SQL Server 2012 – Database Development

Lesson 4: Managing Transactions

Capgemini

Lesson Objectives

➢In this lesson, you will learn:
- Managing Transactions
- TCL statements
- @@trancount global variable

Introduction

➢ A sequence of operations performed as a single logical unit of work

➢ It can be a set of DDL/DML statements

➢ Transactions are ATOMIC -either all operations are performed or none of it is performed .

➢ Data in the database is in consistent stage before and after the transaction

➢ A transaction can be implicit or explicit

Transaction

➢ A transaction can have the following outcome
  - COMMIT : Changes made on the data are made permananent
  - ROLLBACK : Undo the transaction , data goes back to the original state

➢ Implicit Transactions automatically starts a new transaction after the current transaction is committed /rolled back .Does not require explicit mention of start /end of transaction

➢ Explicit transaction requires defining the beginning and end of the transactions
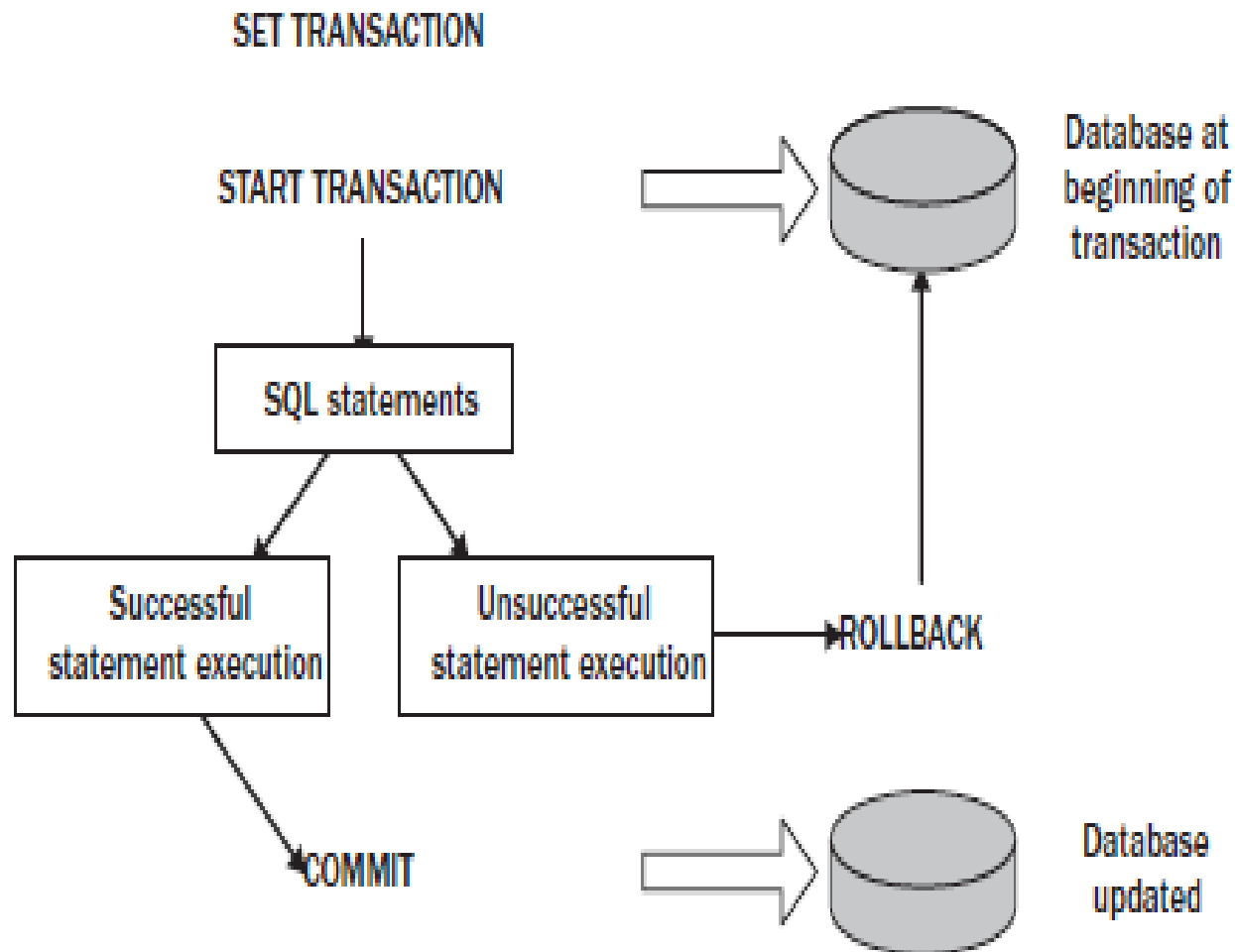
Transaction

➢Implicit Transaction
   Insert into Employees values (…)
   Update employees
   Set …..

➢Explicit Transaction
   BEGIN TRAN
   insert into Employees (..)
   Update Employees Set …
   COMMIT [WORK]

Start Transaction

SET TRANSACTION

START TRANSACTION

SQL statements

Successful statement execution

Unsuccessful statement execution → ROLLBACK

COMMIT

Database at beginning of transaction

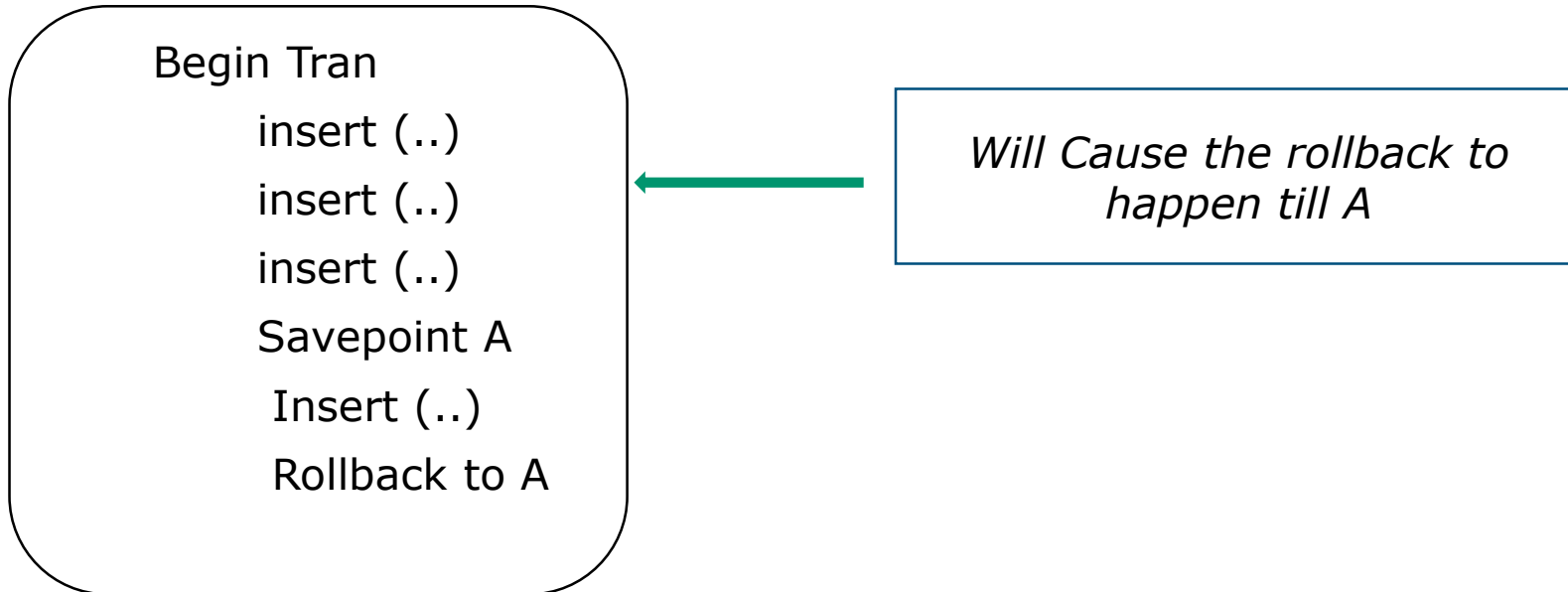Database updated

Setting the Implicit Transactions Option

➢ Automatically starts a Transaction when you execute certain statements

➢ Nested Transactions are not allowed

➢ Transaction must be explicitly completed with COMMIT or ROLLBACK TRANSACTION

➢ By default, setting is Off

```
SET IMPLICIT_TRANSACTIONS ON
```

Save Point

➢ A savepoint is a special mark inside a transaction that allows all commands that are executed after it to be rolled back to that point

➢ For example

Begin Tran

    insert (..)

    insert (..)

    insert (..)

    Savepoint A

    Insert (..)

    Rollback to A

Will Cause the rollback to happen till A

Restrictions on User-defined /Explicit Transactions

➢ Certain Statements May Not Be Included

- ALTER DATABASE
- BACKUP LOG
- CREATE DATABASE
- DROP DATABASE

- RECONFIGURE
- RESTORE DATABASE
- RESTORE LOG
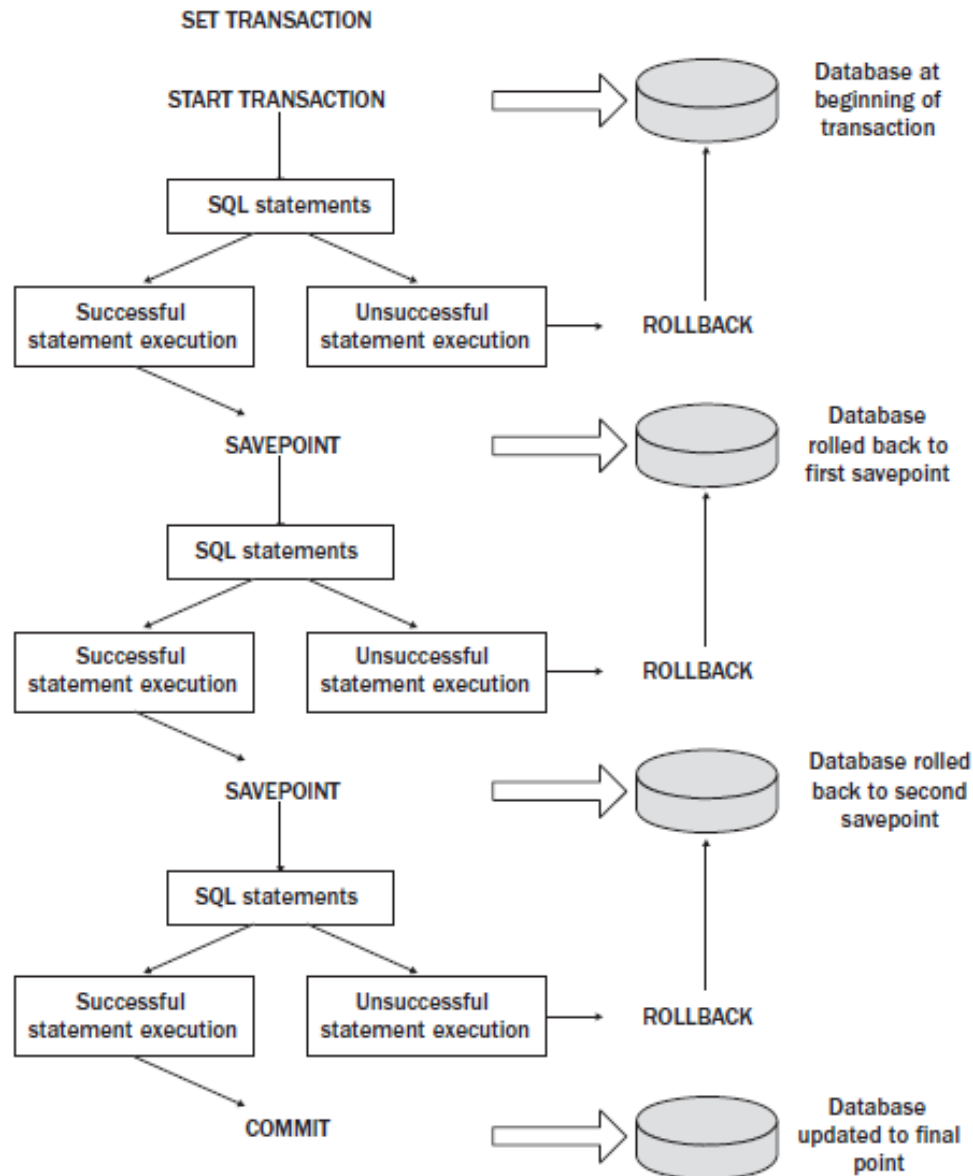- UPDATE STATISTICS

Considerations for Using Transactions

➢ Transaction Guidelines
  - Keep transactions as short as possible
  - Avoid transactions that require user interaction

➢ Issues in Nesting Transactions
  - Allowed, but not recommended
  - Use @@trancount to determine nesting level

Savepoint in Transactions

Demo

➤ Managing Transactions

Summary

In this lesson, you have learnt:

➤ How to write explicit transactions.

➤ TCL statements

Summary

Review Question

➢Question 1: ---------- is a sequence of operations performed as a single logical unit of work.

➢Question 2: ----------- transaction requires defining the beginning and end of the transactions.