Schema Initialization

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**Exercise 1: Control Structures**

**Scenario 1:** The bank wants to apply a discount to loan interest rates for customers above 60 years old.

CREATE DEFINER=`root`@`localhost` PROCEDURE `ApplyInterestDiscountForSeniorCustomers`()

BEGIN

DECLARE done INT DEFAULT FALSE;

DECLARE cust\_id INT;

DECLARE dob DATE;

DECLARE cur CURSOR FOR SELECT CustomerID, DOB FROM Customers;

DECLARE CONTINUE HANDLER FOR NOT FOUND SET done = TRUE;

OPEN cur;

read\_loop: LOOP

FETCH cur INTO cust\_id, dob;

IF done THEN

LEAVE read\_loop;

END IF;

-- Check age

IF TIMESTAMPDIFF(YEAR, dob, CURDATE()) > 60 THEN

-- Apply 1% discount to their loans

UPDATE Loans

SET InterestRate = InterestRate - 1

WHERE CustomerID = cust\_id;

END IF;

END LOOP;

CLOSE cur;

END

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**Scenario 2:** A customer can be promoted to VIP status based on their balance.

ALTER TABLE Customers ADD COLUMN IsVIP BOOLEAN DEFAULT FALSE;

CREATE DEFINER=`root`@`localhost` PROCEDURE `PromoteVIPCustomers`()

BEGIN

UPDATE Customers

SET IsVIP = TRUE

WHERE Balance > 10000;

END

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**Scenario 3:** The bank wants to send reminders to customers whose loans are due within the next 30 days.

CREATE DEFINER=`root`@`localhost` PROCEDURE `SendLoanDueReminders`()

BEGIN

DECLARE done INT DEFAULT FALSE;

DECLARE cust\_id INT;

DECLARE loan\_id INT;

DECLARE end\_date DATE;

DECLARE cust\_name VARCHAR(100);

DECLARE cur CURSOR FOR

SELECT l.LoanID, l.CustomerID, l.EndDate, c.Name

FROM Loans l

JOIN Customers c ON l.CustomerID = c.CustomerID

WHERE l.EndDate BETWEEN CURDATE() AND DATE\_ADD(CURDATE(), INTERVAL 30 DAY);

DECLARE CONTINUE HANDLER FOR NOT FOUND SET done = TRUE;

OPEN cur;

reminder\_loop: LOOP

FETCH cur INTO loan\_id, cust\_id, end\_date, cust\_name;

IF done THEN

LEAVE reminder\_loop;

END IF;

-- Simulate sending reminder (via SELECT message)

SELECT CONCAT('Reminder: Loan ID ', loan\_id, ' for customer ', cust\_name, ' is due on ', end\_date) AS ReminderMessage;

END LOOP;

CLOSE cur;

END

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**Exercise 3: Stored Procedures**

**Scenario 1:** The bank needs to process monthly interest for all savings accounts.

CREATE DEFINER=`root`@`localhost` PROCEDURE `ProcessMonthlyInterest`()

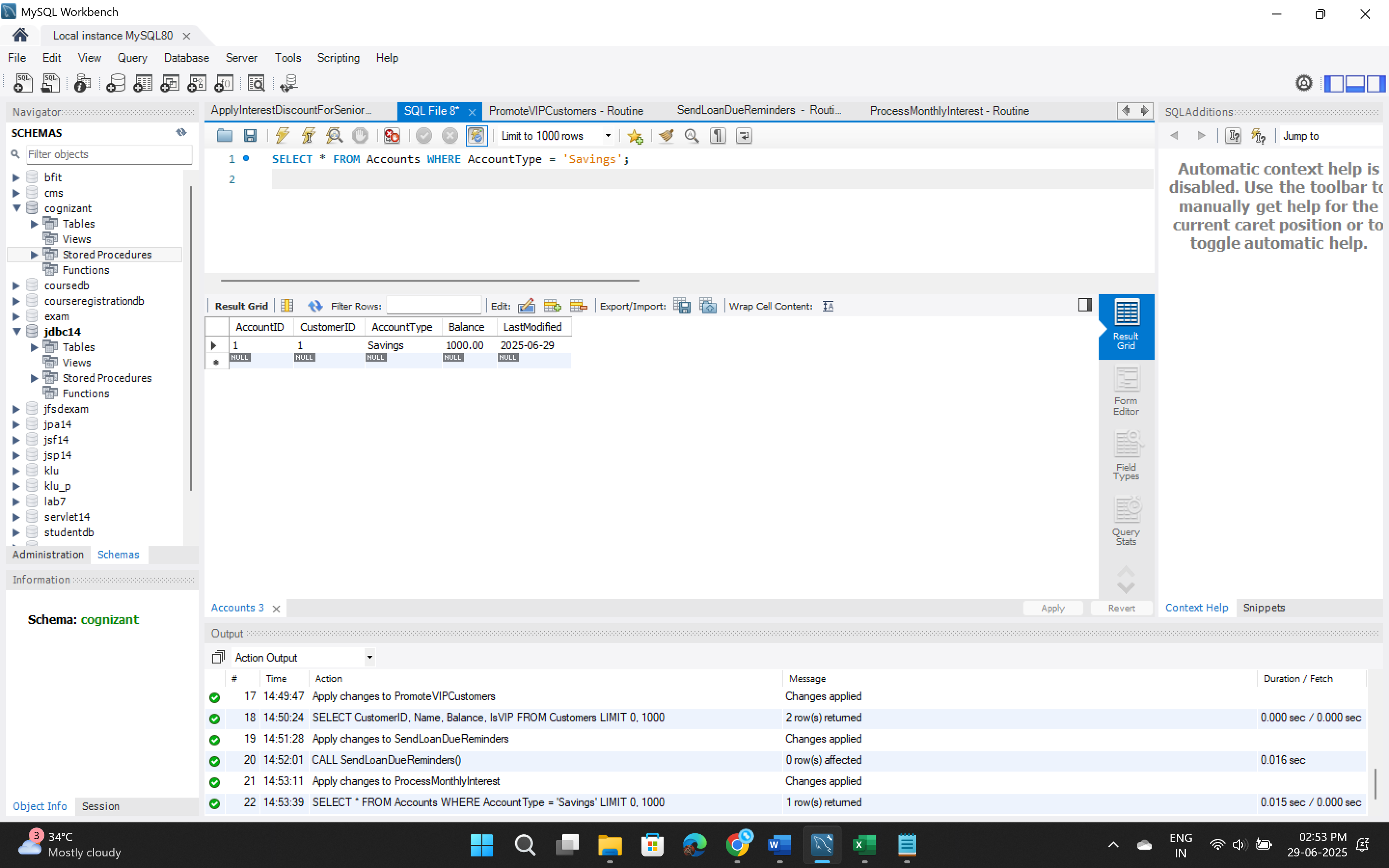
BEGIN

UPDATE Accounts

SET Balance = Balance + (Balance \* 0.01)

WHERE AccountType = 'Savings';

END



**Scenario 2:** The bank wants to implement a bonus scheme for employees based on their performance.

CREATE DEFINER=`root`@`localhost` PROCEDURE `UpdateEmployeeBonus`(

IN dept\_name VARCHAR(50),

IN bonus\_percent DECIMAL(5,2)

)

BEGIN

UPDATE Employees

SET Salary = Salary + (Salary \* bonus\_percent / 100)

WHERE Department = dept\_name;

END

CALL UpdateEmployeeBonus('IT', 10);

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**Scenario 3:** Customers should be able to transfer funds between their accounts

CREATE DEFINER=`root`@`localhost` PROCEDURE `TransferFunds`(

IN source\_account\_id INT,

IN target\_account\_id INT,

IN transfer\_amount DECIMAL(10,2)

)

BEGIN

DECLARE source\_balance DECIMAL(10,2);

-- Get current balance of source account

SELECT Balance INTO source\_balance

FROM Accounts

WHERE AccountID = source\_account\_id;

-- Check if sufficient balance

IF source\_balance >= transfer\_amount THEN

-- Deduct from source

UPDATE Accounts

SET Balance = Balance - transfer\_amount

WHERE AccountID = source\_account\_id;

-- Add to target

UPDATE Accounts

SET Balance = Balance + transfer\_amount

WHERE AccountID = target\_account\_id;

ELSE

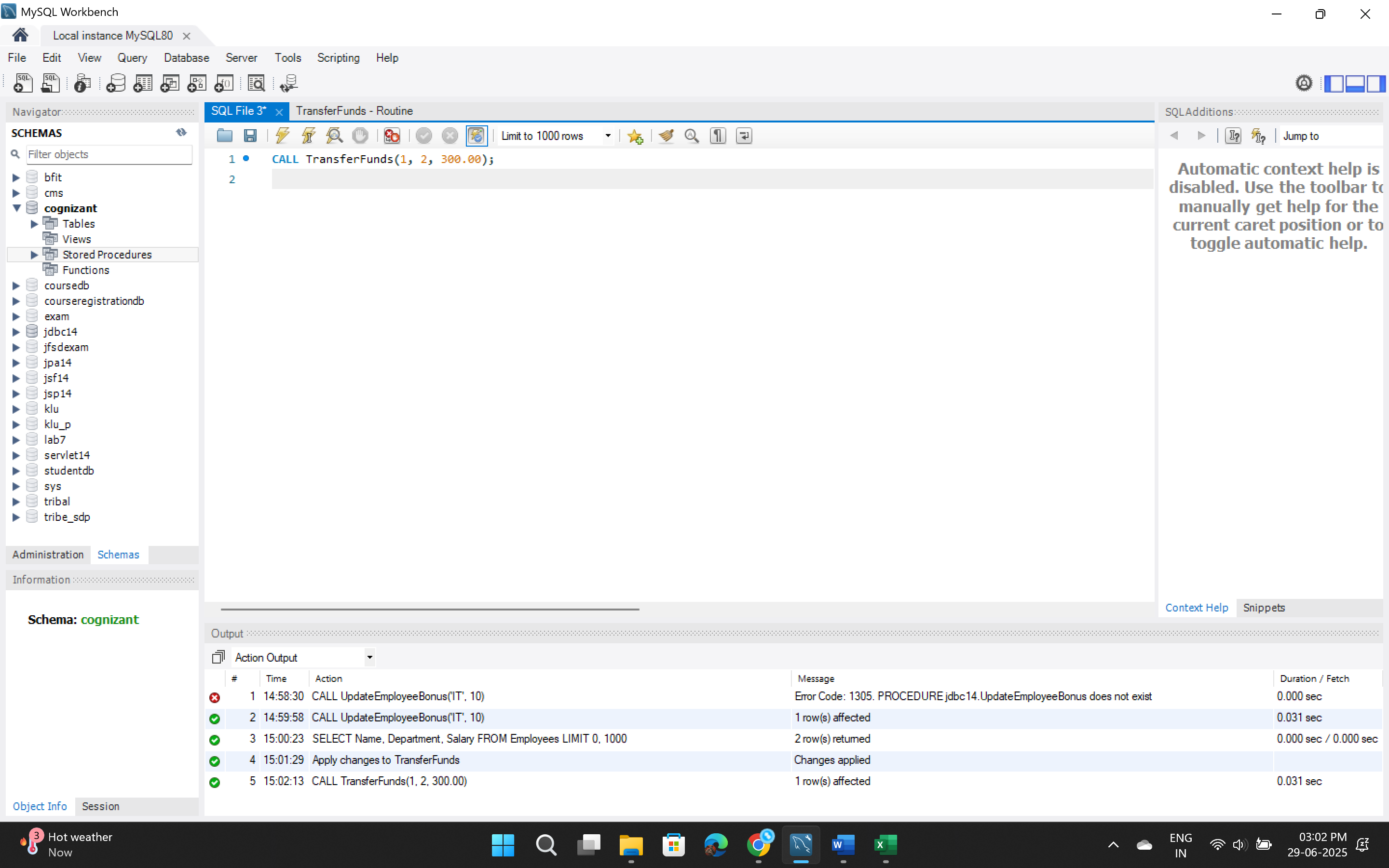
SIGNAL SQLSTATE '45000'

SET MESSAGE\_TEXT = 'Insufficient funds in source account';

END IF;

END

CALL TransferFunds(1, 2, 300.00);



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