

Assignment 2

SENG 696

Research Matchmaking Project

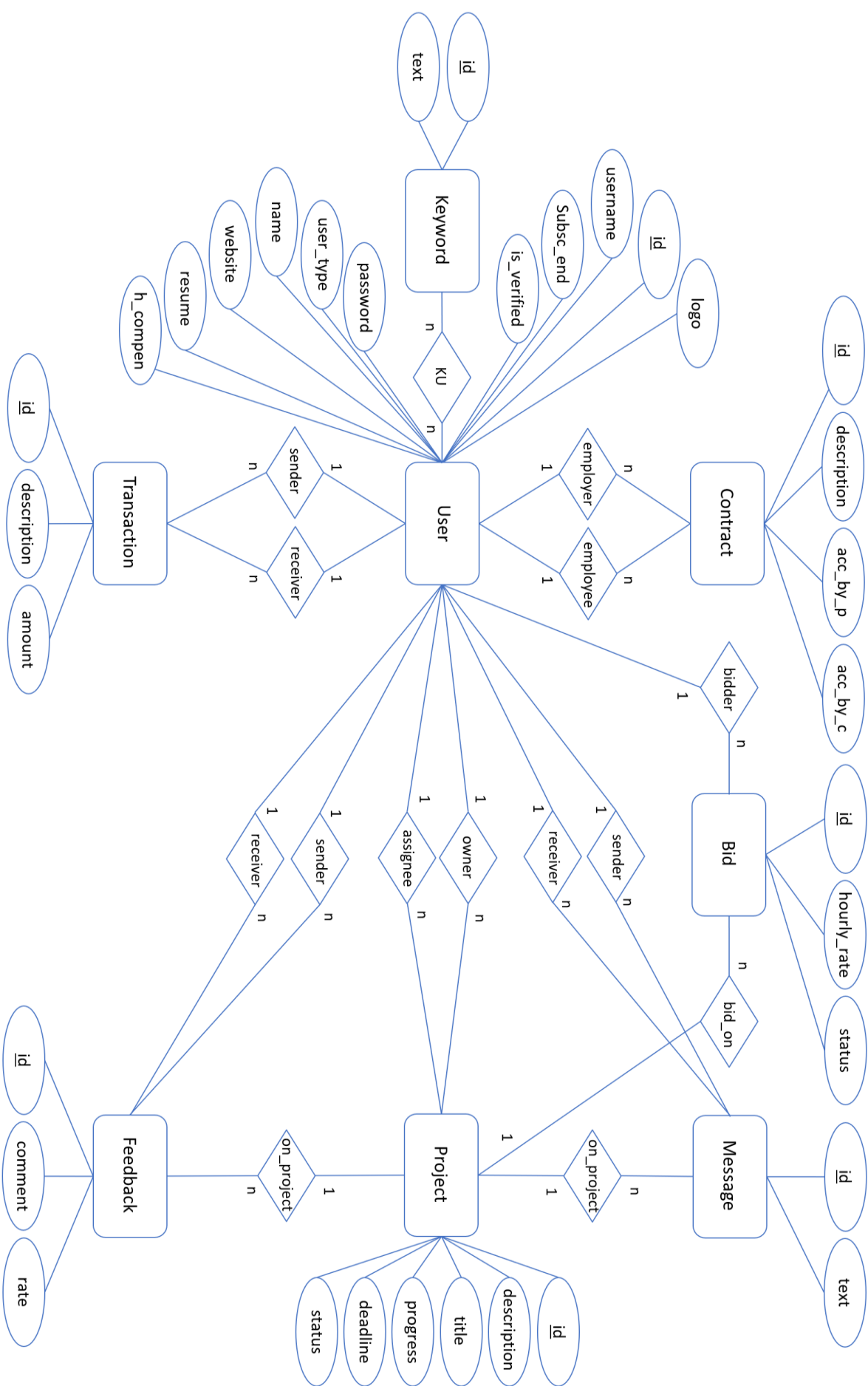
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Data Specification - ER Diagram



The many-to-many relationship between the User and Keywords models will get converted to another table named UserKeyword.

Data Specification - Tables

In all tables, id is the primary key except for UserKeyword. In this table the primary key is the combination of user_id and keyword_id.

User:

Field	Type
id	int
username	varchar
encrypted_password	varchar
user_type	varchar
name	varchar
website	varchar
logo	varchar
resume	varchar
hourly_compensation	int
is_verified	boolean
subscription_ends	timestamp

Keyword:

Field	Type
id	int
text	varchar

UserKeyword:

Field	Type
user_id	int (FK to User)
keyword_id	int (FK to User)

Project:

Field	Type
id	int
owner_id	int (FK to User)
description	varchar
title	varchar
assignee_id	Int (FK to User)
progress	Int
deadline	Timestamp
status	varchar

Bid:

Field	Type
id	int
bidder_id	int (FK to User)
project_id	int (FK to Project)
hourly_rate	Int
status	varchar

Contract:

Field	Type
id	int
provider_id	int (FK to User)
client_id	int (FK to User)
description	varchar
accepted_by_provider	boolean
accepted_by_client	boolean

Transaction:

Field	Type
id	int
sender_id	int (FK to User)
receiver_id	int (FK to User)
description	varchar
amount	int

Message:

Field	Type
id	int
sender_id	int (FK to User)
receiver_id	int (FK to User)
project_id	int (FK to project)
text	varchar

Feedback:

Field	Type
id	int
sender_id	int (FK to User)
receiver_id	int (FK to User)
project_id	int (FK to Project)
comment	varchar
rate	int

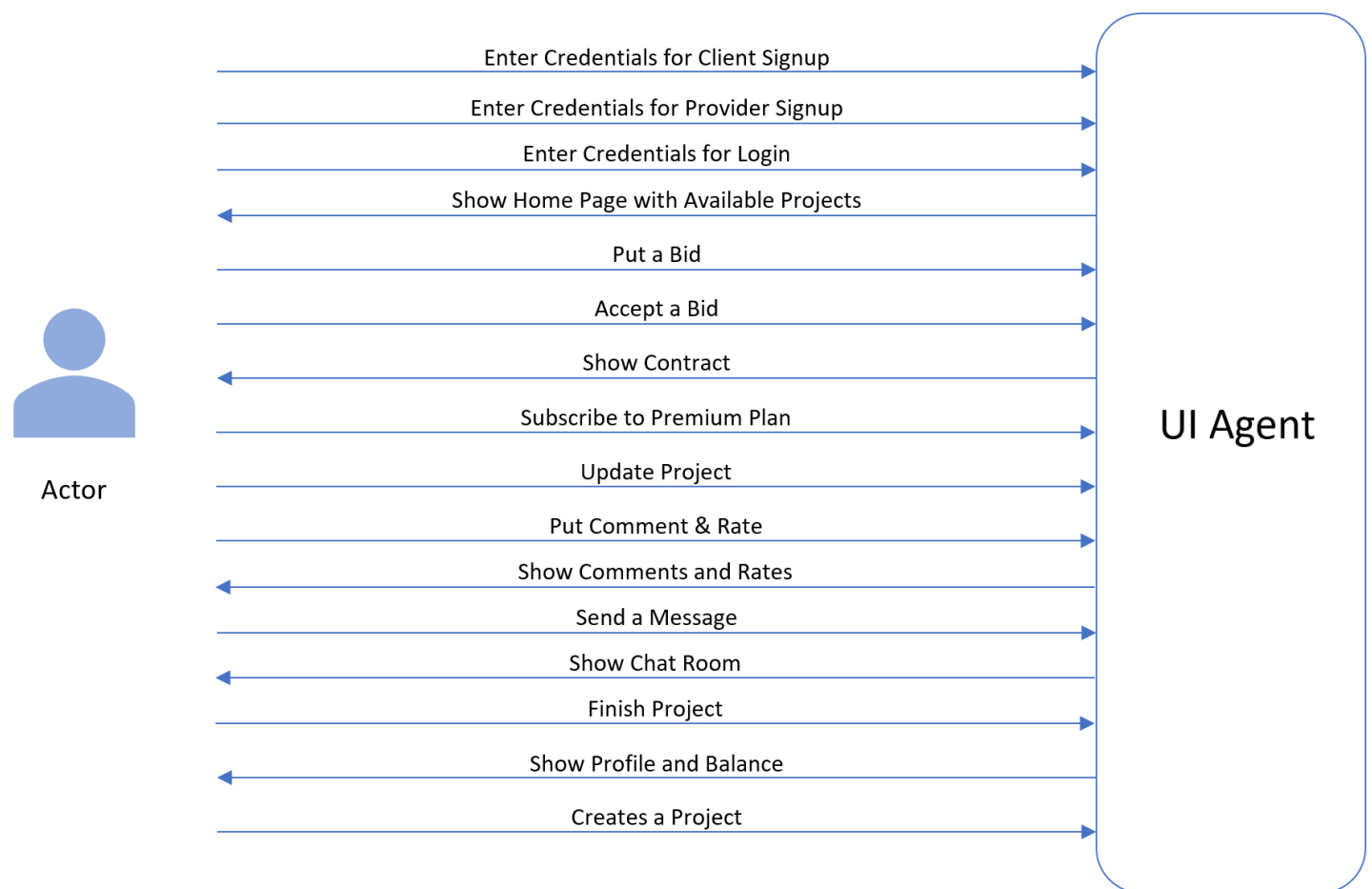
The SQL file for the tables above is available here: [GitHub](#)

Use Cases and Sequence Diagrams

This is the use case between Actor and UI Agent

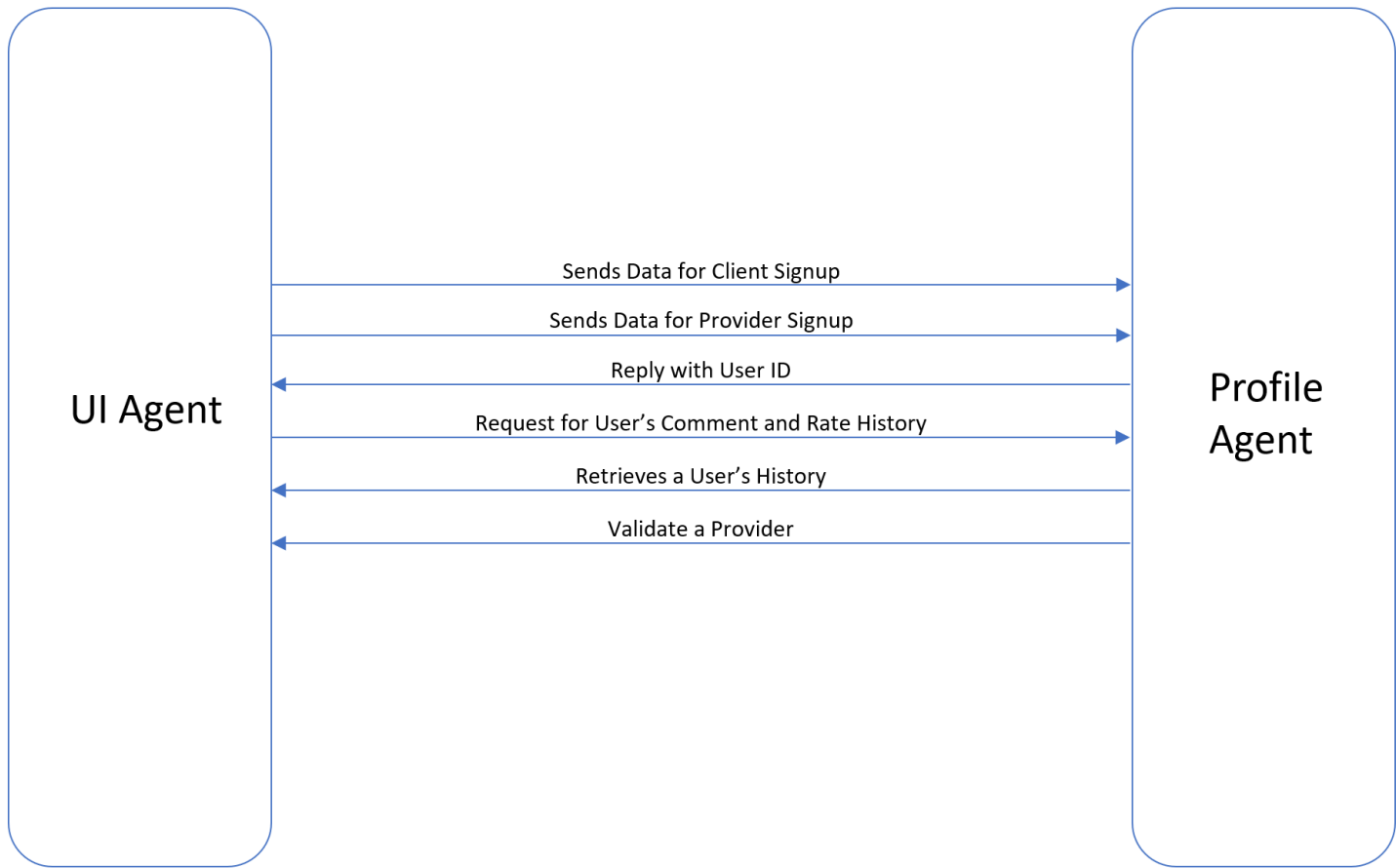
1	Actor enters credentials and information for signup
2	Actor enters credentials for login
3	Actor puts or accepts a bid
4	Actor creates a project
5	UI Agent retrieves the available projects
6	UI Agent sends the contract
7	Actor puts a comment
8	Actor updates or finishes a project
9	Actor subscribes to premium plan
10	UI Agent retrieves comments and rates for a user
11	Actor sends a message to the employee or employer
12	UI Agent shows the chat room between an employer and an employee
13	UI Agent shows the user profile

UI Agent:



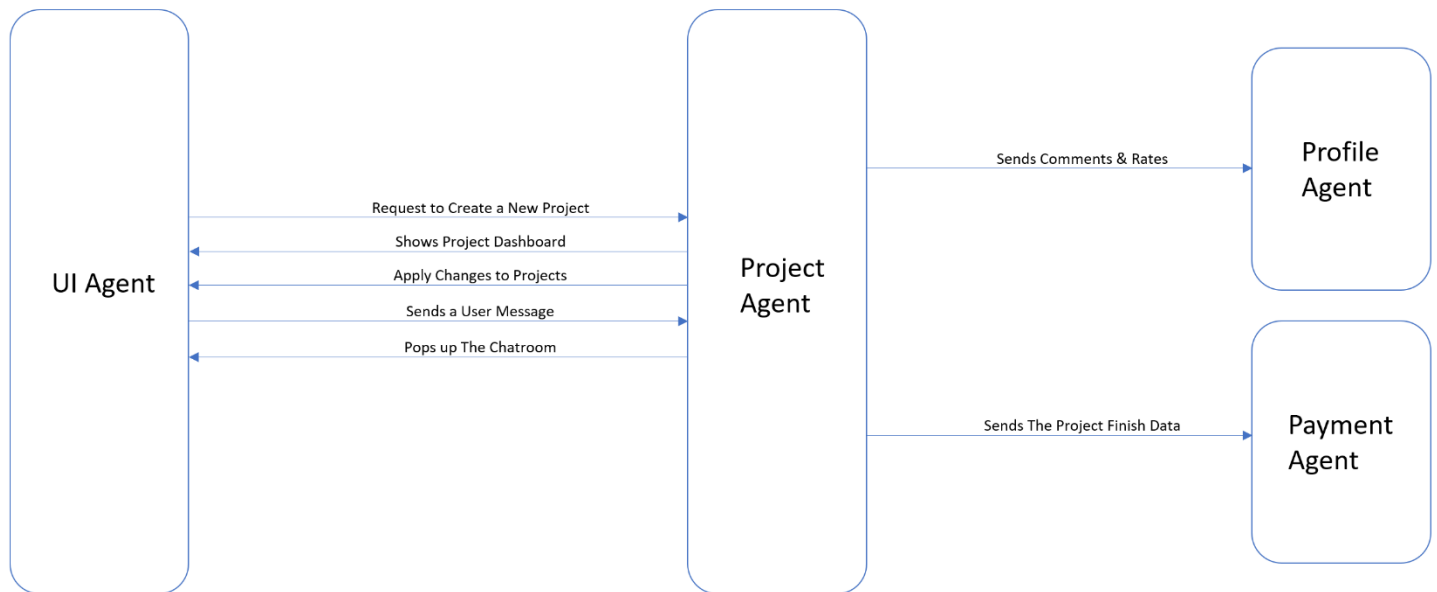
Profile Agent:

1	Registers a client
2	Registers a provider
3	Retrieves comments and rates for a user
4	Validate a provider information



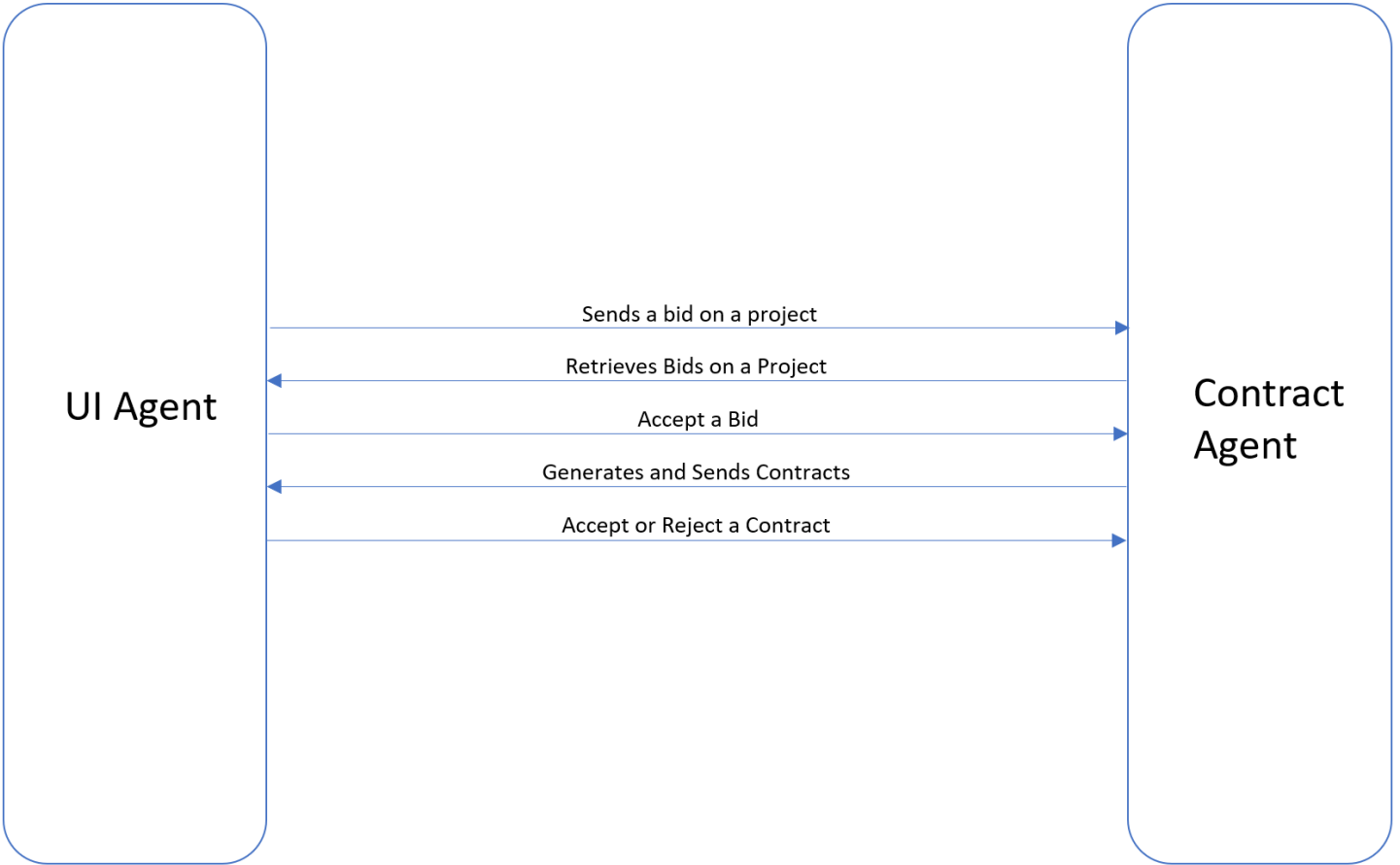
Project Agent:

1	Initiates a new project
2	Apply changes to projects
3	Handle the chat room between provider and the client
4	Notify the payment agent when the project is finished
5	Sends the comments and rates to profile agent



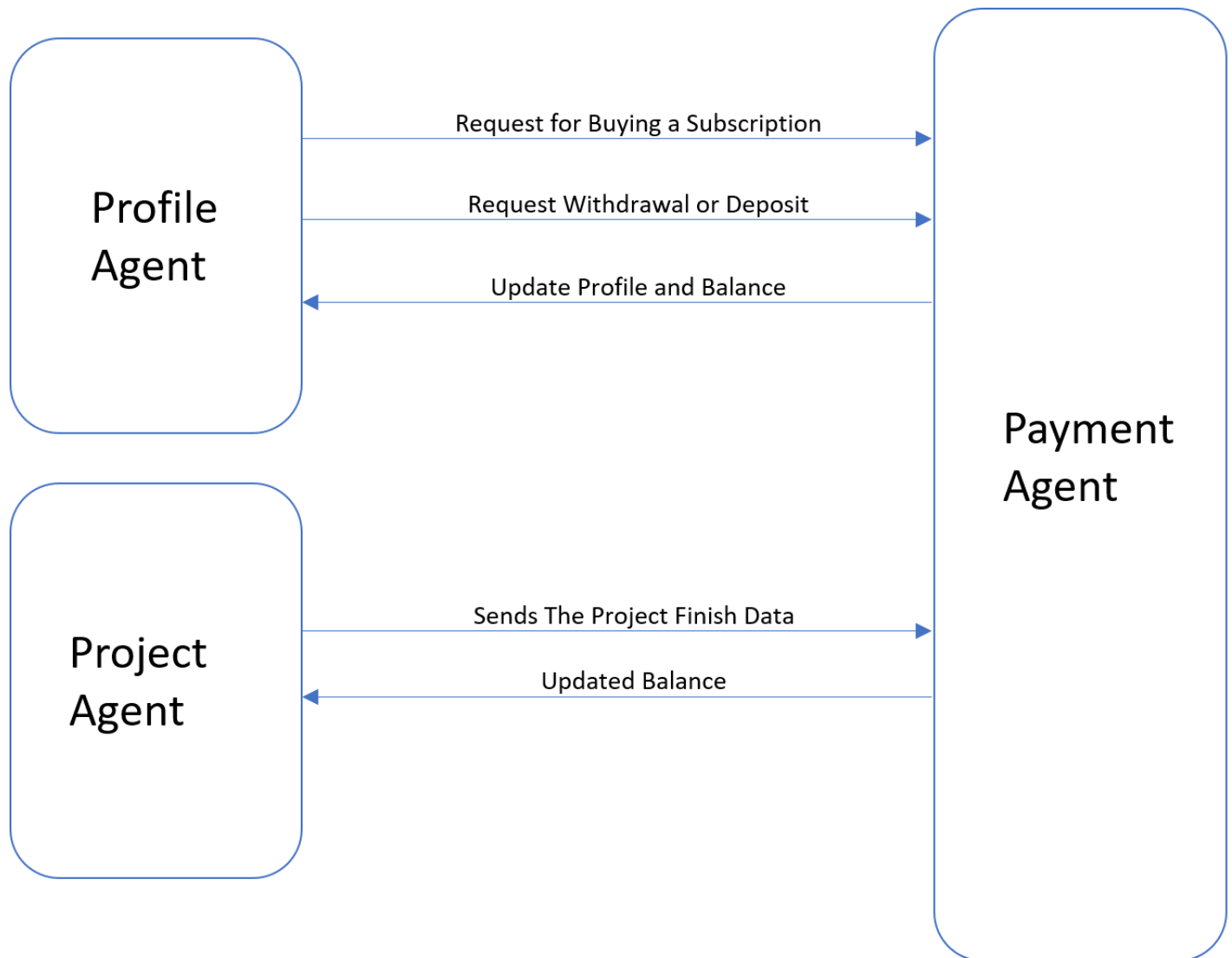
Contract Agent:

1	Handles bids from different clients on a project
2	Retrieves bids on a project for the owner provider
3	Generates and sends contracts to both parties upon agreement
4	Handles acceptance and rejection of contracts

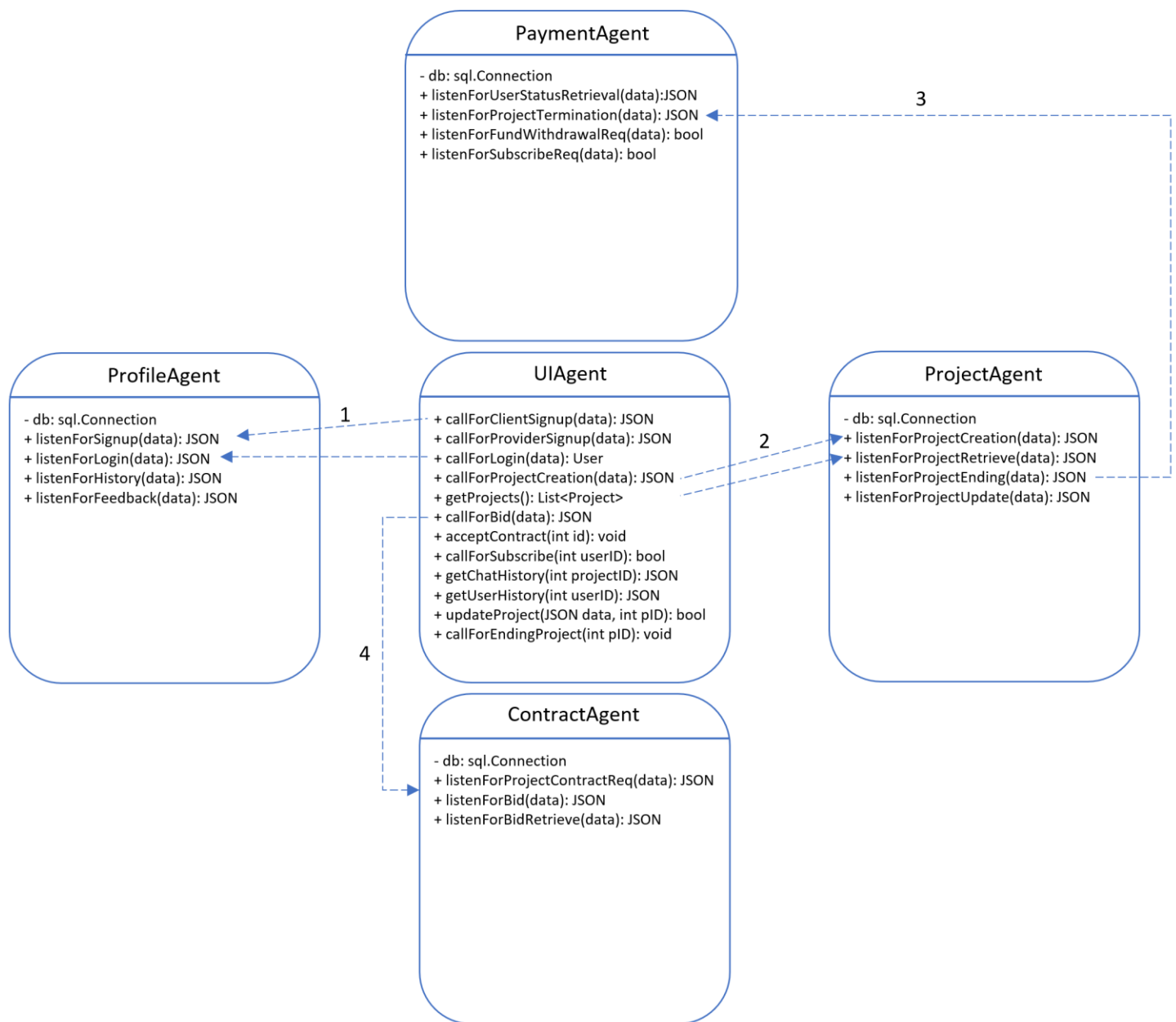


Payment Agent:

1	Request for buying a subscription
2	Manage project payments upon completion
3	Handle withdrawal/depositing of funds for clients and providers



Class Diagram and Message Structure Passing



In the diagram above, the word “**listen**” is used for some methods, it represents different types of agents’ behaviors used to achieve certain goals. Therefore, each listen method is a behavior.

UI Agent is in connection with most of the agents since it is the starting point and the interface between user and the MAS system.

For communication among agents, JSON format is selected. A few samples (numbered arrows in the class diagram) of message structure among agents in represented below.

Arrow #1 – user registration message structure:

Field	Type
Username	string
Password	string

Arrow #2 – project creation message structure:

Field	Type
Owner_id	Int
Title	string
Description	String
Duration	int

Arrow #3 – project ending message structure:

Field	Type
Project_id	Int
Hours_spent	string

For project ending message structure, project_id is enough since all the required fields are available in the project record.

Arrow #4 – bid message structure:

Field	Type
Owner_id	Int
Project_id	int
Amount	int