
DBMS HW2 Modified Report

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(a) Description

(1) **Database Name** : NTU Basketball Team's Management System.

(2) Entity

- TeamMember: The superclass with two total specializations representing the membership “Type” and “Identity”. “Type” membership is overlapping specialization of “Player”, “Coach”, “Manager”, “Analyst”, and “PhysicalTherapist”. “Identity” membership is a disjoint specialization of “Student” and “TheEmployed”. 6 attributes, “SSN”, “TeamID”, “Birthday”, “Name”, “PhoneNumber”, “Address”. “SSN” is the primary key, and “Address” is a multi-valued attribute.
- Player: The subclass of “TeamMember”. 5 attributes, “Stats”, “Height”, “JoinDate”, “LeaveDate”, “Position”. “Stats” is a composite value attribute, including “Season”, “Turnovers”, “Score”, “Rebound”, “Assist”, “Block”, “Steal”, “Time”, and “Role”. “Rebound” is a composite value attribute, including “OffensiveRebound” and “DefensiveRebound”. “Position” is a multi-valued attribute.
- Coach: The subclass of “TeamMember”. 4 attributes, “Role”, “Payment”, “JoinDate”, “LeaveDate”.
- Manager: The subclass of “TeamMember”. 3 attributes, “Skill”, “JoinDate”, “LeaveDate”.
- Analyst: The subclass of “TeamMember”. 3 attributes, “Skill”, “JoinDate”, “LeaveDate”.
- PhysicalTherapist: The subclass of “TeamMember”. 3 attributes, “Responsibility”, “JoinDate”, “LeaveDate”. “Responsibility” is a multi-valued attribute.
- Student: The subclass of “TeamMember” based on “Identity” membership. 5 attributes, “StudentID”, “School”, “Department”, “UniversityYear”, and “GPA”.
- TheEmployed: The subclass of “TeamMember” based on “Identity” membership. 3 attributes, “Company”, “Salary”, and “Title”. Besides, it is the superclass of “Sponsor” with the partial union.
- OtherAlumni: The superclass of “Sponsor” with the partial union. 5 attributes, “SSN”, “Name”, “Department”, “Occupation”, “PhoneNumber”. “SSN” is the primary key.
- Company: The superclass of “Sponsor” with the partial union. 4 attributes, “CompanyID”, “Name”, “Address”, “CapitalAmount”, “PhoneNumber”. “CompanyID” is the primary key.

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- Sponsor: The subclass of “TheEmployed”, “OtherAlumni”, and “Company” based on the partial union. 8 attributes, “SponsorID”, “SponsorshipType”, “SponsorshipDESC”, “SponsorshipPeriod”, “SpecialRequest”, “SponsorEntityType”, “CompanyID”, and “SSN”.
 - Rival: A weak entity. 5 attributes, “Report”, “School”, “Tactics”, “AnalystSSN”, and “Season”. (“Season” and “School”) is the partial key.

(3) Relationship

- Instruct:
 - * Data Analysis:
“All players must be instructed by some coaches.”
“A coach can instruct zero or more players.”
 - * Description:
The cardinality ratio is M to N. “Player” is total participation, and “Coach” is partial participation.
- Manage
 - * Data Analysis:
“All players are supervised as supervisees by the captain (including himself).”
“Some players are supervised as supervisees by some of the older players (學長學弟制 & 小隊長制).”
“A player (supervisor) can supervise zero or more players.”
 - * Description:
The cardinality ratio is M to N, and the supervisee is of total participation.
- Treat
 - * Data Analysis:
“A player can be treated by zero or more physical therapists.”
“A physical therapist can treat zero or more players.”
 - * Description:
The cardinality ratio is M to N. “Player” and “PhysicalTherapist” are both partial participation.
- Analyze
 - * Data Analysis:
“An analyst can analyze zero or more rivals.”
“A rival can be analyzed by 1 or more analysts.”
 - * Description:
The cardinality ratio is M to N. “Analyst” is partial participation, and “Rival” is total participation.
- Support
 - * Data Analysis:
“All sponsors support 1 or more teams.”
“A team can be supported by zero or more sponsors.”
 - * Description:
The cardinality ratio is M to N. “Team” is partial participation, and “Sponsor” is total participation.

(b) ER Diagram

