Data Control

• Purpose: to control which actions (access, update, etc.) users and user groups can perform on base tables and views
• GRANT statement: gives privileges to users
• REVOKE statement: removes privileges from users

GRANT Statement

Syntax:
GRANT privilege {, . . .}
ON tablename | viewname
TO userid {, . . .} | PUBLIC

privilege:
ALL
SELECT
INSERT
DELETE
UPDATE
ALTER
INDEX

GRANT Statement: Examples

• Example: Allow all privileges on Student_Course table to user123
  GRANT ALL
  ON Student_Course
  TO user123

• Example: Allow all privileges on Student table to everyone
  GRANT ALL
  ON Student
  TO PUBLIC

GRANT Statement: Examples

• Example: Allow only SELECT of data in IS_Student_View to user234
  GRANT SELECT
  ON IS_Student_View
  TO user234

• Example: Allow SELECT and UPDATE of Course table to user345 and user456
  GRANT SELECT, UPDATE
  ON Course
  TO user345, user456

Note: All views in an external view are normally granted the same privileges

Processing Tables or Views from Different Accounts

• To process tables or views from an account to which privileges have been granted, prefix the table name or view name in the SQL statement by the userid of the account where the table or view is stored:
  useridtablename
  useridviewname

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Example

Assume:
- Course table is stored in the account of user111
- GRANT statement executed in account of user111 to grant
  SELECT and UPDATE privilege on the Course table to user345
- You are logged on to the account of user345

The following statements process the Course table in the
account of user111 from the account of user345:

```sql
SELECT Course_Name
FROM user111.Course
WHERE Course_Number = 'ISYS 263'

UPDATE user111.Course
SET Time = '12:30'
WHERE Course_Number = 'ISYS 565'
```

The following statement will not work
because the necessary privilege has not
been granted to user345:

```sql
DELETE FROM user111.Course
WHERE Course_Number = 'ISYS 464'
```

REVOKE Statement

Syntax:

```sql
REVOKE privilege {, . . .}
ON tablename | viewname
FROM userid {, . . .} | PUBLIC
```

Example: Remove all privileges on the Student_Course
table from user123

```sql
REVOKE ALL
ON Student_Course
FROM user123
```

Example: Remove UPDATE privilege on the Student table
from everyone

```sql
REVOKE UPDATE
ON Student
FROM PUBLIC
```

Who Should Have Which Privileges?

<table>
<thead>
<tr>
<th>SELECT table</th>
<th>UPDATE, INSERT, DELETE table</th>
<th>ALTER, INDEX table</th>
<th>SELECT view</th>
<th>UPDATE, INSERT, DELETE view</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBA staff</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Programmer</td>
<td></td>
<td></td>
<td>If needed for program</td>
<td>If needed for program</td>
</tr>
<tr>
<td>User</td>
<td></td>
<td></td>
<td>If needed for job</td>
<td>If needed for job</td>
</tr>
</tbody>
</table>

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