

## Part 2:

D(studentIdnr, studentName, login, branchName, programName, courseCode, courseName, credits, departmentName, capacity, classification, grade, position)

*studentIdnr --> studentName*

*studentIdnr --> login*

*studentIdnr --> programName*

*studentIdnr --> branchName*

*studentIdnr, courseCode --> grade*

*studentIdnr, courseCode --> position*

*login --> studentIdnr*

*courseCode --> courseName*

*courseCode --> credits*

*courseCode --> capacity*

*courseCode --> departmentName*

*courseCode, position --> studentIdnr*

### Part 3:

$\{studentIdnr\}^+ = \{studentName, login, programName, branchName\}$   
 $\{login\}^+ = \{studentIdnr, studentName, programName\}$   
 $\{courseCode\}^+ = \{courseName, credit, capacity, departmentName\}$   
 $\{studentIdnr, courseCode\}^+ = \{grade, position, studentName, login, programName, credit, capacity, courseName, departmentName, branchName\}$   
 $\{courseCode, position\}^+ = \{studentIdnr, courseName, credit, capacity, departmentName, studentName, login, programName, branchName\}$

*studentIdnr* --> *studentName*  
*studentIdnr* --> *login*  
*studentIdnr* --> *programName*  
*studentIdnr* --> *branchName*  
*studentIdnr, courseCode* --> *grade*  
*studentIdnr, courseCode* --> *position*

*login* --> *studentIdnr*

*courseCode* --> *courseName*  
*courseCode* --> *credits*  
*courseCode* --> *capacity*  
*courseCode* --> *departmentName*  
*courseCode, position* --> *studentIdnr*

$D(courseCode, position, studentIdnr, courseName, credit, capacity, departmentName, grade, studentName, login, programName, branchName)$

$\{studentIdnr\}^+ = \{studentName, login, programName, branchName\}$   
 $\{courseCode\}^+ = \{courseName, credit, capacity, departmentName\}$   
 $\{studentIdnr, courseCode\}^+ = \{grade, position\}$   
 $\{courseCode, position\}^+ = \{studentIdnr\}$

1.  $courseCode \rightarrow courseName \text{ credit capacity departmentName}$

$R_1(courseCode, courseName, credit, capacity, departmentName) \text{ KEY : } \{courseCode\}$

$R_2(courseCode, position, studentIdnr, studentName, login, programName, branchName, grade)$

2.  $studentIdnr \rightarrow studentName \text{ login programName branchName}$

$R_{21}(\text{studentIdnr}, \text{studentName}, \text{login}, \text{programName}, \text{branchName})$  KEY : {studentIdnr}

$R_{22}(\text{position}, \text{studentIdnr}, \text{courseCode}, \text{grade})$  KEY : {courseCode, position}

A(\_code\_, student, credit, capacity, department)

\_code\_ -> Courses.code

student -> Courses.name

credit -> Courses.credit

capacity -> LimitedCourses.capacity

department -> Departments.name

B(\_idnr\_, name, login, program, branch)

\_idnr\_ -> Students.idnr

name -> Students.name

login -> Students.login

program -> Students.program

branch -> Branches.name

C(\_code\_, \_position\_, idnr, grade)

\_code\_ -> Courses.code

\_position\_ -> WaitingList.position

idnr -> Students.idnr

grade -> Taken.grade

#### **Part 4:**

$R_0(\text{courseCode}, \text{courseName}, \text{credit}, \text{capacity}, \text{departmentName})$  KEY : {courseCode}

*courseCode*  $\rightarrow$  classification

$D(\text{courseCode}, \text{courseName}, \text{credit}, \text{capacity}, \text{departmentName}, \text{classification})$

$R_1(\text{courseCode}, \text{classification})$  KEY : {courseCode}

$R_2(\text{courseCode}, \text{courseName}, \text{credit}, \text{capacity}, \text{departmentName})$  KEY : {courseCode}