CE/CZ 4123 Tutorial 2—Data Models

Question 1

Given the following relational schemas containing two tables (a.k.a., relations), and their primary keys are underlined:

Table1(A1, A2, A3)
Table2(A3, B1, B2)

Attribute A3 is the primary key of Table2 and is also a foreign key in Table1.

(1) how do you convert Table 1 **alone** into key-value model? Give one possible solution.

(2) how to convert them into key-value data model? Give one possible solution.

Question 2

Given the following relational schema containing three tables (primary keys are underlined):

Table1(A1, A2)
Table2(B1, B2)
Table3(A1, B1)

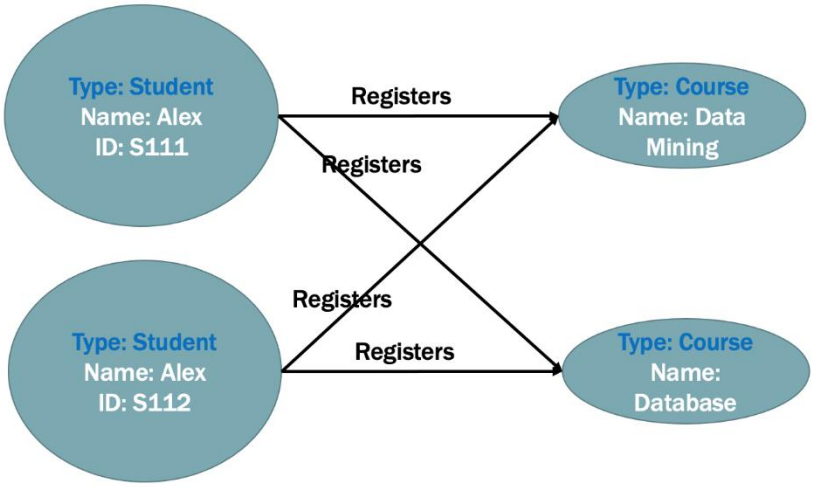
Please give one possible way to convert the above relational model into key-value model.

Question 3

Can key-value model be converted into a relation? Why?

Question 4

Given the following instance based on the graph mode. Please convert it into the instance based on the relational model-based instance. (Hint: converting different types of nodes/edges to tables.)



Question 5 (open discussion)

Why do we need the graph model? Discuss it from the physical storage's perspective.