

Flight Management Database System

TEAM NO. 9
TEAM MEMBERS:

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1. User Requirement Specifications

Goal / Purpose

- Provide investors a simple web interface to track holdings, transactions, portfolio allocations, and historical performance.

Primary users

- Individual investors (students, retail investors), each with a personal account.

Constraints / Assumptions

- Users provide their own market pricing updates if no external API integration is present.
- Single-tenant per account (no shared portfolios).

Review-1 deliverables

- Requirements document, basic ER and relational schema, initial DDL, basic REST endpoints documented, and a working skeleton for frontend pages for: login, register, dashboard, add instrument, add transaction, transaction history.

2. Abstract/Description

This Personal Investment App lets users record and track investments across instruments (stocks, mutual funds, fixed deposits, crypto, etc.), view portfolio summaries, enter transactions (buy/sell), categorize investments, and see performance/analytics. The application is a full-stack JavaScript project (React frontend, Node/Express backend). The report documents functional requirements, data model (ER & relational schema), SQL DDL, CRUD examples, stored procedures/triggers, and sample backend invocation snippets.

3. User Requirement Specification

Functional requirements (priority)

- FR1: User authentication (signup / login / logout).
- FR2: Create / Read / Update / Delete user profile.
- FR3: Add investment instruments with metadata (name, type, ticker, purchase_date, purchase_price, quantity).
- FR4: Add transactions (buy, sell, dividend, interest).
- FR5: Show portfolio summary (total invested, current value, P&L) and allocation by asset class.
- FR6: Provide transaction history, filter/sort by date, asset, type.
- FR7: Export/import portfolio in CSV.
- FR8: Admin actions (optional): Seed instrument master data.
- FR9: Responsive frontend UI for desktop and mobile.

Non-functional requirements

- NFR1: Secure password storage (bcrypt).
- NFR2: Backend REST API with JSON responses.
- NFR3: Performance — handle up to thousands of transactions per user.
- NFR4: Data persistence in RDBMS (or NoSQL if chosen).
- NFR5: Cross-browser compatibility.

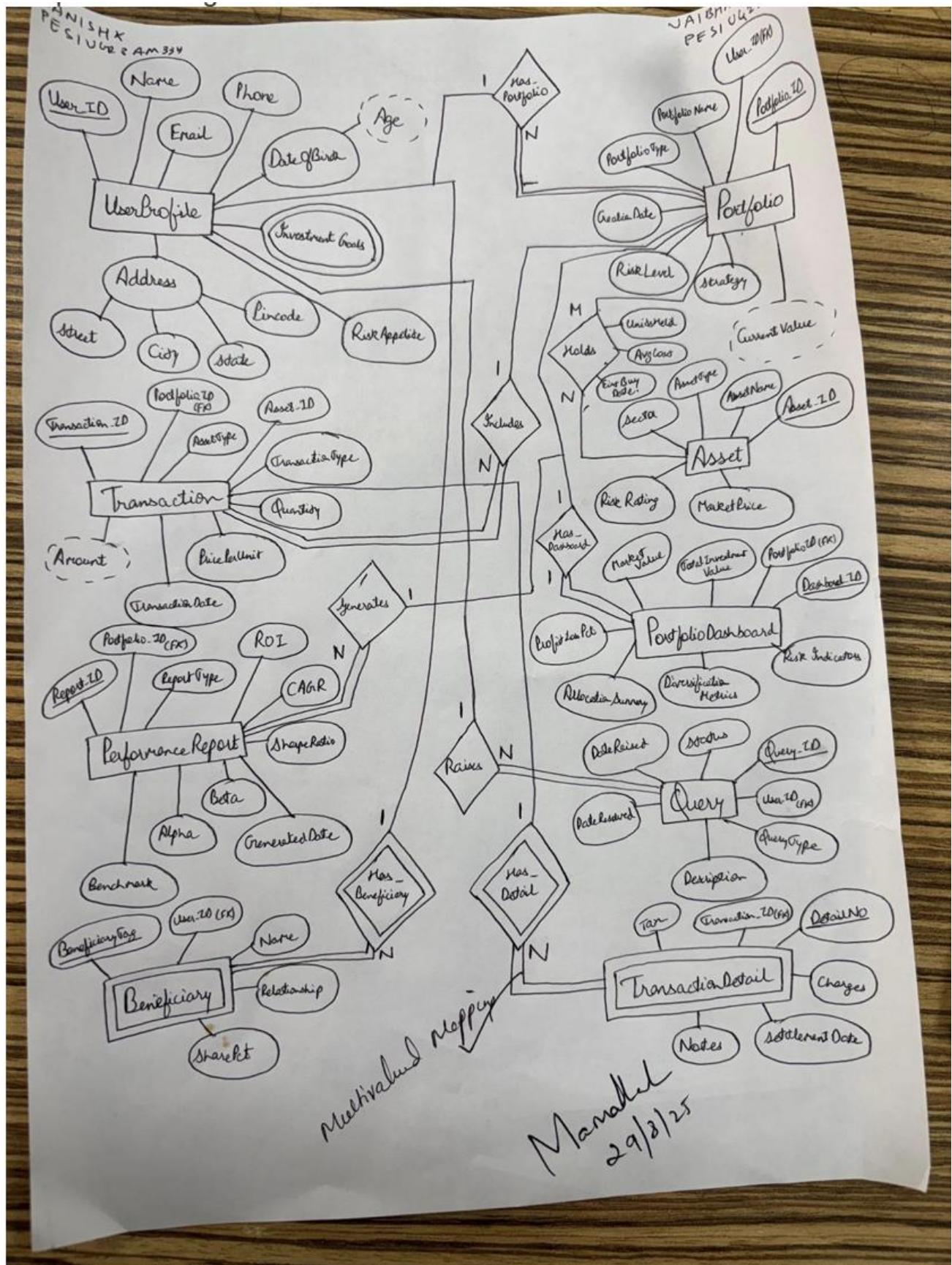
4. Software Used

Component	Tool / Language
Database	MySQL
Interface	MySQL Workbench
Language	SQL (DDL, DML, PL/SQL), ReactJS, Node, HTML, CSS
ER Diagram	Hand-drawn
Testing	SQL Command Line, Workbench Console
OS	Windows

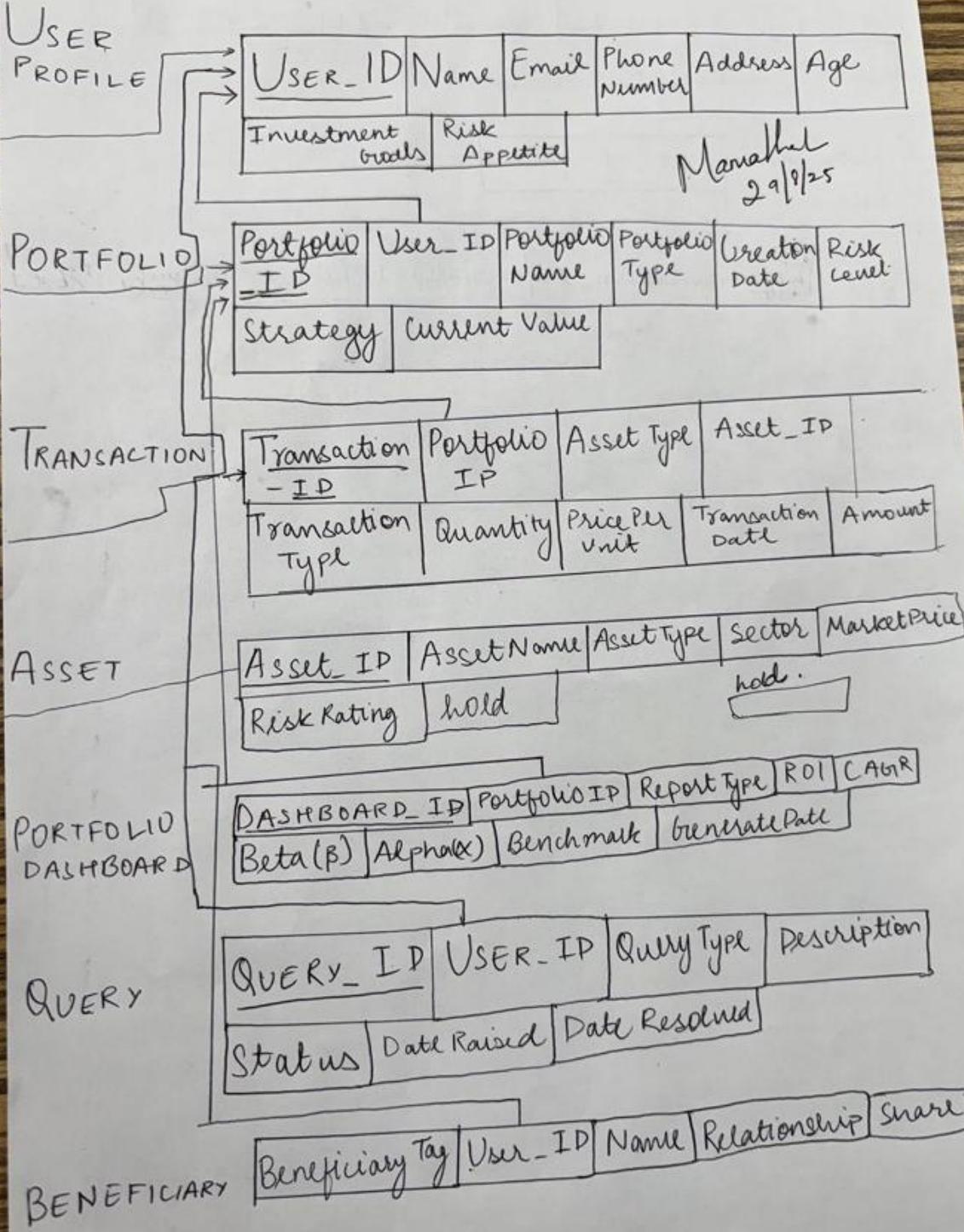
5. ER Diagram

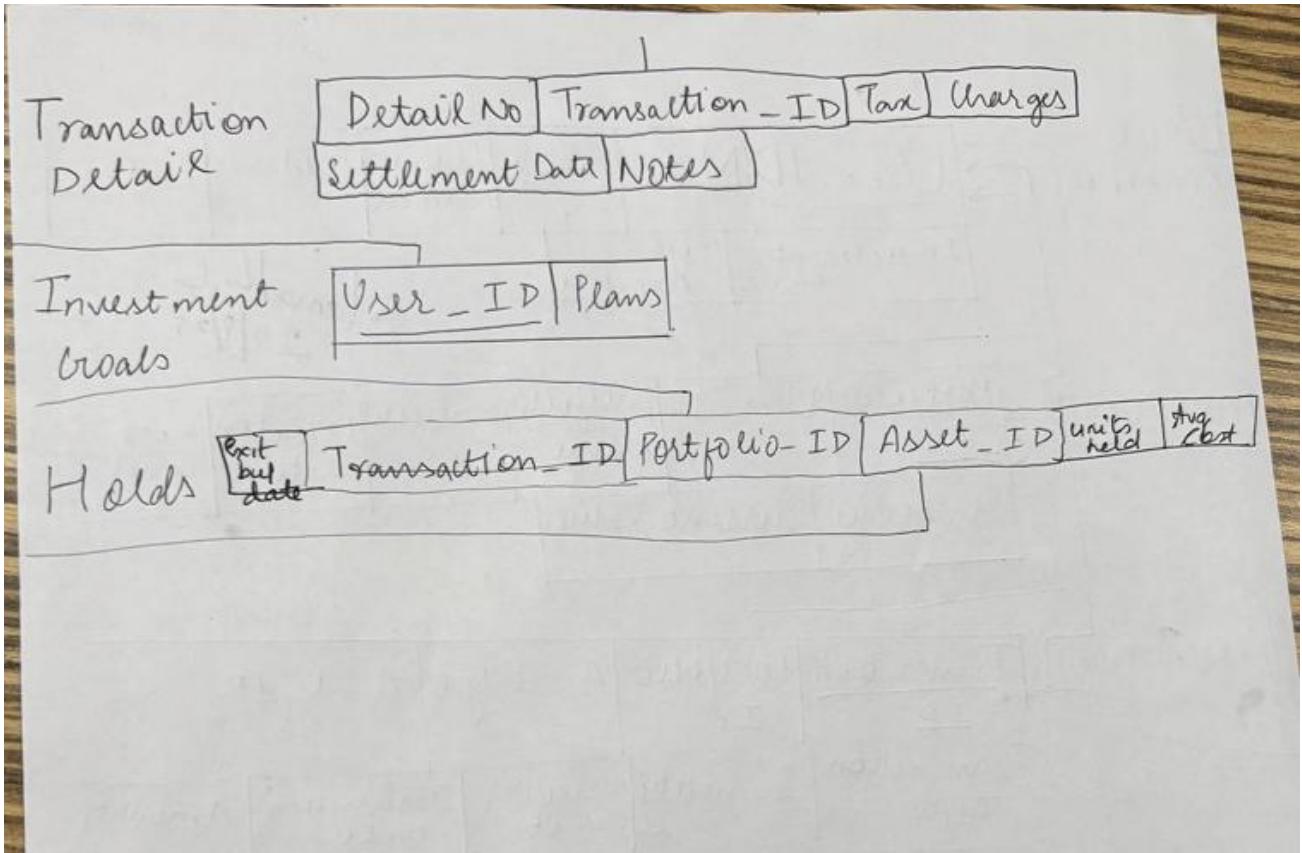
Entities:

- Flight, Airport, Aircraft, Tickets, Passenger, Finance, Admin, 2FA.



6. Relational Schema





7. DDL Commands (Schema Creation)

CREATE:

```
mysql> CREATE TABLE UserProfile (
->     User_ID INT AUTO_INCREMENT PRIMARY KEY,
->     Name VARCHAR(100),
->     Email VARCHAR(100) UNIQUE,
->     Phone_No VARCHAR(20),
->     Address VARCHAR(255),
->     Age INT,
->     Investment_Goals VARCHAR(255),
->     Risk_Appetite VARCHAR(50)
-> );
Query OK, 0 rows affected (0.03 sec)
```

8. CRUD operation Screenshots

```
mysql> CREATE TABLE UserProfile (
    ->     User_ID INT AUTO_INCREMENT PRIMARY KEY,
    ->     Name VARCHAR(100),
    ->     Email VARCHAR(100) UNIQUE,
    ->     Phone_No VARCHAR(20),
    ->     Address VARCHAR(255),
    ->     Age INT,
    ->     Investment_Goals VARCHAR(255),
    ->     Risk_Appetite VARCHAR(50)
    -> );
Query OK, 0 rows affected (0.03 sec)
```

Create

```
mysql> INSERT INTO Portfolio (User_ID, Portfolio_Name, Portfolio_Type, Creation_Date, Risk_Level, Strategy, Current_Value)
-> VALUES (1, 'Green Energy Fund', 'Equity', CURDATE(), 'Moderate', 'Sustainable Investments', 120000.00);
Query OK, 1 row affected (0.01 sec)

mysql> select * from Portfolio;
+-----+-----+-----+-----+-----+-----+-----+
| Portfolio_ID | User_ID | Portfolio_Name | Portfolio_Type | Creation_Date | Risk_Level | Strategy |
+-----+-----+-----+-----+-----+-----+-----+
| 1 | 1 | Tech Growth | Equity | 2025-01-01 | High | Aggressive Growth | 351000.00 |
| 2 | 2 | Balanced Fund | Hybrid | 2025-02-15 | Moderate | Diversified Mix | 167100.00 |
| 3 | 3 | Safe Haven | Debt | 2025-03-20 | Low | Capital Preservation | 115000.00 |
| 4 | 4 | Crypto Vision | Crypto | 2025-04-05 | High | High-Risk Crypto Mix | 75000.00 |
| 5 | 1 | Long Term | Equity | 2025-05-10 | Moderate | Value Investing | 58000.00 |
| 6 | 5 | Retirement Fund | Debt | 2025-06-01 | Low | Fixed Income Focus | 128000.00 |
| 7 | 6 | Aggressive Growth | Equity | 2025-06-15 | High | Small Cap Focus | 105000.00 |
| 8 | 7 | Education Corpus | Hybrid | 2025-07-01 | Moderate | Balanced Approach | 126000.00 |
| 9 | 8 | Tax Saver | ELSS | 2025-07-15 | High | Tax Efficient | 100000.00 |
| 10 | 9 | Property Fund | Real Estate | 2025-08-01 | Moderate | REIT Investment | 147000.00 |
| 11 | 10 | Global Diversified | International | 2025-08-15 | High | Global Markets | 115000.00 |
| 12 | 1 | Green Energy Fund | Equity | 2025-11-10 | Moderate | Sustainable Investments | 120000.00 |
+-----+-----+-----+-----+-----+-----+-----+
12 rows in set (0.00 sec)
```

Read

```
mysql> -- Fetch all portfolios with owner name
mysql> SELECT p.Portfolio_ID, p.Portfolio_Name, u.Name, p.Current_Value
      -> FROM Portfolio p
      -> JOIN UserProfile u ON p.User_ID = u.User_ID;
+-----+-----+-----+-----+
| Portfolio_ID | Portfolio_Name | Name       | Current_Value |
+-----+-----+-----+-----+
|      1 | Tech Growth    | Tanishk Maheshwari | 351000.00 |
|      5 | Long Term     | Tanishk Maheshwari | 58000.00  |
|     12 | Green Energy Fund | Tanishk Maheshwari | 120000.00 |
|      2 | Balanced Fund   | Aarav Sharma      | 167100.00 |
|      3 | Safe Haven      | Riya Patel        | 115000.00 |
|      4 | Crypto Vision    | Ananya Verma      | 75000.00  |
|      6 | Retirement Fund  | Priya Singh        | 128000.00 |
|      7 | Aggressive Growth | Rahul Kumar       | 105000.00 |
|      8 | Education Corpus | Sneha Gupta       | 126000.00 |
|      9 | Tax Saver        | Vikram Joshi      | 100000.00 |
|     10 | Property Fund    | Neha Reddy        | 147000.00 |
|     11 | Global Diversified | Arjun Mehta       | 115000.00 |
+-----+-----+-----+-----+
12 rows in set (0.00 sec)
```

Update

```
mysql> -- Verify trigger action in PortfolioDashboard
mysql> SELECT Portfolio_ID, ROI FROM PortfolioDashboard WHERE Portfolio_ID = 12;
Empty set (0.00 sec)

mysql>
```

9. List of functionalities/features of the application and its associated screenshots using front end

The screenshot displays the 'Investment Dashboard' interface. At the top, there's a navigation bar with tabs: Overview, Investors, Portfolios, Assets, Transactions, and Analytics. Below the navigation bar, the main dashboard area features several summary cards:

- Total Investors: 10
- Active Portfolios: 11
- Available Assets: 6
- Total Portfolio Value: ₹1,477,100
- Average ROI: 42.3%
- Total Transactions: 25

Below these cards, there are two main sections: 'Recent Transactions' and 'Database Features Demo'.

Recent Transactions:

Type	Portfolio	Asset	Amount	Date
BUY	Balanced Fund	HDFC Bank	₹77,500	20/02/2025
BUY	Tech Growth	Apple Inc	₹15,000	01/03/2025
BUY	Balanced Fund	Tesla Inc	₹9,600	15/03/2025
BUY	Safe Haven	Tata Motors	₹68,000	25/03/2025
BUY	Tech Growth	Bitcoin	₹116,000	01/04/2025

Database Features Demo:

This section includes a 'Test Beneficiary Trigger' form and a 'Portfolio Functions' section.

Test Beneficiary Trigger:

User	Name
Sneha Gupta	Test Beneficiary
Relationship	Share %
Family	30

Portfolio Functions:

Property Fund
ROI: 141.2% Generate Dashboard | User Summary

📊 Portfolio Performance (Join + Aggregate Query)

Portfolio	User	Total Investment	Current Value	ROI	Beta	Alpha
Property Fund	Neha Reddy	₹60,950	₹147,000	141.2%	0.72	0.48
Property Fund	Neha Reddy	₹60,950	₹147,000	141.2%	0.00	0.00
Property Fund	Neha Reddy	₹60,950	₹147,000	141.2%	0.00	0.00
Property Fund	Neha Reddy	₹60,950	₹147,000	141.2%	0.00	0.00
Property Fund	Neha Reddy	₹60,950	₹147,000	141.2%	0.00	0.00
Aggressive Growth	Rahul Kumar	₹45,100	₹105,000	132.8%	1.15	0.90
Global Diversified	Arjun Mehta	₹54,200	₹115,000	112.2%	1.02	0.68
Education Corpus	Sneha Gupta	₹68,100	₹126,000	85.0%	0.88	0.60
Tax Saver	Vikram Joshi	₹61,500	₹100,000	62.6%	1.08	0.75
Crypto Vision	Ananya Verma	₹62,200	₹75,000	20.6%	1.25	1.10
Long Term	Tanishk Maheshwari	₹53,525	₹58,000	8.4%	0.85	0.65
Retirement Fund	Priya Singh	₹124,200	₹128,000	3.1%	0.55	0.35
Tech Growth	Tanishk Maheshwari	₹341,000	₹341,000	0.0%	1.10	0.80
Tech Growth	Tanishk Maheshwari	₹341,000	₹341,000	0.0%	0.00	0.00
Balanced Fund	Aarav Sharma	₹167,100	₹167,100	0.0%	0.95	0.70
Safe Haven	Riya Patel	₹120,000	₹115,000	-4.2%	0.60	0.40

PORTFOLIO
Overview
Investors
Portfolios
Assets
Transactions
Analytics

Users Management

[Add New User](#)

All Users (10)						
ID	Name	Email	Age	Risk Appetite	Investment Goals	Actions
1	Tanishk Maheshwari	tanishk@example.com	20	High	Wealth Creation	<button>Edit</button> <button>Delete</button>
2	Aarav Sharma	aarav@example.com	25	Moderate	Long-term Growth	<button>Edit</button> <button>Delete</button>
3	Riya Patel	riya@example.com	27	Low	Retirement Planning	<button>Edit</button> <button>Delete</button>
4	Ananya Verma	ananya@example.com	23	Moderate	Education Fund	<button>Edit</button> <button>Delete</button>
5	Priya Singh	priya.singh@example.com	32	Moderate	Retirement Planning	<button>Edit</button> <button>Delete</button>
6	Rahul Kumar	rahul.kumar@example.com	28	High	Wealth Accumulation	<button>Edit</button> <button>Delete</button>
7	Sneha Gupta	sneha.gupta@example.com	35	Low	Children Education	<button>Edit</button> <button>Delete</button>
8	Vikram Joshi	vikram.joshi@example.com	45	Moderate	Tax Saving	<button>Edit</button> <button>Delete</button>
9	Neha Reddy	neha.reddy@example.com	29	High	Real Estate Investment	<button>Edit</button> <button>Delete</button>
10	Arjun Mehta	arjun.mehta@example.com	38	Moderate	International Diversification	<button>Edit</button> <button>Delete</button>

PORTFOLIO

- Overview
- Investors
- Portfolios
- Assets
- Transactions
- Analytics

Portfolios Management

[Create Portfolio](#)

All Portfolios (11)							
ID	Portfolio Name	User	Type	Risk Level	Current Value	Database Functions	Actions
1	Tech Growth	Tanishk Maheshwari	Equity	High	₹341000.00	Total Investment Calculate ROI Get Risk	Delete
5	Long Term	Tanishk Maheshwari	Equity	Moderate	₹58000.00	Total Investment Calculate ROI Get Risk	Delete
2	Balanced Fund	Aarav Sharma	Hybrid	Moderate	₹167100.00	Total Investment Calculate ROI Get Risk	Delete
3	Safe Haven	Riya Patel	Debt	Low	₹115000.00	Total Investment Calculate ROI Get Risk	Delete
4	Crypto Vision	Ananya Verma	Crypto	High	₹75000.00	Total Investment Calculate ROI Get Risk	Delete
6	Retirement Fund	Priya Singh	Debt	Low	₹128000.00	Total Investment Calculate ROI Get Risk	Delete

PORTFOLIO

- Overview
- Investors
- Portfolios
- Assets
- Transactions
- Analytics

Assets Management

Available Assets (6)

ID	Asset Name	Type	Sector	Market Price	Risk Rating	Hold Status
1	Apple Inc	Stock	Technology	₹175.50	Medium	Hold
2	Bitcoin	Crypto	Blockchain	\$60000.00	High	Hold
3	HDFC Bank	Stock	Finance	₹1600.00	Low	Hold
4	Tata Motors	Stock	Automobile	₹920.00	Medium	Hold
5	Tesla Inc	Stock	Automobile	₹250.75	High	Hold
6	Gold ETF	ETF	Commodities	₹55.20	Low	Hold

PORTFOLIO
Overview
Investors
Portfolios
Assets
Transactions
Analytics

Transactions History

All Transactions (25)

ID	Portfolio	Asset	Type	Quantity	Price/Unit	Total Amount	Date	Actions
25	Tech Growth	Apple Inc	BUY	100	₹100.00	₹10000.00	10/11/2025	<button>Delete</button>
26	Balanced Fund	Apple Inc	BUY	400	₹200.00	₹80000.00	10/11/2025	<button>Delete</button>
24	Tech Growth	Tesla Inc	BUY	200	₹1000.00	₹200000.00	10/11/2025	<button>Delete</button>
22	Global Diversified	Apple Inc	BUY	100	₹242.00	₹24200.00	25/08/2025	<button>Delete</button>
21	Global Diversified	Tesla Inc	BUY	120	₹250.00	₹30000.00	20/08/2025	<button>Delete</button>
20	Property Fund	Bitcoin	BUY	0	₹60500.00	₹18150.00	10/08/2025	<button>Delete</button>
19	Property Fund	Gold ETF	BUY	800	₹53.50	₹42800.00	05/08/2025	<button>Delete</button>
18	Tax Saver	HDFC Bank	BUY	30	₹1650.00	₹49500.00	25/07/2025	<button>Delete</button>
17	Tax Saver	Apple Inc	BUY	50	₹240.00	₹12000.00	20/07/2025	<button>Delete</button>
16	Education Corpus	Tata Motors	BUY	40	₹940.00	₹37600.00	10/07/2025	<button>Delete</button>
15	Education Corpus	Bitcoin	BUY	1	₹61000.00	₹30500.00	05/07/2025	<button>Delete</button>
14	Aggressive Growth	Tesla Inc	BUY	100	₹255.00	₹25500.00	25/06/2025	<button>Delete</button>

PORTFOLIO
localhost:3000 says
Transaction added successfully using stored procedure!
Assets
Transactions
Analytics

Advanced Features

Stored Procedure: Add Transaction

Portfolio ID	Asset ID
<input type="text" value="1"/>	<input type="text" value="1"/>
Transaction Type	Quantity
<input type="text" value="BUY"/>	<input type="text" value="100"/>
Price per Unit	Transaction Date
<input type="text" value="100"/>	<input type="text" value="18-11-2025"/>

Add Transaction (Stored Procedure)

Portfolio Performance

High Risk Users (Nested Query)

Sector-wise Summary

OK

Portfolio Performance

[Load Performance Data](#)

Portfolio	User	ROI	Current Value
Property Fund	Neha Reddy	141.18%	₹147000.00
Property Fund	Neha Reddy	141.18%	₹147000.00
Property Fund	Neha Reddy	141.18%	₹147000.00
Property Fund	Neha Reddy	141.18%	₹147000.00
Property Fund	Neha Reddy	141.18%	₹147000.00
Aggressive Growth	Rahul Kumar	132.82%	₹105000.00
Global Diversified	Arjun Mehta	112.18%	₹115000.00
Education Corpus	Sneha Gupta	85.02%	₹126000.00
Tax Saver	Vikram Joshi	62.60%	₹100000.00
Crypto Vision	Ananya Verma	20.58%	₹75000.00
Long Term	Tanishk Maheshwari	8.36%	₹58000.00
Retirement Fund	Priya Singh	3.06%	₹128000.00
Tech Growth	Tanishk Maheshwari	0.00%	₹351000.00
Tech Growth	Tanishk Maheshwari	0.00%	₹351000.00
Balanced Fund	Aarav Sharma	0.00%	₹167100.00
Safe Haven	Riya Patel	-4.17%	₹115000.00

Sector-wise Summary

[Load Sector Data](#)

Sector	Total Assets	Total Value
Finance	1	₹272000.00
Blockchain	1	₹240000.00
Automobile	2	₹181863.75
Commodities	1	₹126960.00
Technology	1	₹61425.00

10
Total Investors

42.3%
Average ROI

26
Total Transactions

localhost:3000 says
✔ Beneficiary added successfully! Trigger executed.

OK

₹1,487,100
Total Portfolio Value

Recent Transactions

Type	Portfolio	Asset	Amount	Date
BUY	Balanced Fund	HDFC Bank	₹77,500	20/02/2025
BUY	Tech Growth	Apple Inc	₹15,000	01/03/2025
BUY	Balanced Fund	Tesla Inc	₹9,600	15/03/2025
BUY	Safe Haven	Tata Motors	₹68,000	25/03/2025
BUY	Tech Growth	Bitcoin	₹116,000	01/04/2025

Database Features Demo

Test Beneficiary Trigger

User	Name
Sneha Gupta	Test Beneficiary

Relationship	Share %
Family	0

Test Beneficiary Trigger

This tests the trigger that prevents beneficiary share from exceeding 100%

The screenshot shows a financial dashboard with various metrics and a central error dialog.

Top Metrics:

- Total Investors:** 10
- Average ROI:** 42.3%
- Total Transactions:** 26
- Total Portfolio Value:** ₹1,487,100

Error Dialog:

localhost:3000 says
Trigger Error: Total Beneficiary Share exceeds 100%

Recent Transactions Table:

Type	Portfolio	Asset	Amount	Date
BUY	Balanced Fund	HDFC Bank	₹77,500	20/02/2025
BUY	Tech Growth	Apple Inc	₹15,000	01/03/2025
BUY	Balanced Fund	Tesla Inc	₹9,600	15/03/2025
BUY	Safe Haven	Tata Motors	₹68,000	25/03/2025
BUY	Tech Growth	Bitcoin	₹116,000	01/04/2025

Database Features Demo:

Test Beneficiary Trigger:

User: Sneha Gupta Name: Test Beneficiary

Relationship: Family Share %: 30

Test Beneficiary Trigger
This tests the trigger that prevents beneficiary share from exceeding 100%

Portfolio Functions:

Property Fund
ROI: 141.2% [Generate Dashboard](#) [User Summary](#)

Property Fund
ROI: 141.2% [Generate Dashboard](#) [User Summary](#)

Property Fund
ROI: 141.2% [Generate Dashboard](#) [User Summary](#)

10. Triggers, Procedures, Functions, Nested Queries, Joins, Aggregates

Functions:

- Test Function: get_total_investment(pid)
- Test Function: calc_roi(invested, current_val)
- Test Function: get_risk_by_portfolio(pid)

Procedures:

- Procedure: add_transaction()
- generate_dashboard()
- user_summary()

Triggers:

- Trigger: after_transaction_insert
- Trigger: after_portfolio_update
- Trigger: check_beneficiary_share

11. Code Snippets for Invoking Procedures / Functions / Triggers

Functions:

```
SELECT get_total_investment(1) AS 'Total Investment of Portfolio 1';
SELECT get_total_investment(2) AS 'Total Investment of Portfolio 2';
```

Procedures:

```
CALL add_transaction(1, 1, 'BUY', 5, 180.00, '2025-10-08');
SELECT * FROM Transaction WHERE Portfolio_ID = 1;
SELECT Current_Value FROM Portfolio WHERE Portfolio_ID = 1;
```

Triggers:

```
INSERT INTO Beneficiary (User_ID, Name, Relationship, Share_Per)
VALUES (1, 'Test Person', 'Friend', 10.00);
```

12. SQL File Deliverable

File uploaded in github repository.

13. GITHUB REPOSITORY LINK

<https://github.com/Tanishk-dot/personal-investment-app>