Relational Model constraints & DB Schemas

9/19

Constraints: restrictions on actual data values

Constraint Categories:

- implicit: constraints inherent in model (eg. no. multi-values)
- explicit: directly expressed by schema
- business rules: not expressed by model or Schema (implemented at application layer)

Constraint types (explicit constraints)

- domain constraints
- key constraints
- Null constraints
- refferential integrity constraints

Domain Constraints

each value in a tuple is constrained to the domain

E.g. string, int, single-float, time, fixed len strings

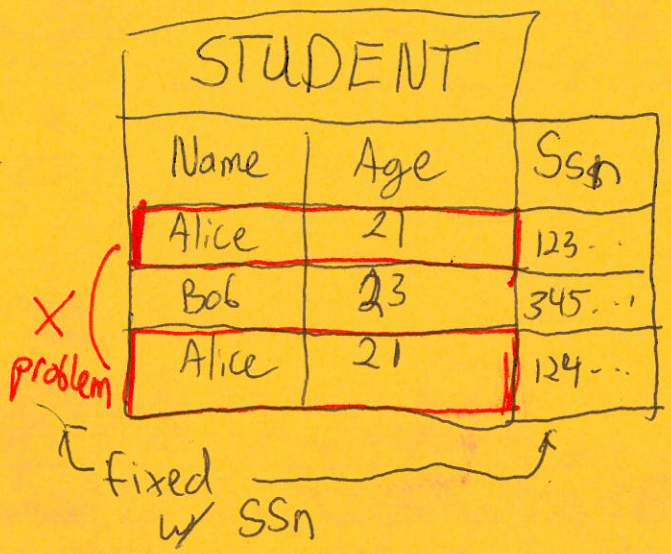
enumeration, subrange of values

e.g GPA, dom(GPA) = single precison floating point numbers [0,4]

Key Constraint

recall:
relation is a set of tuples

$\not\Rightarrow$ all elements are distinct
$\Rightarrow$ all tuples are distinct



Q: how can we fix?

Super key: subset of attributes such that no tuples in the relation have the same set of values.

E.g. Vehical(Color, Make, Model, State, Plate_num)

{State, Plate_num} ← are a super key for Vehical

Props of keys:

Uniqueness: no 2 tuples can have same value for all the attributes in key

minimal: cannot remove any attribute and uniqueness constraint still holds

May have more than 1 key

e.g. Car (State, Plate_num, Color, Model, VIN)

{State, Plate_num}, {VIN}

candidate key: each key

primary key: used to identify tuples

Null Constraints

- specifies if NULL values are allowed for an attribute

Car (VIN, Make, Model, Material_of_tailfin)

↑ constraind NOT to be NULL

↑ probably be nullable