Project – Part 1: Conceptual Model

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a – c. Below is a table that breaks down the entities and multiplicity constraints for each relationship:

Entity 1	Multiplicity 1	Relationship	Multiplicity 2	Entity 2	Type of Rel.
Client	1..1/1	Requires	0..*	Service	1:*
Service	0..*	Needs	0..*	Equipment	*:*
Employee	1..*	Assigned To	0..*	Service	*:*

We made the following assumptions:

- Clients can be registered with the cleaning company and have zero, one, or many services, however, each service is unique to a single client. Moreover, a service can only exist if it is required by a company so there is mandatory participation for the service.
- If an employee is new or is on break it's possible they won't be actively working to deliver a service. Therefore, an employee can be assigned to none, one, or many services. A service can only be performed if it is assigned to at least one employee (otherwise no one can carry out the task). It can also be assigned to many employees.
- Services may need none, one, or many pieces of special equipment. Similarly, the company will have a registry of its special equipment but that does not mean the equipment needs to actively be in use for a service. So, a piece of special equipment may be used in none, one, or many services.

d. The attributes of the entities can be seen below:

Client (**clientNo**, fName, lName, address, telNo)
Service (**serviceNo**, startDate, startTime, duration, comments)
Employee (**staffNo**, fName, lName, address, salary, telNo)
Equipment (**equipNo**, description, usage, cost)

e. The candidate and primary keys for each candidate are given below:
Client {PK}: clientNo
Service {PK}: serviceNo
Employee {PK}: staffNo
Equipment {PK}: equipNo

f. Taking the previous details into consideration, this is the Entity-Relationship diagram we developed for the conceptual data model: