BITS, PILANI – K. K. BIRLA GOA CAMPUS

Database Systems (CSF212)

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Assertions

Assertions

- An *assertion* is a predicate expressing a condition that we wish the database always to satisfy.
- An assertion in SQL takes the form

  create assertion <assertion-name> **check** <predicate>
- When an assertion is made, the system tests it for validity, and tests it again on every update that may violate the assertion.
  - This testing may introduce a significant amount of overhead; hence assertions should be used with great care.
- Asserting for all X, P(X) is achieved in a round-about fashion using not exists X such that not P(X)

Assertion Example

The sum of all loan amounts for each branch must be less than the sum of all account balances at the branch.

```
create assertion sum-constraint check
    (not exists (select * from branch
                 where (select sum(amount) from loan
                        where loan.branch-name =
                              branch.branch-name)
                       >= (select sum(amount) from account
                           where loan.branch-name =
                                 branch.branch-name)))
```

Assertion Example

Every loan has at least one borrower who maintains an account with a minimum balance or $1000.00

```
create assertion balance-constraint check
    (not exists (
        select * from loan
        where not exists (
            select *
            from borrower, depositor, account
            where loan.loan-number = borrower.loan-number
                and borrower.customer-name = depositor.customer-name
                and depositor.account-number = account.account-number
                and account.balance >= 1000)))
```