ICA | INFORMATICA COMMUNICATIE ACADEMIE

Building an ER-model from verbalizations of facts

Part 3: Analyzing FTs with 1 segment

HAN

Procedure to draw up an ERD

Steps 1, 2 and 3: not covered here.

Step 1: see the reader DM-RDS.

Step 2: see presentation Verbalizing.

Step 3: see presentation Sorting.

Step 4:
2 segments see presentation 3_5,
1 segment: this presentation.

1. Collect concrete examples of facts
   - Use BPM as starting point
   - Make up examples if they don't exist (yet)
2. Verbalize these examples
   - With domain expert. Result: fact expressions.
   - Make the meaning as clear as possible
3. Sort expressions into Fact Types (FTs)
   - Same kind of expression: same FT
   - Order FTs with most components last
4. Analyze each FT (1 or 2 segments) and add the results to the ERD

Rules for analyzing FTs

- Mark 2 segments (or 1), and decide on
  ET + Att or ET + ET (if 1 segment: ET).
- If you find an old ET: MATCH
- If you find a new ET:
  determine its ID (primary identifier)
- If this ID contains an ET:
  add a dependent RT to it
- In the ET + ET case:
  add a non-dependent RT
- Give the complete predicate
- Determine <M> for new Atts
- Determine cardinalities for new RTs
- Add predicates and populations to the diagram to make the meaning of the fact types more clear

Examples of FTs with one segment

Example 1: Domain list

```
There is a course ERM.
  "    " "    "   SQL.
```

Such verbalizations might be given for domain lists (departments in an organization, wards in a hospital, towns in a country, …).

Domain lists prevent typos, save users time and effort, and are easily updated by the DB admin.

Examples of FTs with one segment

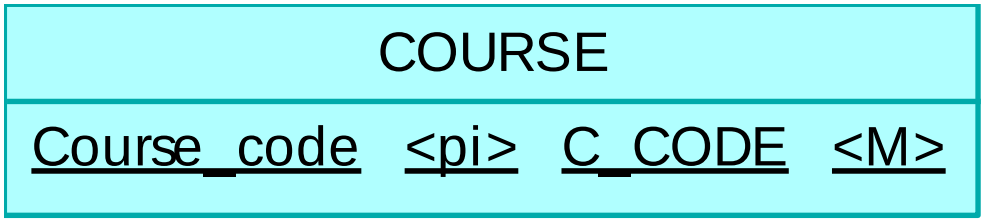
Example 1: Domain list

Only one component, only one segment possible.

This must then be an ET.

```
There is a course ERM.
  "    " "    "   SQL.

There is a course ERM.
  "    " "    "   SQL.
          ET COURSE
          ID: Att Course_code
Predicate: There is a course <Course_code>.
```



Examples of FTs with one segment

Example 2: Empty weak ET

```
Student S17 has enrolled for the course ERM.
   "    T66  "      "     "   "      "   SQL.
```

Suppose you know that enrollments have attributes of their own (date, status, …).

Then you don't want to treat this as an ET+ET case:
this would result in a Many-to-Many RT,
which cannot have attributes of its own..

Instead, an empty ET for these future Atts is needed.

Examples of FTs with one segment

Example 2: Empty weak ET

Two components, only 1 segment chosen: must be ET.

Student S17 has enrolled for the course ERM.
" T66 " " " " " SQL.

ET ENROLLMENT

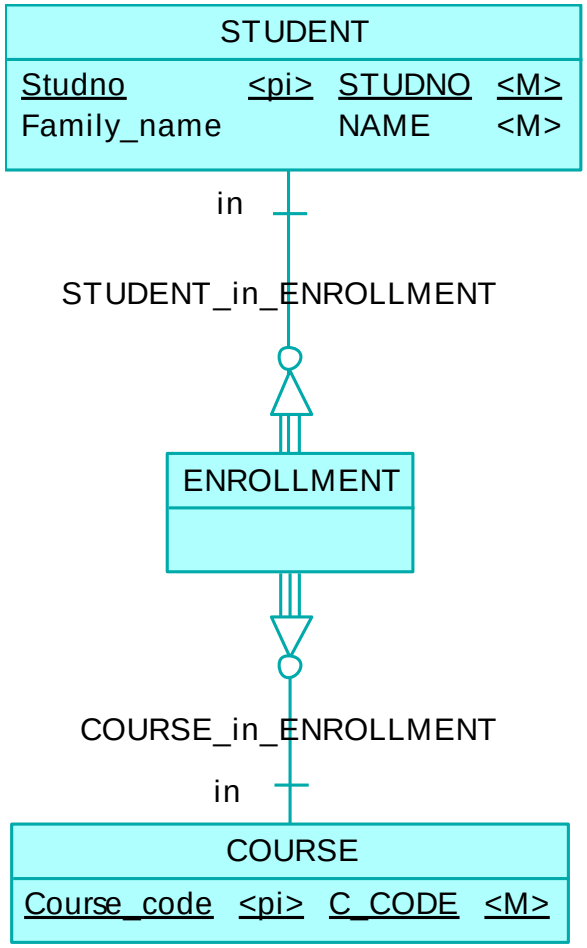
ID: ET STUDENT + ET COURSE
MATCH MATCH

RT R_STUDENT_in_ENROLLMENT between
ENROLLMENT(dependent) and STUDENT

RT R_COURSE_in_ENROLLMENT between
ENROLLMENT(dependent) and COURSE

Predicate: **Student <Studno> has enrolled for the course <Course_code>.**

Examples of FTs with one segment



Example 2: Empty weak ET

Note:

- Attributes for ENROLLMENT can be easily added:

  'Pending' is the status of Att Status student S17's enrollment in the course ERM.

  ET ENROLLMENT MATCH

  ET ENROLLMENT is old, so MATCH will do.

- Note that there are no new rules for analyzing FTs with 1 segment. The rules in slide 3 cover all cases.

Practical recommendations

- Always work exclusively from concrete examples of facts.
- Always verbalize these facts carefully, with the possible exception of widely known simple attributes, but don't be too sloppy!
- Add predicates and/or example populations for
  - all unclear non-dependent RTs
  - all unclear <pi>+Att fact types