



Cairo University

**Faculty of Computers and Artificial
Intelligence**

IS211

General

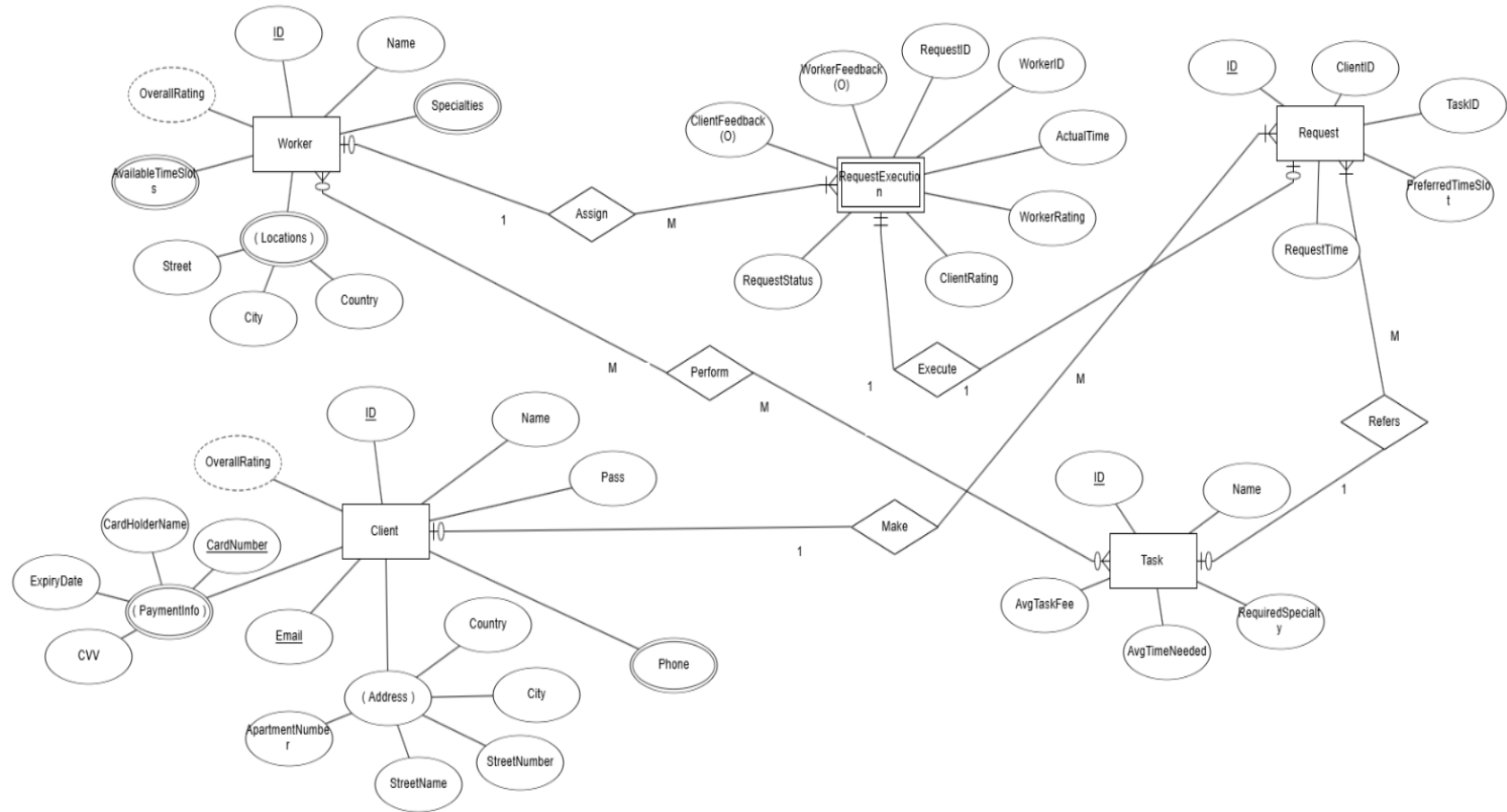
Task-Worker Matching Project

Phase 1

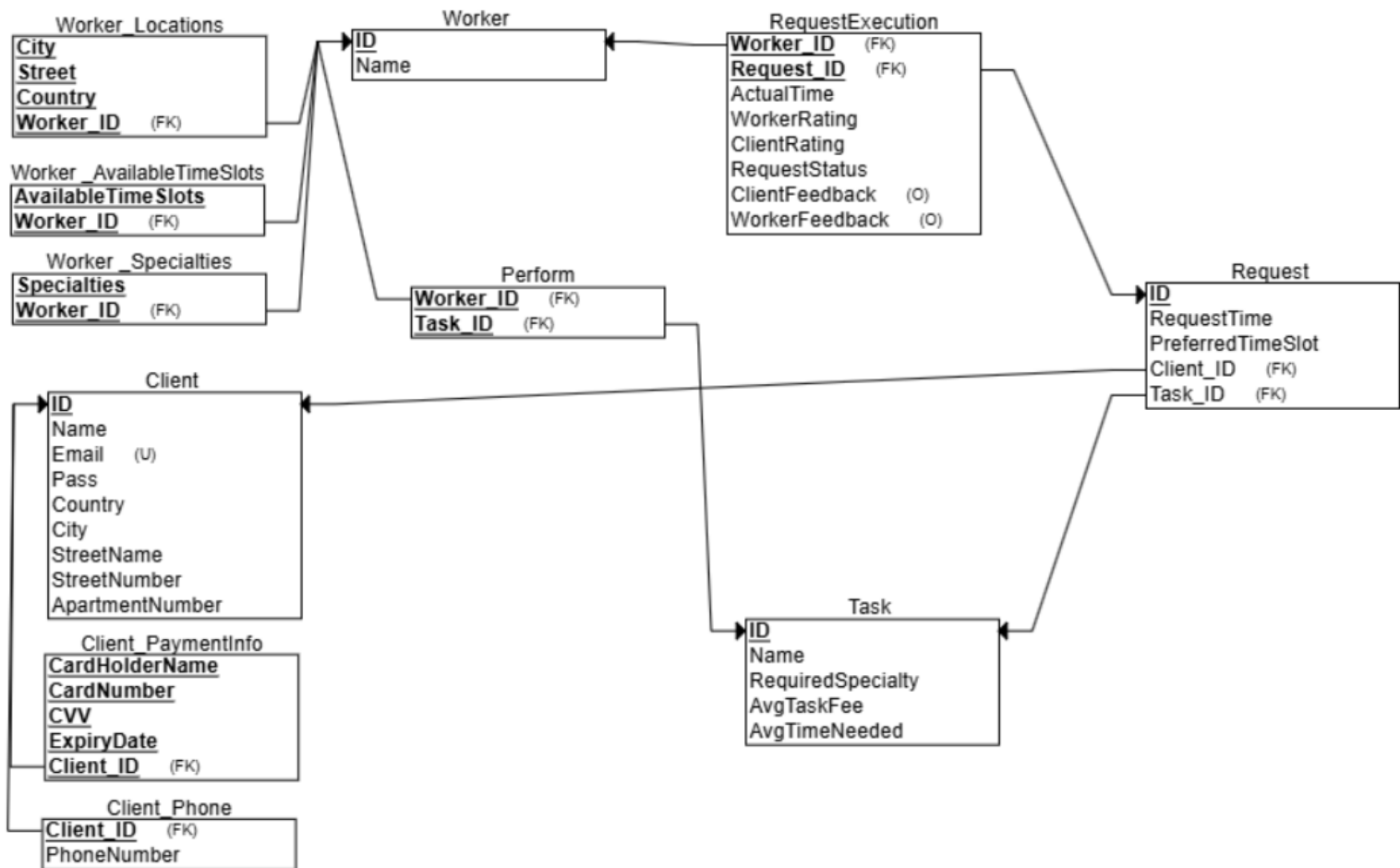
S25, S26

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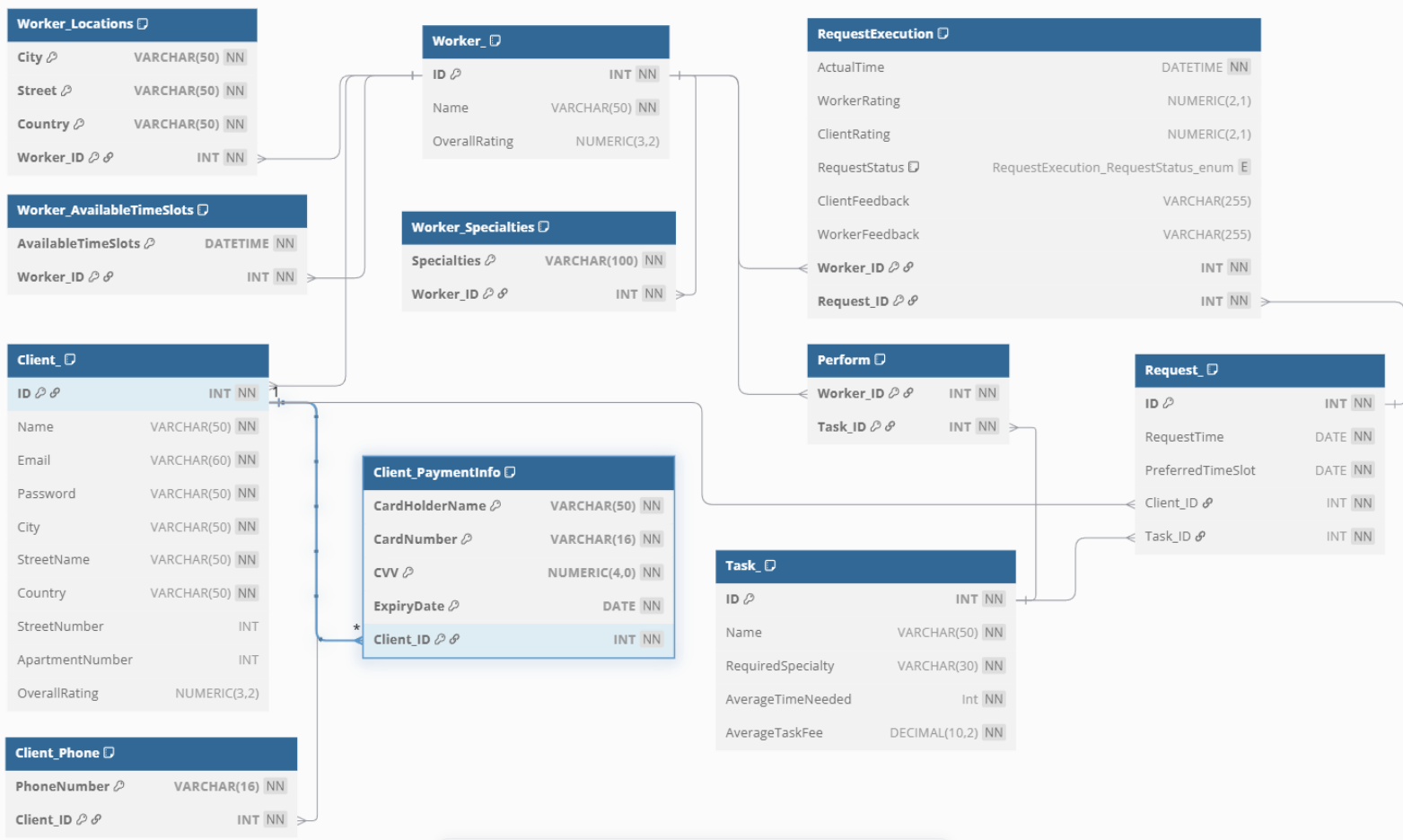
ERD Diagram



Relational Schema



Physical Diagram



ERD Entities and Relationships for Task-Worker Matching system:

- **Worker** (ID, Name, Specialties(**Multivalued**), Locations(**Complex**), AvailableTimeSlots(**Multivalued**), OverallRating)
- **Client** (ID, Name, Phone(**Multivalued**), Address, Email, PaymentInfo, OverallFeedback)
- **Task** (ID, Name, RequiredSpecialty, AvgTimeNeeded, AvgTaskFee)
- **Request** (ID, ClientID, TaskID, RequestAddress, RequestTime, PreferredTimeSlot)
- **RequestExecution is the weak entity** (RequestID, WorkerID, ActualTime, WorkerRating, ClientRating, RequestStatus, ClientFeedback, WorkerFeedback).

Relationships:

1. **Worker to Task**: Many-to-Many through the **WorkerTask** table. This table links workers to the tasks they can perform.
2. **Client to Request**: One-to-Many (A client can make many requests, but each request belongs to only one client).
3. **Task to Request**: One-to-Many (Each task can be requested by many clients, but each request refers to only one task).
4. **Request to RequestExecution**: One-to-One (Each request has one execution record).
5. **Worker to RequestExecution**: One-to-Many (A worker can be assigned to many requests).

Attribute types:

Entity	Attribute	Type
Worker	Specialties	Multivalued
Client	Phone Number	Multivalued
Client	Address	Composite
RequestExecution	ClientFeedback	Optional
RequestExecution	WorkerFeedback	Optional
RequestExecution	RequestStatus	Optional
Worker	WorkerID	Unique
Task	TaskID	Unique
Client	ClientID	Unique
Worker	Location	Composite
RequestExecution	ExecutionID	Unique
RequestExecution	RequestID, WorkerID	Composite (for composite key)

Functional Requirements:

ID	Requirement	Description
RQ01	Register Client	If a client is new, they must sign up by providing an ID, full name, one or more phone numbers, address (composite), email address, and payment information.
RQ02	Admin Login	Admin will login, and he can access any data of the clients, workers, tasks and requests, he can add only workers and tasks but the other objects he cannot, he can edit and delete for all objects
RQ03	Listed Tasks	Tasks should be displayed by the system including task ID, task name, required specialty, average time needed, and average task fee.
RQ04	Make Request	A client can request a task by selecting a task, providing their ID, preferred time slot, request address, and request timestamp.
RQ05	Match Worker to Request	The system should automatically match the most suitable worker based on specialty, availability, and location compatibility with the client's request.
RQ06	Rate and Give Feedback	After a request is executed, the system stores: request ID, assigned worker ID, actual time taken, worker rating by client, client rating by worker, request status (open or closed), optional client feedback, and optional worker feedback. These ratings contribute to each party's overall score.

