IIO30120 Database design (5 ECTS)

Course introduction

Jouni Huotari

2015

http://homes.jamk.fi/~huojo/opetus/IIO30120/

jamk.fi

Objectives

You

- understand conceptual modeling and database design as part of the development of information systems
- can perceive information and related rules of the application area at a conceptual level
- can make descriptions (with a CASE tool) of the information objects of the application area and their interrelations
- can make a normalized relational model database description based on a conceptual model

Items of Assessment

Mandatory:

- Assignment (database documentation, presentation etc.): 40 points
- Exam (two parts): 20 + 20 = 40 points

Optional (but affect grading):

- Exercises and assignments in the Optima learning environment: 10 points
- Learning report: 10 points

Grading scale

Points	Grade	Explanation
0 – 24.9	0	☹
25 – 39.9	1	Mastery of the basics
40 – 54.9	2	😐
55 – 69.9	3	Database has been designed and documented rather comprehensively and nearly faultlessly, good knowledge of modeling
70 – 84.9	4	☺
85 –	5	Exemplary performance in all the subareas; the choices are well justified and the meta data has been saved, innovative solution, excellent modeling competence

Choosing the topic and the group

- Size of the group: 2-4 persons
- Choose a topic which solves a real problem
- Size of the database: ~ 10-20 concepts (when normalized to 3rd normal form => ~ 20 tables)

Exam

- 1st part contains typical modeling tasks such as finding errors from an ER diagram or writing a conceptual and logical model from a given description
- 2nd part is applied modeling task: design a database according to a given requirements specification by using a CASE tool; all learning material is available
- Approximately three hours for both parts

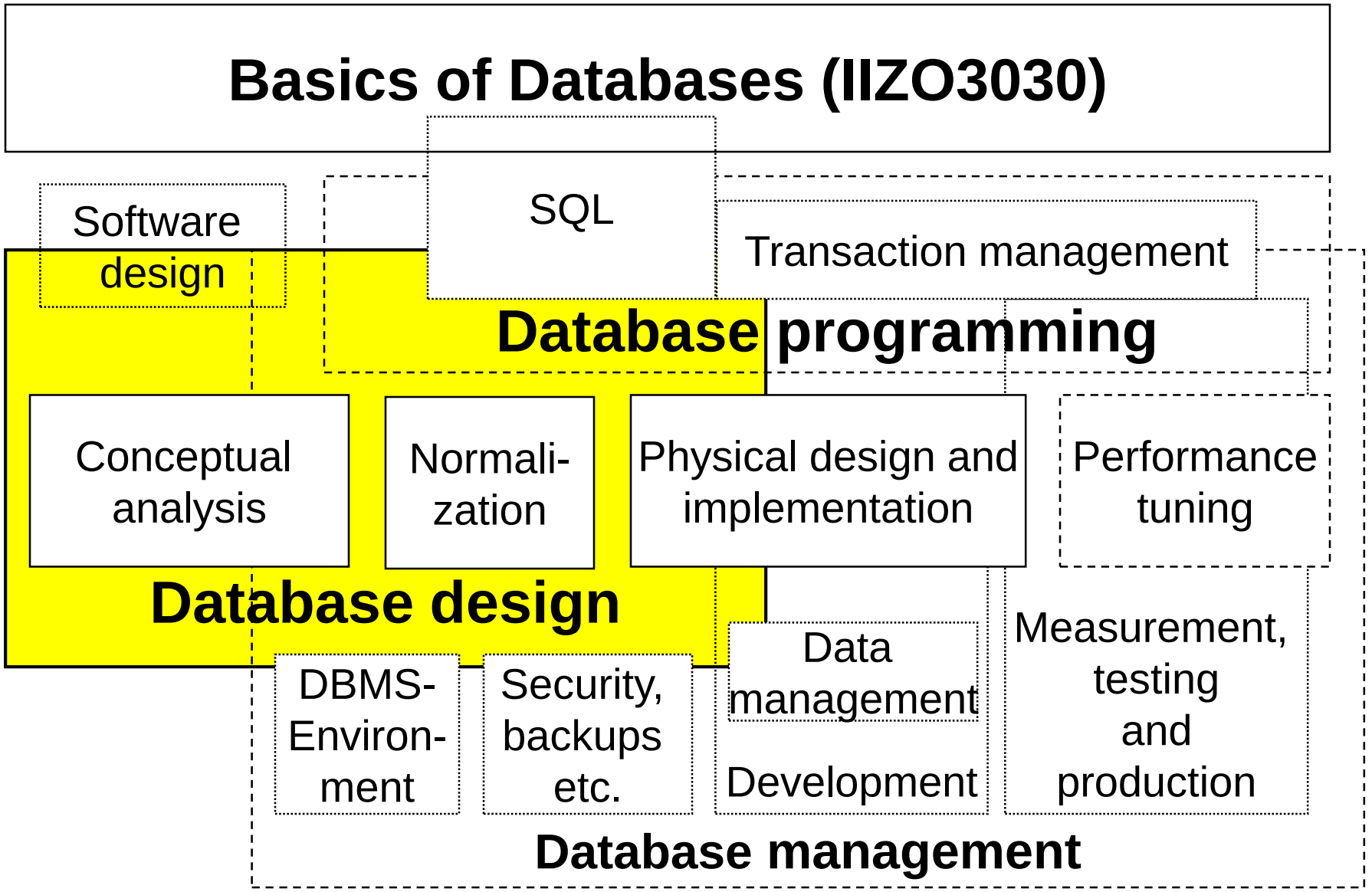
Learning report

- In the beginning: your background, personal goals etc.
- Every week: what you have learned etc.
- In the end: how did you achieve your goals, what things to improve etc.
- Return it to the Optima environment
- Detailed information: http://homes.jamk.fi/~huojo/opetus/IIO30120/LearningReport.pdf
- Word template
  - http://homes.jamk.fi/~huojo/mallit/Oppimisraportti.dot
  - http://homes.jamk.fi/~huojo/mallit/LearningDiary.doc

Learning material

- Slides (both in Schedule pages and in Optima)
- Tietokantojen suunnittelu & indeksointi (Hovi, Huotari, Lahdenmäki, Docendo) part I (chapters 1-9)
- Books24x7 (Nelliportaali), e.g.
  - Database Modeling and Design: Logical Design, Fifth Edition (by Toby J. Teorey, Sam S. Lightstone, Tom Nadeau and H.V. Jagadish)
  - Beginning Database Design and Implementation (by Gavin Powell)
  - Beginning Database Design: From Novice to Professional, Second Edition (by Clare Churcher)
- Connolly & Begg: Database Systems

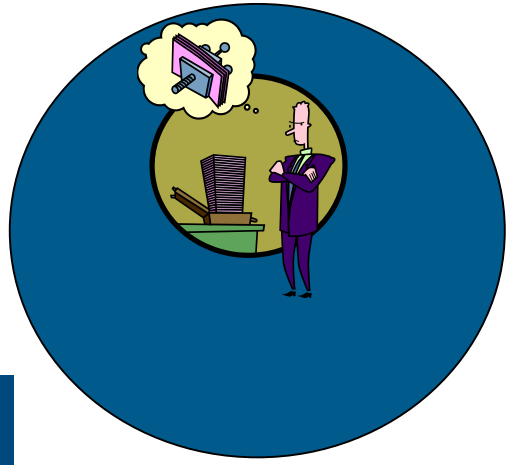
Basics of Databases (IIZO3030)



IIO30Z Databases

- IIO30120 Database design 5 ECTS
- IIO30220 Database management 5 ECTS
- IIO31100 XML Techniques 5 ECTS

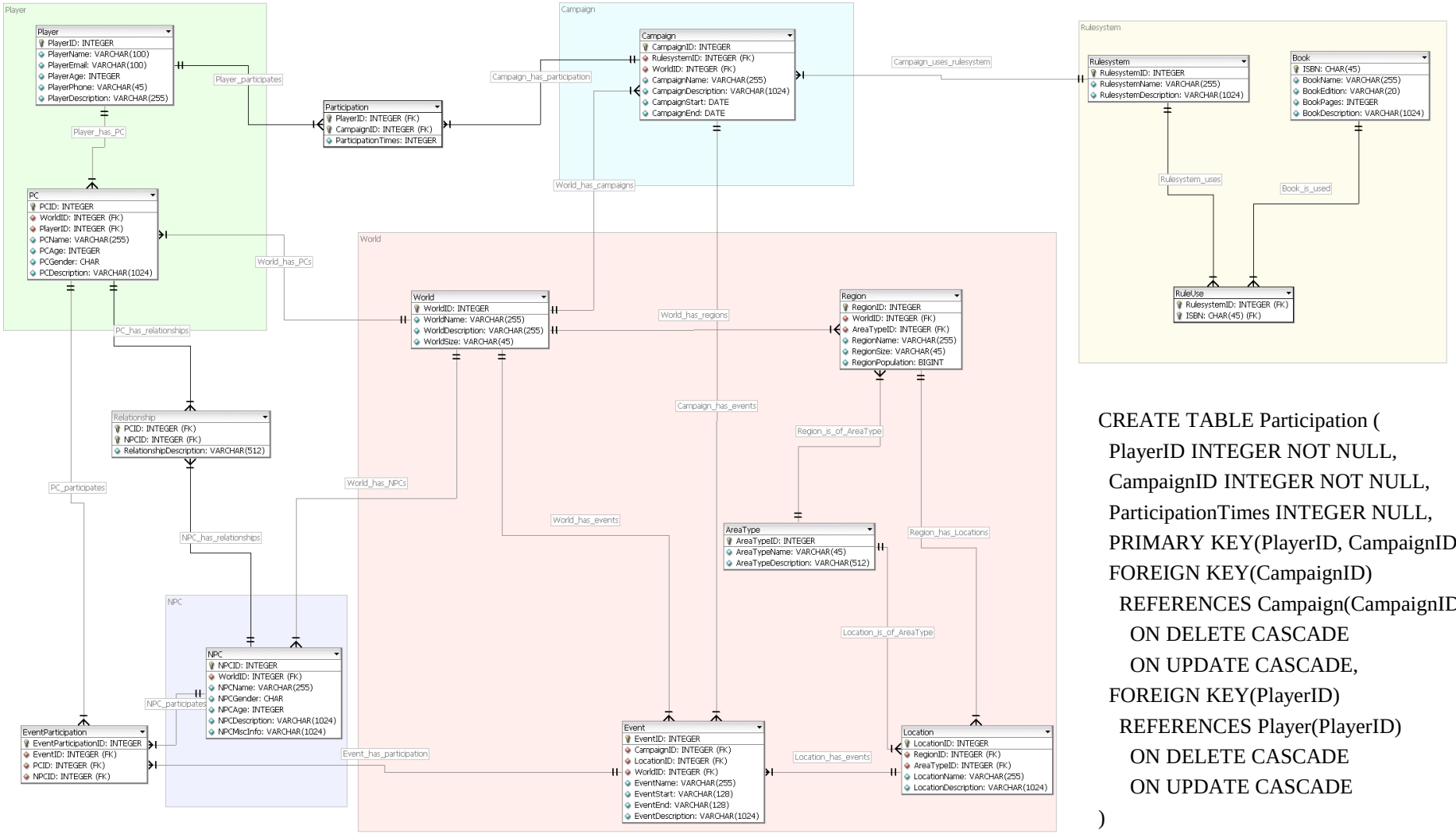
Total 15 ECTS



Note:

- Partly virtual
- If you have already passed XML Techniques , it can be replaced with another course, e.g., IIM92Z Valinnainen erikoistyö

Example




```
CREATE TABLE Participation (
  PlayerID INTEGER NOT NULL,
  CampaignID INTEGER NOT NULL,
  ParticipationTimes INTEGER NULL,
  PRIMARY KEY(PlayerID, CampaignID),
  FOREIGN KEY(CampaignID)
    REFERENCES Campaign(CampaignID)
      ON DELETE CASCADE
      ON UPDATE CASCADE,
  FOREIGN KEY(PlayerID)
    REFERENCES Player(PlayerID)
      ON DELETE CASCADE
      ON UPDATE CASCADE
)
```