

CSC423 Project Part 1: ER Model

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1. Develop a conceptual data model reflecting the following requirements: (11/11/25)

- a. Identify the main entities.
- b. Identify the main relationships between the entities identified in "a".
- c. Determine the multiplicity constraints for each relationship identified in "b".
- d. Identify attributes and associate them with entities or relationships.
- e. Determine candidate and primary key attributes for each (strong) entity.
- f. Generate the E-R diagram for the conceptual level (no FKs as attributes).

a) Main entity types

- a. Client
- b. Requirement
- c. Equipment
- d. Employee

b) Relationships

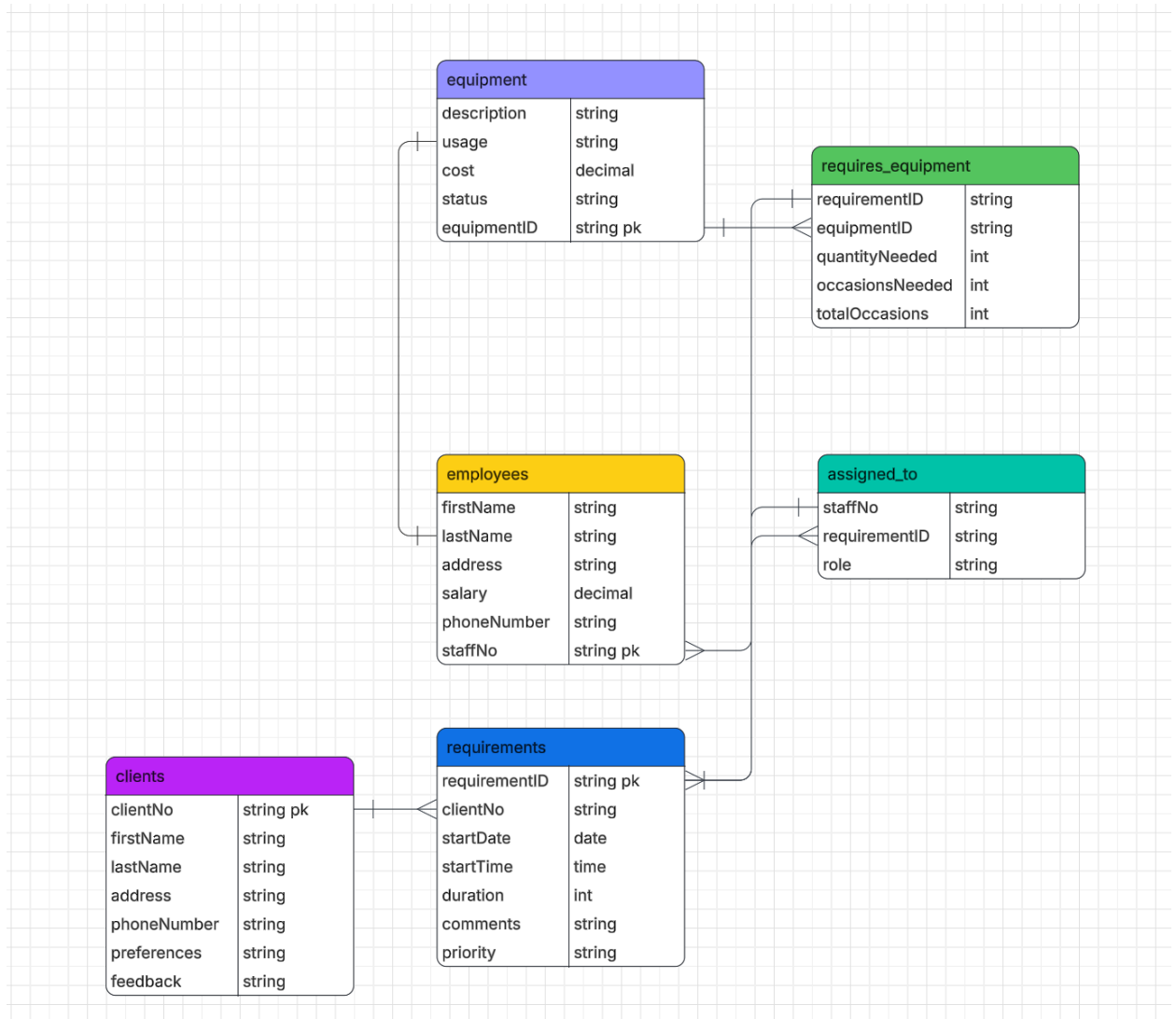
- a. Client-Requirement
 - i. Each client has a set of cleaning requirements
- b. Requirement-equipment
 - i. For each requirement, its figured out whether any specific equipment is required\
- c. Employee-requirement
 - i. Employees perform cleaning work for clients

c) Multiplicity

- a. Client-requirement
 - i. Client
 1. One client can have 0+ requirements
 - ii. Requirement
 1. Each requirement belongs to at least one client
- b. Requirement-Equipment
 - i. Requirement
 1. A requirement may or may not need special equipment
 - ii. Equipment
 1. A given type of equipment may be required by 0+ requirements

- c. Employee Requirement
 - i. Requirement
 - 1. At least one employee must perform cleaning for a requirement
 - ii. Employee
 - 1. An employee may work on 0+ client requirements
- d) Attributes
 - a. For Client entity
 - i. Client number
 - ii. First name
 - iii. Last name
 - iv. Address
 - v. Phone number
 - b. Employee entity
 - i. Staff number
 - ii. First name
 - iii. Last name
 - iv. Address
 - v. Salary
 - vi. Phone number
 - c. Equipment entity
 - i. Equipment ID
 - ii. Description
 - iii. Usage
 - iv. Cost
 - d. Requirement entity
 - i. Requirement ID
 - ii. Start date
 - iii. Start time
 - iv. Duration
 - v. Comments
- e) Candidate / primary keys (same bc only one unique identifier)
 - a. Client
 - i. Candidate key – Client number
 - ii. Primary key – Client number
 - b. Employee
 - i. Candidate key – Staff number
 - ii. Primary key – staff number

- c. Equipment
 - i. Candidate key – equipment id
 - ii. Primary key – equipment id
- d. Requirement
 - i. Candidate key – requirement id
 - ii. Primary key – requirement id



Pdf attached to blackboard as well, made with lucidchart