

The background of the slide features a light gray gradient. It is decorated with several realistic water droplets of various sizes, some clustered in the top left and others in the bottom right. A faint, large circular pattern, resembling a ripple or a stylized sunburst, is centered in the upper half of the image.

# RELATIONAL DATABASES

# OBJECTIVES

- DEFINE AND COMPOSE A STRUCTURAL BUSINESS RULE
- DEFINE AND COMPOSE A PROCEDURAL BUSINESS RULE
- RECOGNISE THAT SOME BUSINESS RULES WILL REQUIRE PROGRAMMING
- INCLUDE THOSE THAT CAN BE REPRESENTED IN AN ER MODEL

# PURPOSE

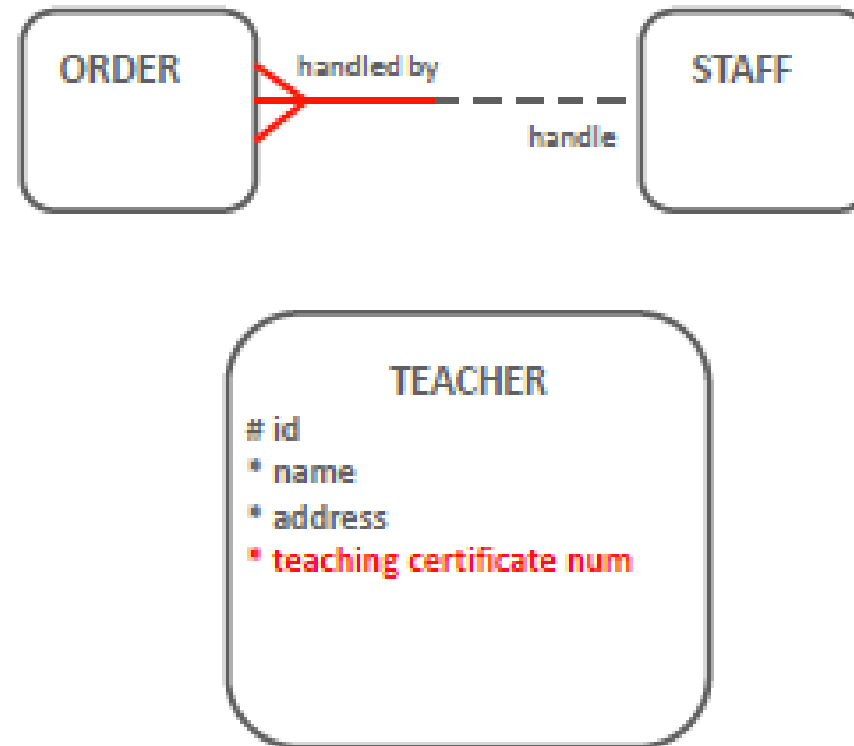
- ONE OF THE PRIMARY GOALS OF DATA MODELLING IS TO ENSURE THAT ALL PIECES OF INFORMATION THAT ARE REQUIRED TO RUN A BUSINESS ARE RECOGNISED.
- IDENTIFYING AND DOCUMENTING BUSINESS RULES HELP TO CHECK YOUR DATA MODEL FOR ACCURACY AND COMPLETENESS
- IT IS IMPORTANT TO KNOW AND IDENTIFY SOME RULES THAT CAN'T BE REPRESENTED ON THE ER DIAGRAM
- SOME MUST BE IMPLEMENTED BY PROGRAMMING

# STRUCTURAL AND PROCEDURAL BUSINESS RULES

- STRUCTURAL RULES INDICATE THE TYPES OF DATA TO BE STORED AND HOW THEY ARE RELATED
- STRUCTURAL RULES CAN NEARLY ALWAYS BE MODELLED IN THE ERD
- PROCEDURAL RULES DEAL WITH THE PREREQUISITES, STEPS, PROCESSES, OR WORKFLOW REQUIREMENTS OF A BUSINESS
- MANY PROCEDURAL RULES ARE RELATED TO TIME: EVENT A MUST HAPPEN BEFORE EVENT B
- SOME PROCEDURAL RULES CANNOT BE DIAGRAMMED BUT MUST STILL BE DOCUMENTED SO THAT THEY CAN BE PROGRAMMED LATER.

# STRUCTURAL RULE EXAMPLE

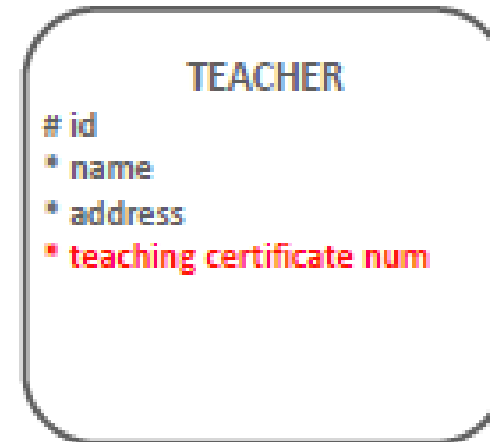
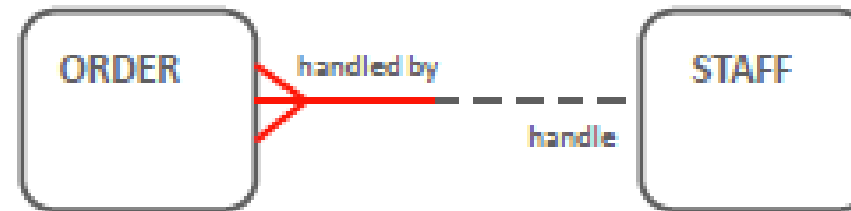
- STRUCTURAL BUSINESS RULES INDICATE THE DATA (ATTRIBUTES) TO BE STORED AND HOW THEY ARE RELATED (RELATIONSHIPS)



Structural Business Rules represented  
in ERD models

# STRUCTURAL RULE EXAMPLE

- ALL ORDERS AT OUR RESTAURANT MUST BE HANDLED BY A STAFF MEMBER, THERE IS NO SELF SERVICE ORDERING SYSTEM.
- ALL TEACHERS AT OUR SCHOOL MUST POSSESS A VALID TEACHING CERTIFICATE

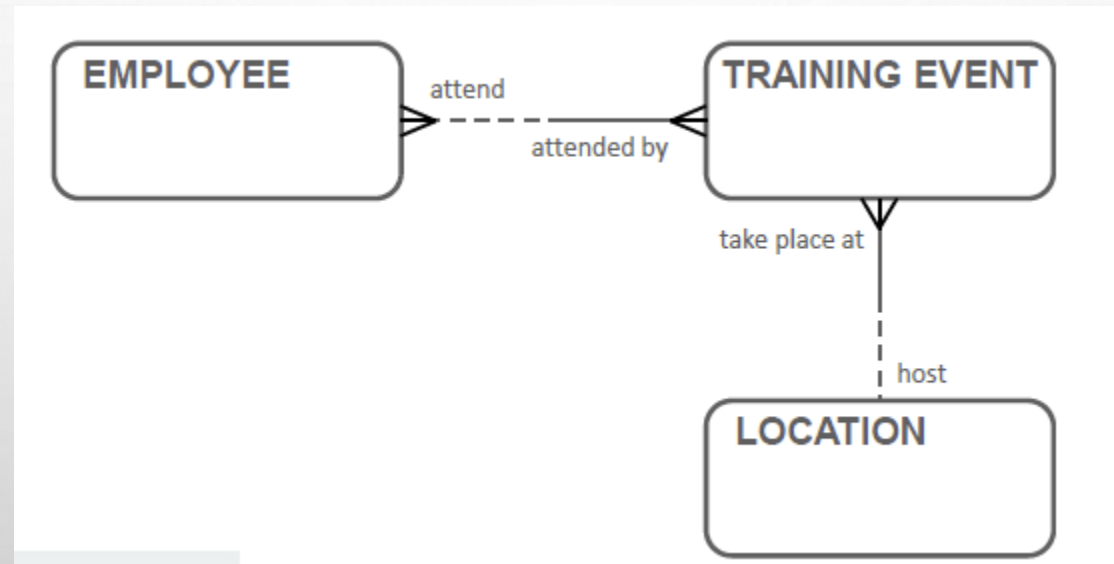


Structural Business Rules represented  
in ERD models

# PROCEDURAL RULE EXAMPLE

- PROCEDURAL BUSINESS RULES ARE WORKFLOW OR PROCESS RELATED
- “SOME OF OUR EMPLOYEES ARE REQUIRED TO ATTEND MANDATORY TRAINING EVENTS. THESE EVENTS TAKE PLACE AT ONE OF THE COMPANY’S LOCATIONS, AND EMPLOYEES TRAVEL THERE TO TAKE PART IN THE TRAINING. APPROVAL FOR ALL TRAVEL REQUESTS TO A TRAINING EVENT MUST BE SIGNED BY THE EMPLOYEE’S MANAGER BEFORE THE EMPLOYEE CAN REGISTER FOR THE EVENT.”

# BUSINESS RULE DIAGRAMMED IN AN ERD





# PROCEDURAL RULE EXAMPLE

- “STUDENTS MUST HAVE STUDIED ALGEBRA AND GEOMETRY IN ORDER TO SIGN UP FOR TRIGONOMETRY”
- CAN YOU REPRESENT THIS IN THE ERD?
- HOW WOULD YOU IMPLEMENT THIS WITH PROGRAMMING?
- IF THE STUDENT HAD TAKEN THE SUBJECTS, CAN YOU THINK OF AN ADDITIONAL BUSINESS RULE THAT A SCHOOL MAY WANT IN THIS SCENARIO?

# DOCUMENTING RULES

- IN THE PROCESS OF DEVELOPING A CONCEPTUAL DATA MODEL, NOT ALL BUSINESS RULES CAN BE MODELLED.
- SOME RULES SUCH AS THE TWO LISTED BELOW MUST BE IMPLEMENTED BY PROGRAMMING THE PROCESSES THAT INTERACT WITH DATA:
  - ANY EMPLOYEE WHOSE OVERTIME EXCEEDS 10 HOURS PER WEEK MUST BE PAID 1.5 TIMES THEIR HOURLY RATE.
  - CUSTOMERS WHOSE ACCOUNT BALANCES ARE 90 DAYS OVERDUE WILL NOT BE PERMITTED TO CHARGE ADDITIONAL ORDERS.

# RULES

- WHAT KIND OF RULES DOES WIT HAVE THAT AFFECT YOU?
- REGISTRATION?
- ATTENDANCE?