

21CSC205P – DATABASE MANAGEMENT SYSTEM

PROJECT REPORT (Review – 2)

B.Tech. CSE - CYBERSECURITY



**SCHOOL OF COMPUTING
COLLEGE OF ENGINEERING AND TECHNOLOGY
SRM INSTITUTE OF SCIENCE AND TECHNOLOGY
(Under Section 3 of UGC Act, 1956)
S.R.M. NAGAR, KATTANKULATHUR – 603 203
CHENGALPATTU DISTRICT**

February 2025

**GigSphere:
A Cohesive Sphere to Bridge Freelancers and Clients**

KIRONMOY MUKHERJEE (RA2311030010129)
ADITYA KHANDELWAL (RA2311030010130)

TABLE OF CONTENTS

S No.	Title	Page No.
1	Introduction	3
2	Problem Statement	
3	Abstract	4
4	Tech Stack	5
5	Existing Challenges	6
6	Listing of Entities	7
7	Code	8
8	Output	8
9	Diagrams	10

INTRODUCTION

GigSphere is a complete freelance management system that helps optimize hiring and managing freelance experts. It offers a safe interface for freelancers and clients to work together, monitor progress, administer contracts, process payments, and settle conflicts. The system has features such as proposal submission, contract tracking, invoice creation, milestone payment, and user endorsements. Clients can list projects, view freelancer proposals, and hire experts on the basis of skills, while freelancers can search for work, send proposals, and track contracts. A formal system of endorsement improves reliability, enabling clients to identify freelancer ability through reviews and ratings.

The site comprises 16 basic entities, which are Users, Clients, Freelancers, Projects, Proposals, Contracts, Invoices, Payments, and Support Tickets. A Withdrawal process provides contract termination when required. GigSphere relies on a PostgreSQL database for scalability and data integrity, with API requests, payments, and authentication managed by a Python-Flask back-end. The front-end, created with HTML, CSS, and JavaScript, provides an intuitive user experience. With its strong architecture and secure financial management, GigSphere promotes trust, efficiency, and productivity in the gig economy.

PROBLEM STATEMENT

The freelance market is expanding, but efficient project management is still a problem. Conventional platforms lack organized contracts, milestone payments, and open dispute resolution, resulting in delays, mismanagement, and distrust. Clients find it difficult to identify trustworthy freelancers and monitor progress, while freelancers experience unjust contract modifications, payment disputes, and non-recognition.

GigSphere addresses these problems through proposal tracking, milestone payments, flexible contracts, and an endorsement-based credibility framework. Secure transactions, dispute resolution, and transparent work tracking create a fair and efficient freelancing experience for every user.

ABSTRACT

The independent industry is developing at a quick pace but handling projects continues to be tricky as a result of unorganized agreements, payment-related problems, and trust factors. Most sites center on advertisement posts and auctions but do not possess adequate solutions for tracking contracts, milestone payments, and solving disagreements. GigSphere addresses such challenges by presenting a full system of freelance administration to improve coordination, provide secure transactions, and ease project workflow processes.

GigSphere incorporates essential features such as proposal tracking, contract adaptability, milestone payments, and freelancer endorsements. Clients can publish projects, evaluate proposals, and hire freelancers, whereas freelancers can post bids, track contracts, and get paid securely. Dynamic contract management enables open-ended changes, avoiding disputes on project scope changes. Work submissions, endorsements, invoices, and support tickets further facilitate seamless operations. Developed using PostgreSQL, Flask, and a contemporary web interface, GigSphere provides an efficient and secure freelancing website that fosters efficiency and trust for everyone.

TECH-STACK
(TENTATIVE)

<u>CATEGORY</u>	<u>TECHNOLOGY</u>
FRONT END	HTML
	CSS
	JAVASCRIPT
BACK END	PYTHON (FLASK)
DATABASE	POSTGRE SQL
HOSTING	AWS/HEROKU
VERSION CONTROL	GITHUB

EXISTING CHALLENGES

Several freelancing websites do not have an effective contract tracking system, which creates conflict regarding project scope, deadline, and compensation. In the absence of formal agreements, both clients and freelancers end up with misunderstandings and conflicts.

Payment delays are also a regular occurrence, since freelancers don't always receive payments on time or securely. The lack of milestone payments and escrow facilities means that clients can easily withhold or delay payments. Clients also often change project requirements, requiring freelancers to work overtime without adequate compensation or extension of deadlines.

Trust and credibility are also big issues. Without an endorsement system, freelancers can't demonstrate their expertise, and clients can't find reliable professionals. Most of these platforms do not have a formal work submission and approval procedure, leading to delays in completing projects and receiving payments.

Dispute resolution is also a problem. There are no defined mechanisms to manage contract breaches, scope creep, or payment defaults, leaving clients and freelancers with no adequate assistance. Financial monitoring is also limited, as most platforms lack transparent invoicing systems to monitor payments, taxes, and outstanding balances.

Finally, contract cancellation is usually rigid. When a project is no longer viable, neither clients nor freelancers have a formal method of terminating contracts without fines, which makes it hard to handle unforeseen circumstances smoothly.

LIST OF ENTITIES IN PROJECT

```
users{
  user_id PK
  username
  email
  user_type
  created_at
  password_hash
}

clients{
  client_id PK FK references users.user_id
  company_name
  business_type
}

projects{
  project_id PK
  client_id FK references clients.client_id
  title
  description
  budget
  deadline
  posted_at
  status
}

freelancers{
  freelancer_id PK FK references users.user_id
  bio
  portfolio
  experience
  hourly_rate
}

skills{
  skill_id PK
  skill_name
}

freelancer_skills{
  skill_id PK FK references skills.skill_id
  freelancer_id FK references freelancers.freelancer_id
}

proposals{
  proposal_id PK
  freelancer_id FK references freelancers.freelancer_id
  project_id references projects.project_id
  proposal_text
}
```



```
bid_amount
status
submitted_at
}

reviews{
review_id PK
reviewer_id FK references user.user_id
reviewee_id FK references user.user_id
project_id FK references projects.project_id
review_text
rating
review_date
}

endorsements{
endorsement_id PK
client_id FK references clients.client_id
freelancer FK references freelancers.freelancer_id
endorsement_text
}

contracts{
contract_id PK
client_id FK references clients.client_id
freelancer_id FK references freelancers.freelancer_id
project_id FK references projects.project_id
proposal_id FK references proposals.proposal_id
agreed_price
start_date
end_date
status
}

contract_modification{
modification_id PK
contract_id FK references contracts.contract_id
modified_by FK references users.user_id
modified_at
old_price
new_price
old_deadline
new_deadline
status
}

payments{
payment_id PK
contract_id FK references contracts.contract_id
amount
}
```

```
payment_method
status
}

invoice_id{
invoice_id PK
contract_id FK references contracts.contract_id
net_amount
issued_at
due_date
status
paid_at
}

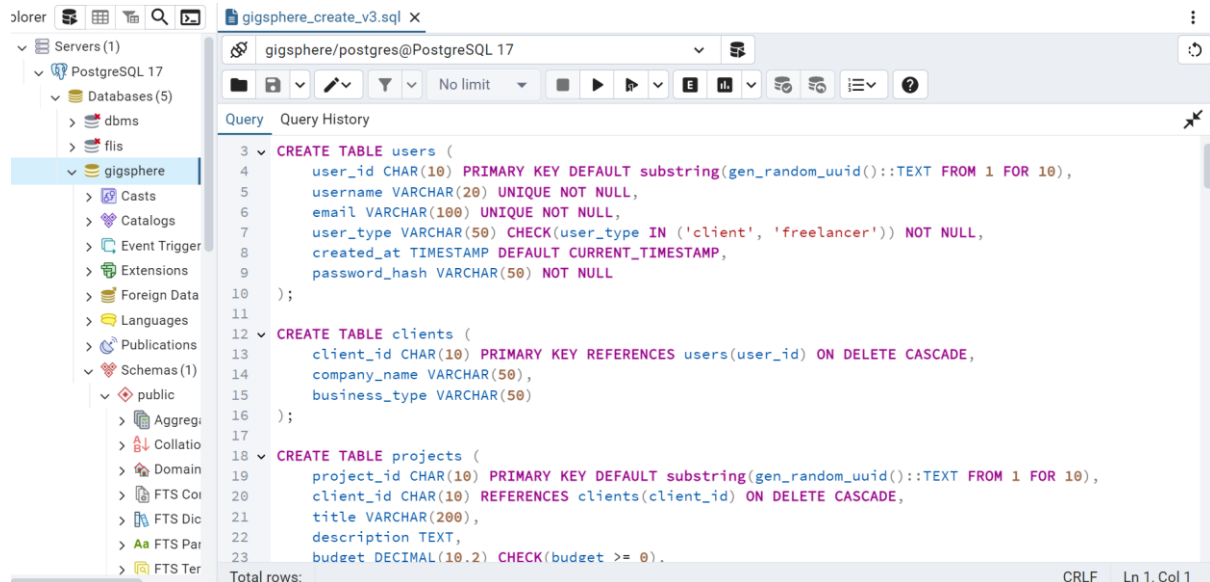
submissions{
submission_id PK
submitted_by FK references freelancers.freelancer_id
contract_id FK references contracts.contract_id
description
submitted_file
submitted_at
approved
}

withdrawals{
withdrawal_id PK
requested_by FK references users.user_id
approved_by FK references users.user_id
contract_id FK references contracts.contract_id
reason
status
withdrawn_at
}

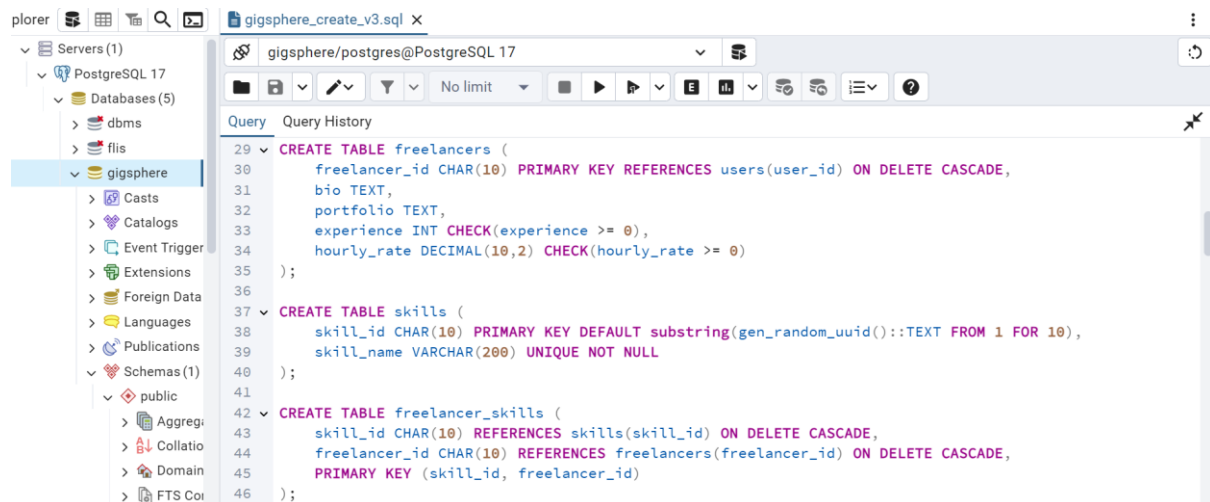
support_tickets{
ticket_id PK
raised_by FK references users.user_id
created_at
subject
description
status
resolved_at
}
```

CODE

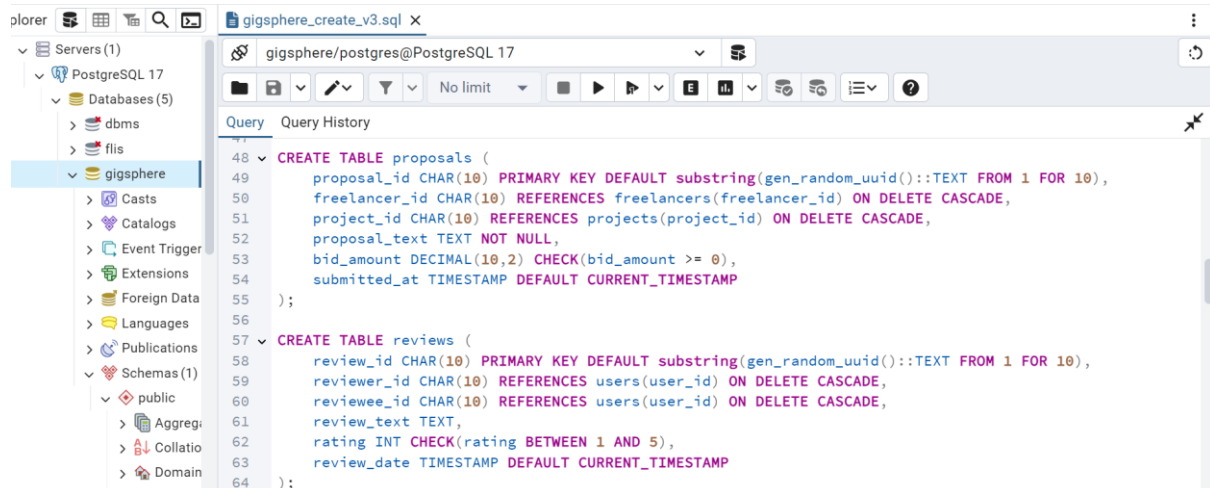
CREATING THE TABLES



```
3 CREATE TABLE users (  
4   user_id CHAR(10) PRIMARY KEY DEFAULT substring(gen_random_uuid()::TEXT FROM 1 FOR 10),  
5   username VARCHAR(20) UNIQUE NOT NULL,  
6   email VARCHAR(100) UNIQUE NOT NULL,  
7   user_type VARCHAR(50) CHECK(user_type IN ('client', 'freelancer')) NOT NULL,  
8   created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
9   password_hash VARCHAR(50) NOT NULL  
10 );  
11  
12 CREATE TABLE clients (  
13   client_id CHAR(10) PRIMARY KEY REFERENCES users(user_id) ON DELETE CASCADE,  
14   company_name VARCHAR(50),  
15   business_type VARCHAR(50)  
16 );  
17  
18 CREATE TABLE projects (  
19   project_id CHAR(10) PRIMARY KEY DEFAULT substring(gen_random_uuid()::TEXT FROM 1 FOR 10),  
20   client_id CHAR(10) REFERENCES clients(client_id) ON DELETE CASCADE,  
21   title VARCHAR(200),  
22   description TEXT,  
23   budget DECIMAL(10,2) CHECK(budget >= 0).  
24 );
```



```
29 CREATE TABLE freelancers (  
30   freelancer_id CHAR(10) PRIMARY KEY REFERENCES users(user_id) ON DELETE CASCADE,  
31   bio TEXT,  
32   portfolio TEXT,  
33   experience INT CHECK(experience >= 0),  
34   hourly_rate DECIMAL(10,2) CHECK(hourly_rate >= 0)  
35 );  
36  
37 CREATE TABLE skills (  
38   skill_id CHAR(10) PRIMARY KEY DEFAULT substring(gen_random_uuid()::TEXT FROM 1 FOR 10),  
39   skill_name VARCHAR(200) UNIQUE NOT NULL  
40 );  
41  
42 CREATE TABLE freelancer_skills (  
43   skill_id CHAR(10) REFERENCES skills(skill_id) ON DELETE CASCADE,  
44   freelancer_id CHAR(10) REFERENCES freelancers(freelancer_id) ON DELETE CASCADE,  
45   PRIMARY KEY (skill_id, freelancer_id)  
46 );
```



```
47  
48 CREATE TABLE proposals (  
49   proposal_id CHAR(10) PRIMARY KEY DEFAULT substring(gen_random_uuid()::TEXT FROM 1 FOR 10),  
50   freelancer_id CHAR(10) REFERENCES freelancers(freelancer_id) ON DELETE CASCADE,  
51   project_id CHAR(10) REFERENCES projects(project_id) ON DELETE CASCADE,  
52   proposal_text TEXT NOT NULL,  
53   bid_amount DECIMAL(10,2) CHECK(bid_amount >= 0),  
54   submitted_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP  
55 );  
56  
57 CREATE TABLE reviews (  
58   review_id CHAR(10) PRIMARY KEY DEFAULT substring(gen_random_uuid()::TEXT FROM 1 FOR 10),  
59   reviewer_id CHAR(10) REFERENCES users(user_id) ON DELETE CASCADE,  
60   reviewee_id CHAR(10) REFERENCES users(user_id) ON DELETE CASCADE,  
61   review_text TEXT,  
62   rating INT CHECK(rating BETWEEN 1 AND 5),  
63   review_date TIMESTAMP DEFAULT CURRENT_TIMESTAMP  
64 );
```

INSERTING DATA INTO TABLES

gigsphere_create_v... X insert_clients.sql X

gigsphere/postgres@PostgreSQL 17

Query Query History

```
1 INSERT INTO clients (client_id, company_name, business_type) VALUES ('85d3d266-8', 'Company_78', 'Healthc
2 INSERT INTO clients (client_id, company_name, business_type) VALUES ('5ab8682f-f', 'Company_17', 'Tech');
3 INSERT INTO clients (client_id, company_name, business_type) VALUES ('f2c0020c-c', 'Company_14', 'E-comm
4 INSERT INTO clients (client_id, company_name, business_type) VALUES ('33a852b0-2', 'Company_24', 'Tech');
5 INSERT INTO clients (client_id, company_name, business_type) VALUES ('ec98e132-3', 'Company_22', 'Marketi
6 INSERT INTO clients (client_id, company_name, business_type) VALUES ('64ef70fd-9', 'Company_33', 'Healthc
7 INSERT INTO clients (client_id, company_name, business_type) VALUES ('00dfcc73-8', 'Company_87', 'E-comm
8 INSERT INTO clients (client_id, company_name, business_type) VALUES ('8d3ea35c-5', 'Company_53', 'Healthc
9 INSERT INTO clients (client_id, company_name, business_type) VALUES ('1db815ce-b', 'Company_55', 'Finance
10 INSERT INTO clients (client_id, company_name, business_type) VALUES ('e8d099d0-4', 'Company_50', 'Tech');
11 INSERT INTO clients (client_id, company_name, business_type) VALUES ('4b3b511e-d', 'Company_59', 'Marketi
12 INSERT INTO clients (client_id, company_name, business_type) VALUES ('069a70ab-d', 'Company_94', 'E-comm
13 INSERT INTO clients (client_id, company_name, business_type) VALUES ('560e8773-6', 'Company_28', 'E-comm
14 INSERT INTO clients (client_id, company_name, business_type) VALUES ('cadcacbd-7', 'Company_71', 'E-comm
15 INSERT INTO clients (client_id, company_name, business_type) VALUES ('47b7b97c-e', 'Company_72', 'Tech');
16 INSERT INTO clients (client_id, company_name, business_type) VALUES ('2d587ae5-8', 'Company_46', 'Tech');
17 INSERT INTO clients (client_id, company_name, business_type) VALUES ('37e2bc86-5', 'Company_30', 'Healthc
18 INSERT INTO clients (client_id, company_name, business_type) VALUES ('a28733c4-a', 'Company_94', 'E-comm
19 INSERT INTO clients (client_id, company_name, business_type) VALUES ('597f9109-4', 'Company_9', 'Finance'
20 INSERT INTO clients (client_id, company_name, business_type) VALUES ('34116317-6', 'Company_14', 'Marketi
```

gigsphere_create_v... X insert_freelancers.sql X

gigsphere/postgres@PostgreSQL 17

Query Query History

```
1 INSERT INTO freelancers (freelancer_id, bio, portfolio, experience, hourly_rate) VALUES ('2d140e33-c', 'E
2 INSERT INTO freelancers (freelancer_id, bio, portfolio, experience, hourly_rate) VALUES ('8bd4e3e8-3', 'E
3 INSERT INTO freelancers (freelancer_id, bio, portfolio, experience, hourly_rate) VALUES ('3aa5c8bb-d', 'E
4 INSERT INTO freelancers (freelancer_id, bio, portfolio, experience, hourly_rate) VALUES ('fececf31a-5', 'E
5 INSERT INTO freelancers (freelancer_id, bio, portfolio, experience, hourly_rate) VALUES ('b0b97605-b', 'E
6 INSERT INTO freelancers (freelancer_id, bio, portfolio, experience, hourly_rate) VALUES ('fd2c1f0d-2', 'E
7 INSERT INTO freelancers (freelancer_id, bio, portfolio, experience, hourly_rate) VALUES ('465c16dc-3', 'E
8 INSERT INTO freelancers (freelancer_id, bio, portfolio, experience, hourly_rate) VALUES ('0a96538c-7', 'E
9 INSERT INTO freelancers (freelancer_id, bio, portfolio, experience, hourly_rate) VALUES ('06c06e76-2', 'E
10 INSERT INTO freelancers (freelancer_id, bio, portfolio, experience, hourly_rate) VALUES ('5989dae6-c', 'E
11 INSERT INTO freelancers (freelancer_id, bio, portfolio, experience, hourly_rate) VALUES ('fdfc17a5-8', 'E
12 INSERT INTO freelancers (freelancer_id, bio, portfolio, experience, hourly_rate) VALUES ('61c160d2-f', 'E
13 INSERT INTO freelancers (freelancer_id, bio, portfolio, experience, hourly_rate) VALUES ('303ea92f-8', 'E
14 INSERT INTO freelancers (freelancer_id, bio, portfolio, experience, hourly_rate) VALUES ('caed638b-8', 'E
15 INSERT INTO freelancers (freelancer_id, bio, portfolio, experience, hourly_rate) VALUES ('2b7c3a56-8', 'E
16 INSERT INTO freelancers (freelancer_id, bio, portfolio, experience, hourly_rate) VALUES ('032f21fa-6', 'E
17 INSERT INTO freelancers (freelancer_id, bio, portfolio, experience, hourly_rate) VALUES ('4b5a5164-a', 'E
18 INSERT INTO freelancers (freelancer_id, bio, portfolio, experience, hourly_rate) VALUES ('fb34d04a-5', 'E
19 INSERT INTO freelancers (freelancer_id, bio, portfolio, experience, hourly_rate) VALUES ('52ffc6c7-1', 'E
20 INSERT INTO freelancers (freelancer_id, bio, portfolio, experience, hourly_rate) VALUES ('26495112-1', 'E
```

gigsphere_create_v... X insert_users.sql X

gigsphere/postgres@PostgreSQL 17

Query Query History

```
1 INSERT INTO users (username, email, user_type, password_hash)
2 VALUES
3 ('sa43hil_sh34arma', 'sahil.sharma92@gmail.com', 'freelancer', 'abc123xyz'),
4 ('deepika.kumar12', 'deepika.kumar12@hotmail.com', 'client', 'p@ssw0rd99'),
5 ('rahul_dev_567', 'rahul.dev567@yahoo.com', 'freelancer', 'securePass890'),
6 ('mishraVish_21', 'vishal.mishra21@gmail.com', 'freelancer', 'VishPass123'),
7 ('tanmay.tech', 'tanmay.tech@gmail.com', 'freelancer', 'passTanmy99'),
8 ('payal_09', 'payal.09@gmail.com', 'client', 'pass123payal'),
9 ('aarti_patil11', 'aarti.patil11@gmail.com', 'freelancer', 'art_pat999'),
10 ('roshan_x97', 'roshan.x97@yahoo.com', 'freelancer', 'RoshanSecure97'),
11 ('mehul.business', 'mehul.business@gmail.com', 'client', 'MehBiz876'),
12 ('shivang.designs', 'shivang.designs@outlook.com', 'freelancer', 'shivDesigns77'),
13 ('parth_dev_101', 'parth.dev101@gmail.com', 'freelancer', 'ParthCode101'),
14 ('nitin.raajput777', 'nitin.raajput777@gmail.com', 'client', 'Nitin77Pass'),
15 ('manisha_codes', 'manisha.codes@yahoo.com', 'freelancer', 'ManiCode77'),
16 ('rohit.malik78', 'rohit.malik78@outlook.com', 'client', 'RMalikPass99'),
17 ('anushka.tech', 'anushka.tech@gmail.com', 'freelancer', 'AnushkaSecure88'),
18 ('tanishq_vfx', 'tanishq.vfx@gmail.com', 'freelancer', 'VFX_Tan_444'),
19 ('kavya.art_22', 'kavya.art22@yahoo.com', 'freelancer', 'KavArtPass77'),
20 ('pranav_dev', 'pranav.dev@gmail.com', 'client', 'Pranav77Pass'),
21 ('surai.freelance', 'surai.freelance@yahoo.com', 'freelancer', 'SuraiFL789').
```

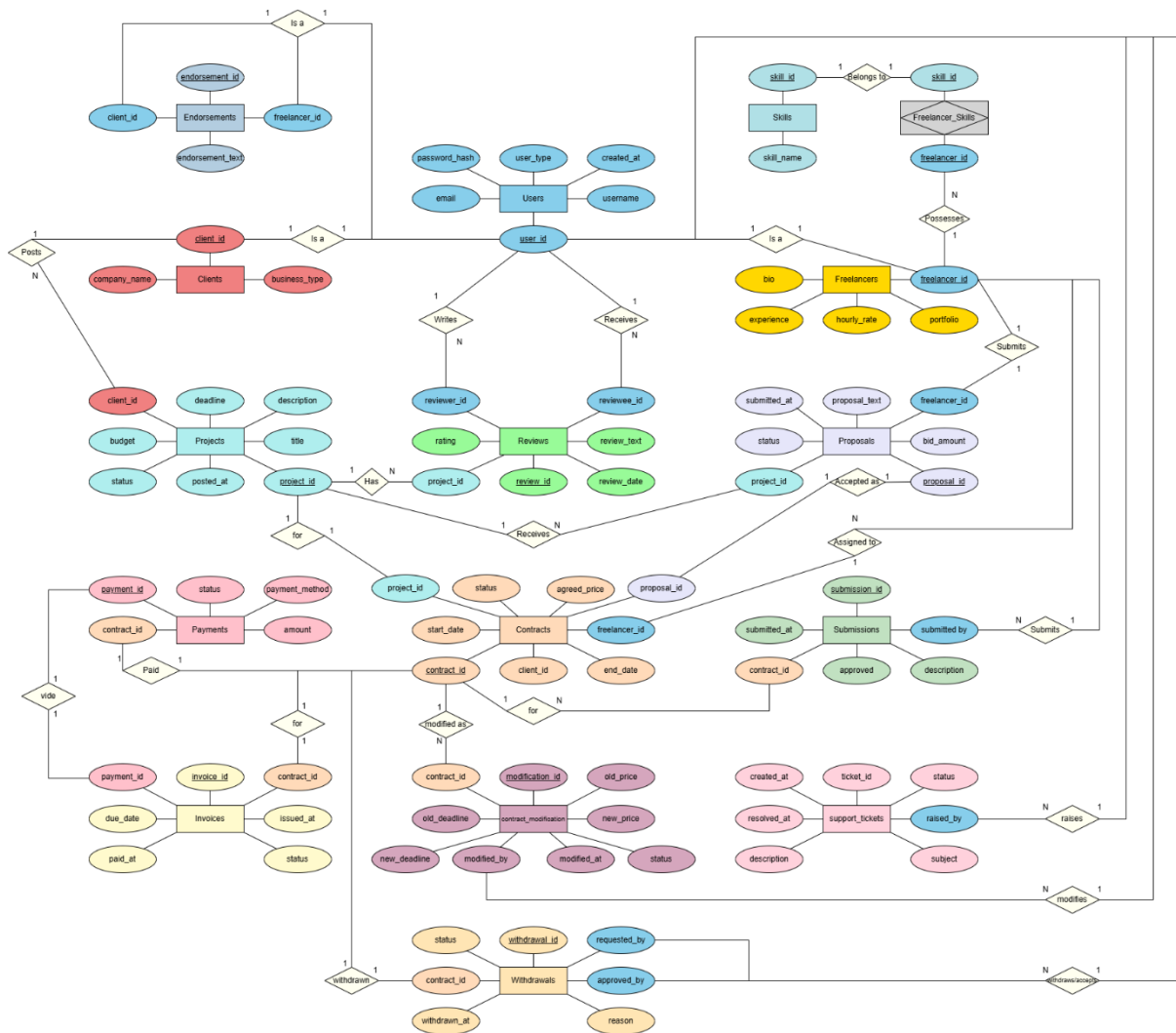
OUTPUT

	user_id [PK] character (10)	username character varying (20)	email character varying (100)	user_type character varying (50)	created_at timestamp without time zone	password_hash character varying (128)
1	2d140e33-c	sa43hil_sh34arma	sahil.sharma92@gmail.com	freelancer	2024-10-16 20:11:05	abc123xyz
2	85d3d266-8	deepika.kumar12	deepika.kumar12@hotmail.com	client	2024-11-05 18:39:45	p@ssw0rd5
3	8bd4ece8-3	rahul_dev_567	rahul.dev567@yahoo.com	freelancer	2024-12-17 10:33:48	securePass
4	3aa5c8bb-d	mishraVish_21	vishal.mishra21@gmail.com	freelancer	2024-10-18 01:54:46	VishPass12
5	fecef31a-5	tanmay.tech	tanmay.tech@gmail.com	freelancer	2024-11-01 04:24:14	passTanmy
6	5ab8682f-f	payal_09	payal.09@gmail.com	client	2024-11-23 16:44:59	pass123pay
7	b0b97605-b	aarti_patil11	aarti.patil11@gmail.com	freelancer	2025-01-31 20:23:07	art_pat999
8	fd2c1f0d-2	roshan_x97	roshan.x97@yahoo.com	freelancer	2024-10-04 03:05:02	RoshanSec
9	f2c0020c-c	mehul.business	mehul.business@gmail.com	client	2025-01-24 07:19:38	MehBiz876
10	465c16dc-3	shivang.designs	shivang.designs@outlook.com	freelancer	2024-09-16 18:59:39	shivDesigns
11	0a96538c-7	parth_dev_101	parth.dev101@gmail.com	freelancer	2024-09-18 20:25:08	ParthCode1
12	33a852b0-2	nitin.rajput777	nitin.rajput777@gmail.com	client	2024-10-24 15:18:29	Nitin77Pas
13	06c06e76-2	manisha_codes	manisha.codes@yahoo.com	freelancer	2024-09-21 19:00:51	ManiCode@

	project_id [PK] character (10)	client_id character (10)	title character varying (200)	description text
1	f6c43c7d-e	85d3d266-8	Social Media Content Creation	This project focuses on social media content creation with a detailed plan.
2	ef2fc250-d	85d3d266-8	Custom CRM Development	This project focuses on custom crm development with a detailed plan.
3	69bbd78f-4	85d3d266-8	AI Chatbot Development	This project focuses on ai chatbot development with a detailed plan.
4	c5afd464-b	85d3d266-8	Mobile App UI/UX Design	This project focuses on mobile app ui/ux design with a detailed plan.
5	13cca556-0	5ab8682f-f	Financial Consulting Services	This project focuses on financial consulting services with a detailed plan.
6	954c99c1-5	5ab8682f-f	Logo and Branding Package	This project focuses on logo and branding package with a detailed plan.
7	8bf7ffae-7	5ab8682f-f	Custom CRM Development	This project focuses on custom crm development with a detailed plan.
8	a5061c4c-4	f2c0020c-c	Data Analysis and Reporting	This project focuses on data analysis and reporting with a detailed plan.
9	cb2f9e3b-5	f2c0020c-c	Social Media Content Creation	This project focuses on social media content creation with a detailed plan.
10	ebf993ce-f	33a852b0-2	SEO Optimization Project	This project focuses on seo optimization project with a detailed plan.
11	328091e9-b	33a852b0-2	E-commerce Website Development	This project focuses on e-commerce website development with a detailed plan.
12	11e21218-a	33a852b0-2	Social Media Content Creation	This project focuses on social media content creation with a detailed plan.
13	37cc0369-0	33a852b0-2	Social Media Content Creation	This project focuses on social media content creation with a detailed plan.

	contract_id [PK] character (10)	client_id character (10)	freelancer_id character (10)	project_id character (10)	proposal_id character (10)	agreed_price numeric (10,2)	start_date date	end_date date	status character (20)
1	c2d90c59-b	33a852b0-2	2d140e33-c	11e21218-a	54b02cc5-3	2595.07	2025-02-14	2025-02-20	completed
2	d0ccc9cc-8	25c430d4-a	2d140e33-c	4ec469ce-0	c439c465-e	10587.19	2025-02-12	[null]	completed
3	77c35eb0-a	e479845f-2	8bd4ece8-3	c650fe50-5	92bc13f3-5	1911.32	2025-02-25	2025-09-24	cancelled
4	eecdadcb-4	64ef70fd-9	8bd4ece8-3	2240d6f4-a	9c40fbd9-9	4049.40	2025-03-01	2025-02-01	active
5	0dfc55cd-7	dee61fc3-7	8bd4ece8-3	8fdde2da-e	f71a871f-c	5757.86	2025-02-15	2025-09-08	cancelled
6	65a10d6e-2	21b435e6-0	8bd4ece8-3	2b111c89-7	ba2c027c-d	2068.53	2025-03-02	[null]	completed
7	87b46b0d-0	7bd9fdb8-5	8bd4ece8-3	80113dcf-a	580cdfc9-e	2167.26	2025-03-02	2025-09-07	active
8	260b54fd-3	6948b4e9-e	3aa5c8bb-d	dd5ca364-e	1e1cafb3-3	2778.82	2025-02-10	[null]	active
9	19043c24-e	37e2bc86-5	3aa5c8bb-d	50d38286-a	e560e037-7	986.12	2025-03-01	[null]	completed
10	b5c3cd9e-6	aab4b6ec-1	3aa5c8bb-d	e39ee2c6-1	798b566b-a	6344.96	2025-02-17	[null]	completed
11	39de994a-6	3bd64de9-8	fecef31a-5	b795c97f-1	0e7c4906-8	8599.70	2025-02-18	2025-08-08	cancelled
12	7bf8951-a	25c430d4-a	b0b97605-b	d47a6fe2-1	e96852cf-4	2058.73	2025-02-07	2025-06-08	cancelled
13	1ebb7acc-2	5ab8682f-f	b0b97605-b	8bf7ffae-7	a7a7c413-b	2945.87	2025-02-27	2025-02-28	cancelled

ER DIAGRAM



RELATIONAL SCHEMA

