```
@startuml

title Use Case Diagram - Cloud Cost Optimization Platform

actor "Cloud Administrator" as Admin

actor "Data Analyst" as Analyst

actor "System" as System

rectangle "Cloud Cost Optimization Platform" {

    (Login)

    (Upload Cloud Usage Data)

    (Analyze Usage)

    (Generate Cost Report)

    (Recommend Optimization)

    (Visualize Insights)

    (Schedule Automated Reports)

    (Export to Dashboard)

}

Admin --> (Login)

Admin --> (Upload Cloud Usage Data)

Admin --> (Generate Cost Report)

Admin --> (Schedule Automated Reports)

Analyst --> (Analyze Usage)

Analyst --> (Visualize Insights)

Analyst --> (Recommend Optimization)

System --> (Export to Dashboard)

(Analyze Usage) .> (Recommend Optimization) : <<includes>>

(Recommend Optimization) .> (Generate Cost Report) : <<extends>>
```
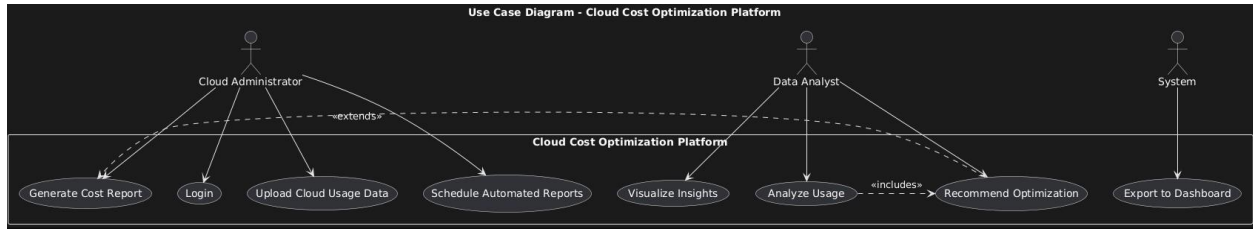
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Use Case Diagram - Cloud Cost Optimization Platform

Cloud Administrator   Data Analyst   System

«extends»

Cloud Cost Optimization Platform

Generate Cost Report   Login   Upload Cloud Usage Data   Schedule Automated Reports   Visualize Insights   Analyze Usage   «includes»   Recommend Optimization   Export to Dashboard

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title Class Diagram - Cloud Cost Optimization Platform

class "User" {

  +userId: int

  +name: String

  +role: String

  +login(): void

}

class "UsageData" {

  +dataId: int

  +cloudProvider: String

  +usageMetrics: List

  +uploadData(): void

}

class "AnalyticsEngine" {

  +analyzeData(): void

  +identifyTrends(): void

  +predictCosts(): double

}

```
class "RecommendationEngine" {

 +generateSuggestions(): List

 +rankStrategies(): void

}


class "ReportGenerator" {

 +generateReport(): void

 +exportReport(): void

}


class "Dashboard" {

 +visualizeData(): void

 +displayRecommendations(): void

}


User --> UsageData : uploads >

UsageData --> AnalyticsEngine : analyzed by >

AnalyticsEngine --> RecommendationEngine : uses >

RecommendationEngine --> ReportGenerator : outputs >

ReportGenerator --> Dashboard : displays in >


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```
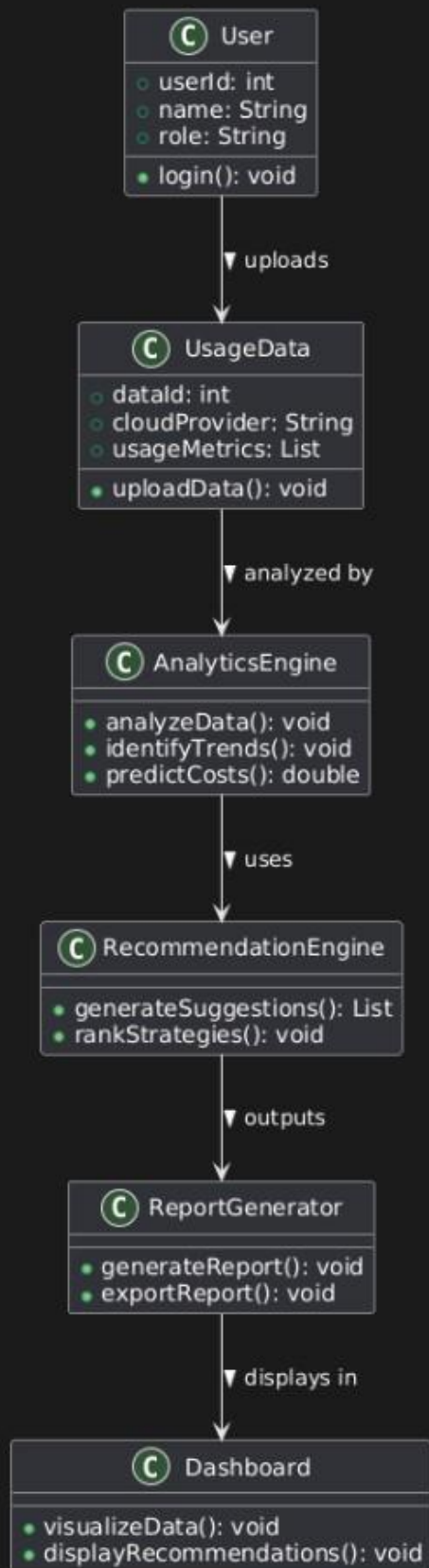
Class Diagram - Cloud Cost Optimization Platform

C User
- userId: int
- name: String
- role: String
- login(): void

uploads ▼

C UsageData
- dataId: int
- cloudProvider: String
- usageMetrics: List
- uploadData(): void

analyzed by ▼

C AnalyticsEngine
- analyzeData(): void
- identifyTrends(): void
- predictCosts(): double

uses ▼

C RecommendationEngine
- generateSuggestions(): List
- rankStrategies(): void

outputs ▼

C ReportGenerator
- generateReport(): void
- exportReport(): void

displays in ▼

C Dashboard
- visualizeData(): void
- displayRecommendations(): void

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title Sequence Diagram - Cloud Cost Optimization Platform

actor Admin

actor Analyst

participant "UsageData" as UD

participant "AnalyticsEngine" as AE

participant "RecommendationEngine" as RE

participant "ReportGenerator" as RG

participant "Dashboard" as DB

Admin -> UD : Upload Cloud Usage Data

UD -> AE : Send Usage Metrics

AE -> AE : Analyze Usage Patterns

AE -> RE : Send Analysis Results

RE -> RE : Generate Cost Optimization Strategies

RE -> RG : Forward Recommendations

RG -> RG : Generate Report

RG -> DB : Push Report to Dashboard

Analyst -> DB : View Insights & Recommendations

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Sequence Diagram - Cloud Cost Optimization Platform

Admin → UsageData: Upload Cloud Usage Data
UsageData → AnalyticsEngine: Send Usage Metrics
AnalyticsEngine → AnalyticsEngine: Analyze Usage Patterns
AnalyticsEngine → RecommendationEngine: Send Analysis Results
RecommendationEngine → RecommendationEngine: Generate Cost Optimization Strategies
RecommendationEngine → ReportGenerator: Forward Recommendations
ReportGenerator → ReportGenerator: Generate Report
ReportGenerator → Dashboard: Push Report to Dashboard
Analyst → Dashboard: View Insights & Recommendations