

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

Topic 4.2: SELECT statements (Chapter 7)

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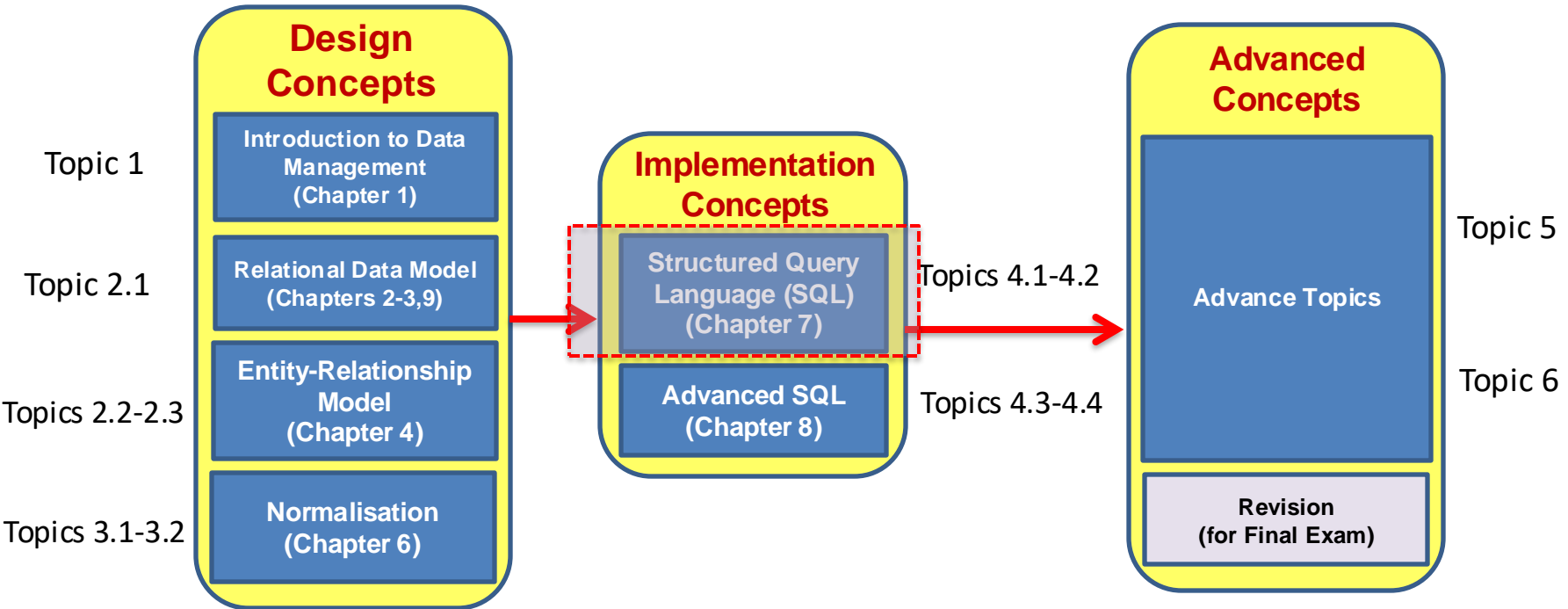
School of Information and Communication Technology

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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

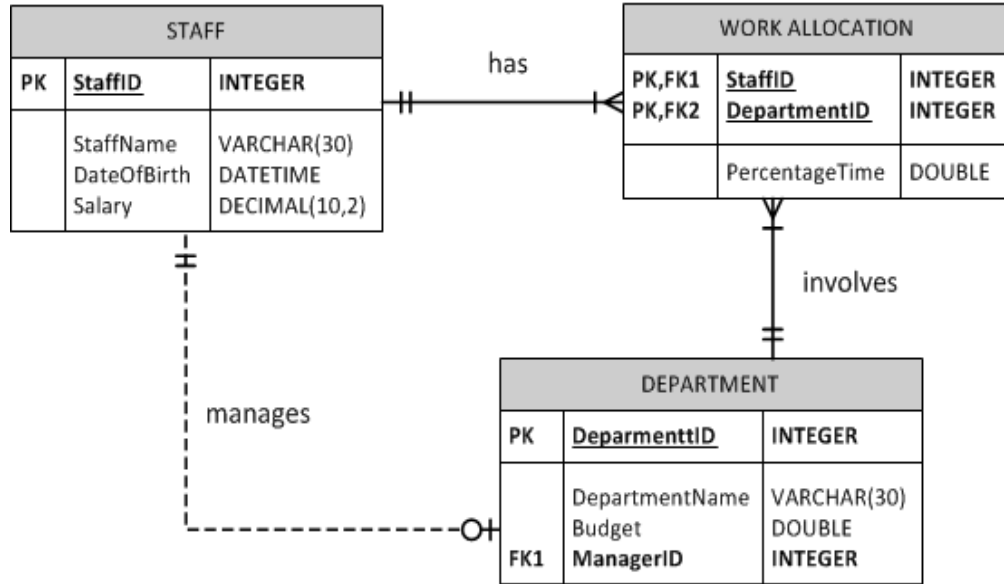
Content

- 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));
```

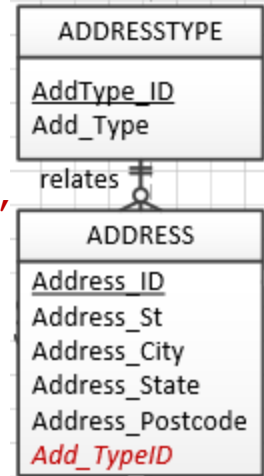

Adding Foreign Key after table creation

- 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