1814ict/2814ict/7003ict/1011ICT: Data Management/ Database Design/ Applied Computing

Topic 4.2: SELECT statements
(Chapter 7)

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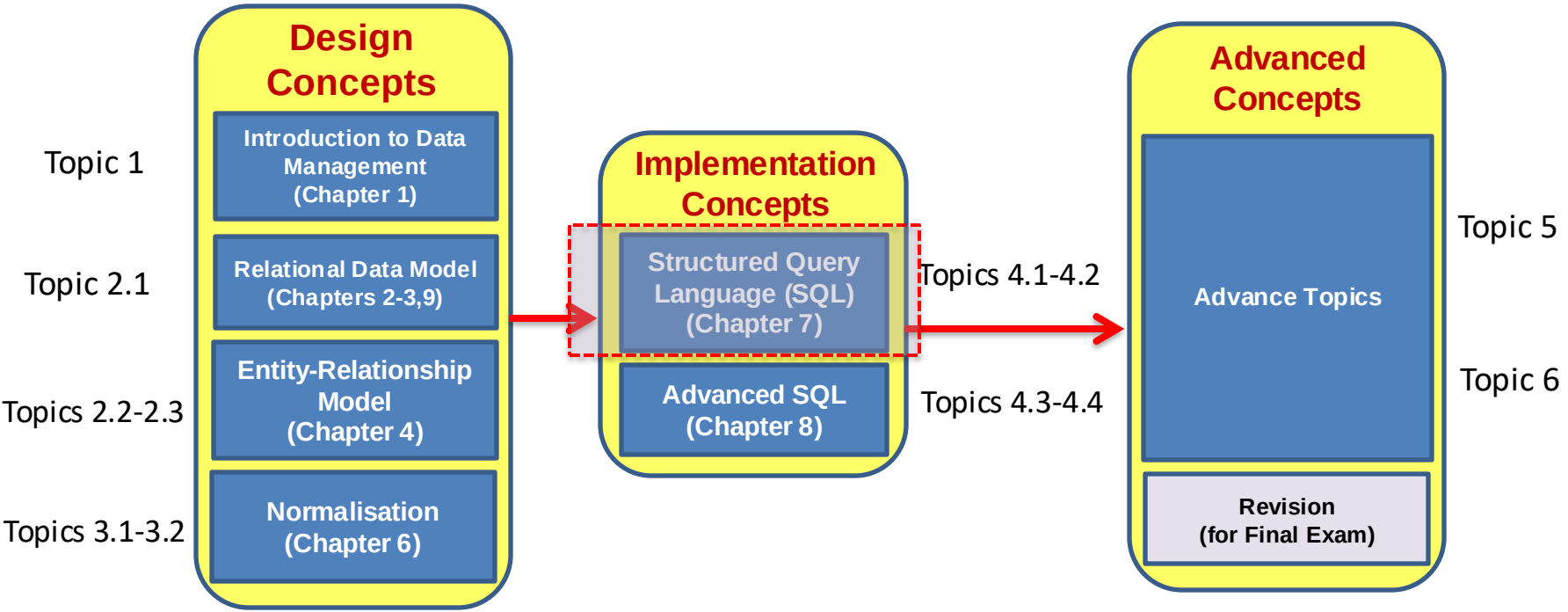
Course bigger picture

- Chapter references are to textbook *Database Systems: Design, Implementation, & Management - By Carlos Coronel and Steven Morris*



Learning Outcomes

At the end of this lecture students will be able to know:

- How to retrieve data from a database

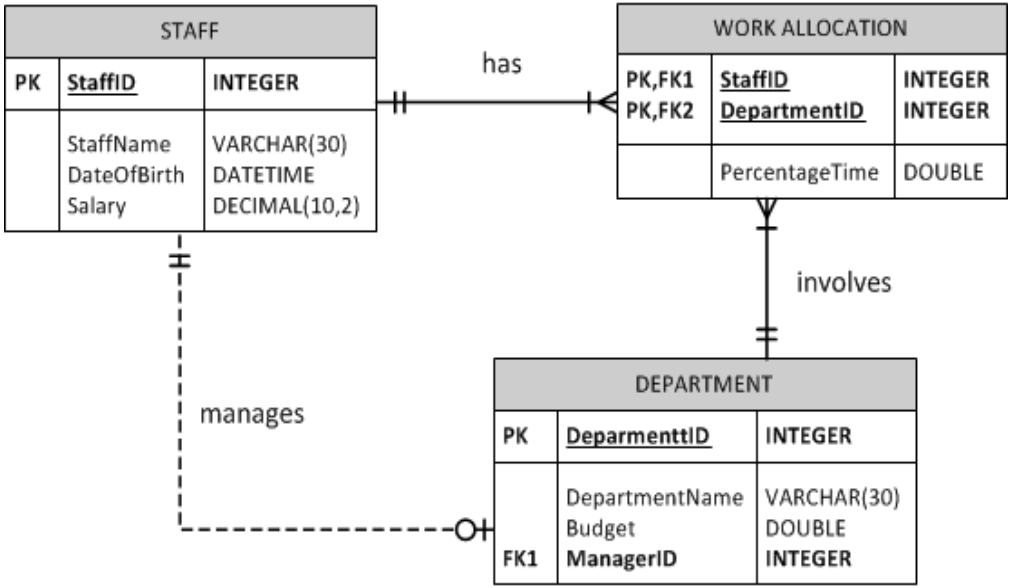
Content

- SELECT statement
- Where clause
- Commands:
  - ORDER BY
  - BETWEEN
  - LIKE
  - IS
  - Operators: <, =, AND, OR, NOT etc.

Outcome 1

Recap from Topic 4.1

ERD (Physical model) and Relation Schema



Business rule:

- An employee may work in several departments, with the percentage of time spent in each department being recorded in the **WORK ALLOCATION** table

STAFF(StaffID, StaffName, DateOfBirth, Salary)

DEPARTMENT(DepartmentID, DepartmentName, Budget, *ManagerID*)

WORK ALLOCATION(*StaffID*, *DepartmentID*, PercentageTime)

Creation of table and insertion of data

- DDL, DML, DCL, TCL

- Three Steps for creating a new database
  1. Create Database
  2. Create Tables
  3. Insert data into tables

```
CREATE DATABASE IF NOT EXISTS
DB_Week7;
USE DB_Week7;
```

```
CREATE TABLE IF NOT EXISTS DEPARTMENT(
    DepartmentID        INT PRIMARY KEY AUTO_INCREMENT,
    DepartmentName      VARCHAR(30),
    Budget                DOUBLE,
    ManagerID           INT NOT NULL,
    FOREIGN KEY (ManagerID) REFERENCES Staff(StaffID)
) ENGINE=InnoDB;
```

```
INSERT INTO staff VALUES (NULL, 'Buffy Summers', '1987-09-15', 27000);
INSERT INTO Staff(StaffName, DateOfBirth, Salary) VALUES ('Teddy Bear', '1983-12-03', 87125.02);
INSERT INTO DEPARTMENT
    VALUES (1, 'Sales', 500000, 2);
```

Update, delete data and drop table

- **Additional DML:**
  - UPDATE
  - DELETE

```
UPDATE Staff
SET Salary = 1.1 * Salary;
```

```
DELETE
FROM Staff2
WHERE Salary > 80000;
```

- **Additional DDL:**
  - DROP table
  - ALTER table
    - ADD column
    - MODIFY column
    - DROP column

```
DROP TABLE Staff2;
```

```
ALTER TABLE Staff
ADD  Address VARCHAR(30);
```

```
ALTER TABLE Staff3
MODIFY Salary INT(11);
```

```
ALTER TABLE Staff
DROP COLUMN Address;
```

- **Constraints**
  - Entity integrity
  - Referential integrity
  - NOT NULL
  - UNIQUE
  - DEFAULT
  - CHECK

```
CREATE TABLE IF NOT EXISTS DEPARTMENT(
        DepartmentID        INT PRIMARY KEY
AUTO_INCREMENT,
        DepartmentName      VARCHAR(30),
        Budget              DOUBLE,
        ManagerID           INT NOT NULL,
        FOREIGN KEY (ManagerID) REFERENCES
Staff(StaffID)
) ENGINE=InnoDB;
```

```
CREATE TABLE CUSTOMER (
CUS_CODE        NUMBER          PRIMARY KEY,
CUS_LNAME       VARCHAR(15)     NOT NULL,
CUS_FNAME       VARCHAR(15)     NOT NULL,
CUS_INITIAL     CHAR(1),
CUS_AREACODE    CHAR(3)         DEFAULT '615'   NOT NULL
                                CHECK(CUS_AREACODE IN
                                ('615','713','931')),
CUS_PHONE       CHAR(8)         NOT NULL,
CUS_BALANCE     NUMBER(9,2)     DEFAULT 0.00,
CONSTRAINT CUS_UI1 UNIQUE (CUS_LNAME, CUS_FNAME));
```

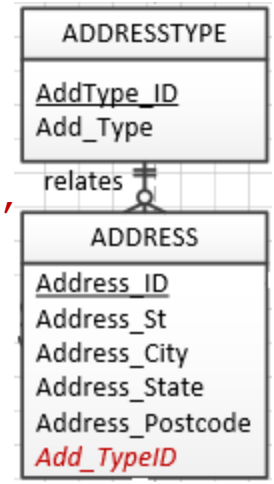
Adding Foreign Key after table creation

- Create AddressType table

```
CREATE TABLE IF NOT EXISTS ADDRESSTYPE(
AddType_ID CHAR(1) PRIMARY KEY,
Add_Type VARCHAR(15)
) ENGINE = INNODB;
```

- Create Address table

```
CREATE TABLE IF NOT EXISTS ADDRESS(
ADDRESS_ID INT PRIMARY KEY AUTO_INCREMENT,
Address_St VARCHAR(50),
Address_City VARCHAR(30),
Address_State VARCHAR(3),
Address_Postcode CHAR(4),
Add_TypeID  CHAR(1)
) ENGINE = INNODB;
```



- Add Foreign Key to Address table

```
ALTER table address
ADD FOREIGN key (Add_TypeID) REFERENCES addresstype(Add_TypeID);
```

Thank you