Project: PortSure – Portfolio Risk Analysis & Investment Compliance System

1. Introduction

PortSure is designed for investment firms and asset managers to manage portfolio risk by integrating asset allocation, risk scoring, and compliance monitoring into a single platform. It enables analysts to evaluate portfolio exposure, simulate market scenarios, and ensure adherence to regulatory guidelines like SEBI and MiFID II. The system supports multiple asset classes (equities, bonds, derivatives), provides automated risk alerts, and offers dashboards for performance analytics. PortSure improves decision-making, reduces compliance risks, and enhances transparency for investors.

Supports backend development using **Java (Spring Boot)** and **.NET (ASP.NET Core)**.

2. Module Overview

2.1 Investor Registration & Portfolio Setup Module

2.2 Asset Allocation & Trade Capture Module

2.3 Risk Scoring & Exposure Analysis Module

2.4 Compliance Monitoring & Audit Module

2.5 Portfolio Performance & Reporting Module

3. Architecture Overview

- **Frontend:** Angular/React for investor and admin dashboards
- **Backend:** REST APIs for portfolio and compliance workflows
- **Database:** MySQL/SQL Server for structured portfolio and transaction data

4. Module-Wise Design

4.1 Investor Registration & Portfolio Setup Module
Features:

- Register investors and maintain profiles
- Create and configure portfolios
- Assign risk categories

Entities:

Investor

- InvestorID
- Name

- ContactInfo
- RiskProfile
- PortfolioID

4.2 Asset Allocation & Trade Capture Module
Features:

- Allocate assets across equities, bonds, and derivatives
- Capture trade details and settlement status
- Track portfolio diversification

Entities:

Trade

- TradeID
- PortfolioID
- AssetType
- Quantity
- Price
- Status (EXECUTED, PENDING)

4.3 Risk Scoring & Exposure Analysis Module
Features:

- Calculate risk scores based on market volatility
- Monitor exposure limits
- Generate alerts for breaches

Entities:

RiskScore

- RiskID
- PortfolioID
- ScoreValue
- EvaluationDate

4.4 Compliance Monitoring & Audit Module
Features:

- Track adherence to investment guidelines
- Maintain audit logs for trades
- Generate compliance reports

Entities:

ComplianceLog

- LogID

- PortfolioID
- RegulationType
- Findings
- Date

4.5 Portfolio Performance & Reporting Module
Features:

- Generate reports on returns, volatility, and risk-adjusted performance
- Provide dashboards for portfolio managers
- Export audit and investor reports

Entities:

PortfolioReport

- ReportID
- Metrics (ReturnRate, RiskAdjustedScore)
- GeneratedDate

5. Deployment Strategy

- **Local:** Developer machines with sample portfolio and trade data
- **Production:** Cloud deployment with secure APIs and dashboards

6. Database Design

Tables: Investor → Trade → RiskScore → ComplianceLog → PortfolioReport

7. User Interface Design

Wireframes:

- **Investor Portal:** View portfolio performance, risk scores
- **Admin Dashboard:** Monitor compliance, manage trades, view analytics

8. Non-Functional Requirements

- **Performance:** Handle 1,000,000 trade records per day
- **Security:** Encrypted data, compliance with SEBI, MiFID II, and GDPR
- **Scalability:** Support multiple portfolios and global investment firms

9. Assumptions & Constraints

- Investors provide digital KYC documents
- Initial rollout for equity and bond portfolios only