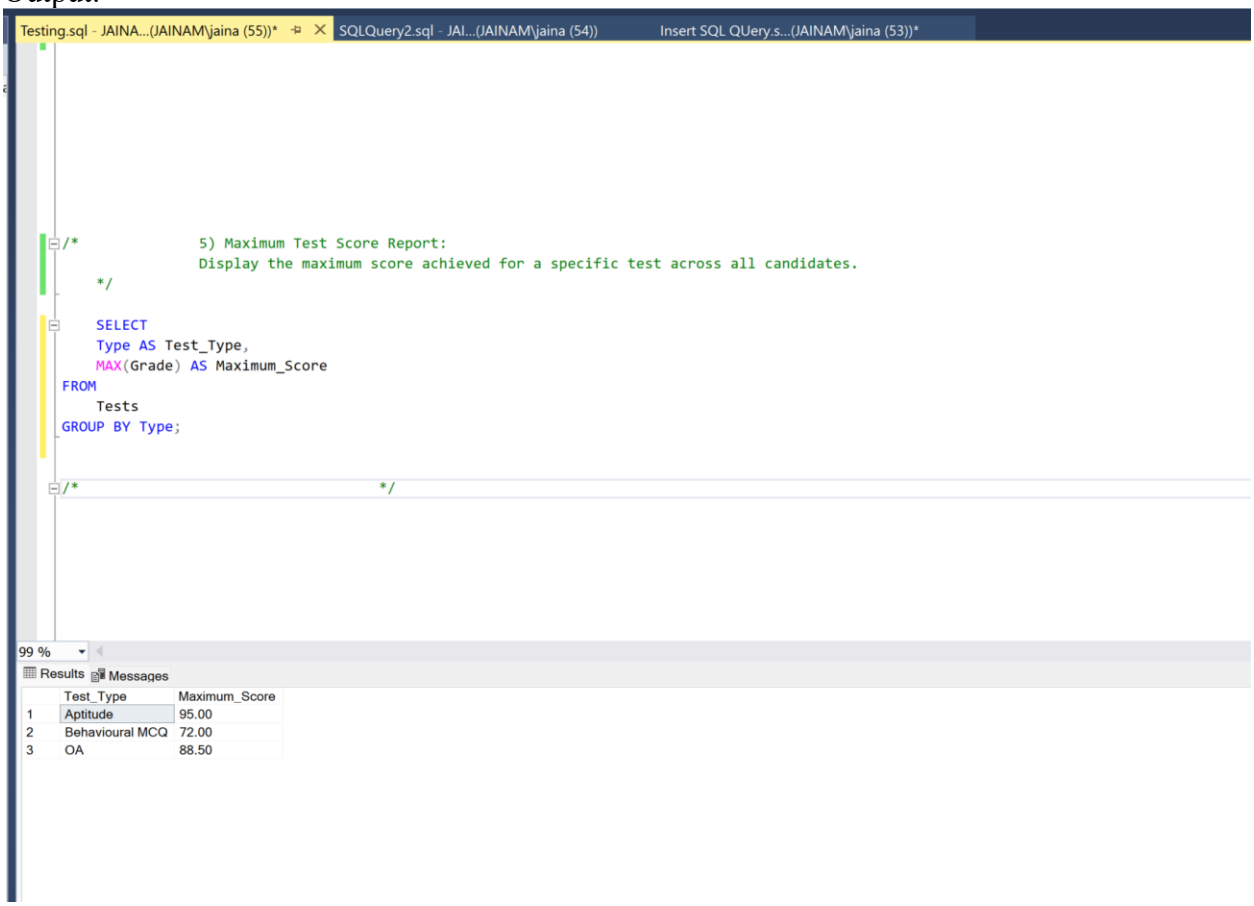


Fig 44: Maximum Test Score Report:

Explanation:

This query selects the test type (Type column) and calculates the maximum grade (Grade column) achieved for each test type across all candidates. The MAX() function is used to find the maximum score, and the results are grouped by the test type using the GROUP BY clause. This provides a summary of the maximum scores achieved for each test type.

4.Conclusion:

In conclusion, the development and implementation of the HR_DB database system have proven to be an asset in managing various aspects of human resources, recruitment, and candidate evaluation processes. Through the course of this project, we have successfully designed and deployed a comprehensive database schema that caters to the needs of a modern HR department. Overall, the HR_DB database system enhances efficiency, streamlines processes, and provides valuable insights into recruitment and candidate evaluation activities. By centralizing data management and automating routine tasks, it empowers HR professionals to make informed decisions and optimize resource allocation. Moving forward, continuous monitoring, maintenance, and refinement of the database system will be essential to uphold its effectiveness and adaptability in meeting the dynamic requirements of HR management.