

Definitions 1

Generalization - the process of defining a more general entity type from a set of more specialized entity types

Weak Entity type - an entity type whose existence depends on another entity type

Composite Key - is a set of more than one key that, together, uniquely identifies each record.

Foreign Key - is a key in some table which uniquely identifies rows in another table

The entity integrity rule - The primary key for a row is unique, and any primary key is not null

Primary Key

Primary key

PERSON_ID	FULL_NAME	BIRTH_PLACE
A123	Olivia Lee	London
A124	Jack Martinez	Warsaw
A125	Sophia Smith	New York
A126	James Williams	Chicago
A127	James Williams	Los Angeles
A128	James Williams	Los Angeles
A129	Jack Evans	London
A130	Adam Philips	Manchester

Primary Key

Composite Key

Composite Key

StudentId	StudentName	Year	Semester
0023765	John Doe	2009	2
0035643	Ann	2009	2
0061234	Pete	2009	2

Tables in First Normal Form

StudentId	UnitCode	UnitName
0023765	UG45783	Advance Database
0023765	UG45832	Network Systems
0023765	UG45734	Multi-User Operating Systems
0035643	UG45832	Network Systems
0035643	UG45951	Project
0061234	UG45783	Advance Database

CompKey

Definitions Continued

Referential Integrity Constraint - each foreign key value must match a primary key value in the other relation

Meta-Data - Data that describes the properties of other data - ex. (rules or constraints, data definitions and structures)

CASE - a class of tools that automates the design of databases and application programs.

Insertion anomaly - when certain attributes cannot be inserted into the database without the presence of other attributes

Insertion

INSERT ANOMALY

The primary key for this table is the combination of Emp_ID and Course_Title

EmpId	EmpName	DeptName	Salary	Course_Title	Date Completed
100	Ali	Marketing	4800	SPSS	6/19/2011
100	Ali	Marketing	4800	Surveys	10/7/2011
140	Said	Accounting	5200	Tax Acc	12/8/2011
110	ahmed	Infosystem	4300	Visual Basic	1/12/2011
110	ahmed	Infosystem	4300	C++	4/22/2011
150	Khalid	Marketing	4200	SPSS	6/19/2011
150	khalid	Marketing	4200	Java	8/12/2011

Because, in the new record empId is available but course_title is Null. As per entity integrity rule primary key must have not null value.

EmpId	EmpName	DeptName	Salary	Course_Title	Date Completed
100	Ali	Marketing	4800	Null	6/19/2011

This is insert anomaly

Insert Anomaly

**True/False

1. Metadata are data that describe the properties of other data - **True**
2. Redundancy increases the risk of inconsistent data - **True**
3. Cost and complexity are just two of the disadvantages of database processing - **True**
4. In an E-R diagram, strong entities are represented by double-walled rectangles - **False**
5. In an E-R diagram, an associative entity is represented by a rounded rectangle - **True**
6. A single occurrence of an entity is called an entity instance - **True**

True/False

7. An entity type name should always be a singular noun - **True**
8. A multivalued attribute may take on more than one value for a particular entity instance - **True**
9. A cardinality constraint tells what kinds of properties are associated with an entity - **False**
10. A member of a subtype does NOT necessarily have to be a member of the supertype - **False**
11. There are three separate discriminators in the following diagram because of the overlap rule - **True**

Deletion Anomaly

Deletion

True/False

13. A composite key consists of only one attribute - **False**
14. A primary key is an attribute that uniquely identifies each row in a relation - **True**
15. The following figure is an example of total specialization - **False**
16. A foreign key is a primary key of a relation that also is a primary key in another relation - **False**
17. One property of a relation is that each attribute within a relation has a unique name - **True**



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Definitions 3

Deletion anomaly - exists when certain attributes are lost because of the deletion of other attributes

When a regular entity type contains a multivalued attribute, one must - create two new relations, one containing the multivalued attribute

Transitive Dependency - A functional dependency between two or more non-key attributes

Total Specialization - specifies that for each entity instance of the supertype must be a member of some subtype in the relationship

True/False

18. There can be multivalued attributes in a relation - **False**

19. Unlike columns, the rows of a relation may not be interchanged and must be stored in one sequence - **False**

20. The allowable range of values for a given attribute is part of the domain constraint - **True**

21. A cascading delete removes all records in other tables associated with the record to be deleted - **True**

22. When transforming a one-to-one relationship, a new relation is always created - **False**

Modification Anomaly

Update anomalies: Modification Anomaly

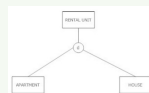
Modification Anomaly: Changing the value of one of the columns in a table will mean changing all the values that have to do with that column.

Employee ID	Employee Address	Skill
426	87 Sycamore Grove	Typing
426	87 Sycamore Grove	Shorthand
519	454 Chestnut Street	Public Speaking
519	456 Walnut Avenue	Carpentry

Employee 519 is shown as having different addresses on different records.

Mod

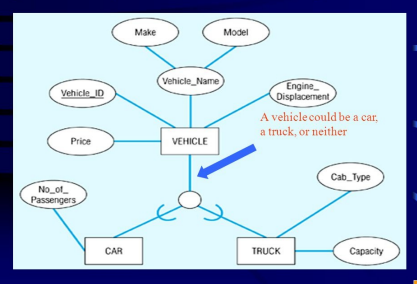
Transitive Specialization



Trans

Partial Specialization

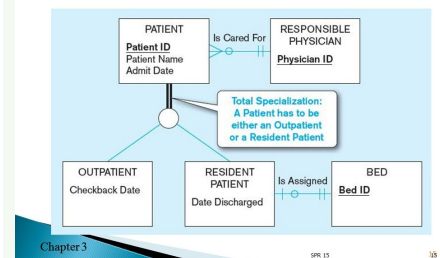
Figure 4-6b: Completeness Constraints - Partial Specialization Rule



Part Spec

Total Specialization

Figure 3-6 Examples of completeness constraints
a) Total specialization rule



Total

Misc



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