# **Centsible Design Document**

## **Overview**

Centsible is a personal subscription tracking and budgeting web application built with Next.js, Firebase, and React. It allows users to add, edit, and track their recurring subscriptions. It also provides visual summaries and report generation features, including filtering and PDF export.

## **Technologies Used**

* **Frontend**: Next.js (React)
* **Backend**: Firebase Authentication, Firestore
* **Charts**: Recharts

## **Design Goals**

* Secure user authentication
* CRUD operations for subscriptions
* Visualization of expenses
* Filtering, reporting, and export capabilities

## **Class Diagram**

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| Subscription |

+---------------------+

| - \_props: SubscriptionProps |

+---------------------+

| +name: string |

| +status: string |

| +formattedCost(): string |

| +createdAt(): string|

| +isActive(): boolean|

+---------------------+

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+----------------------+

| PremiumSubscription |

+----------------------+

| +isPremium(): boolean|

+----------------------+

### **Explanation of Inheritance**

The Subscription class encapsulates subscription data and logic, such as cost formatting and status checking. PremiumSubscription is a subclass that extends Subscription and includes behavior specific to premium subscriptions (e.g., additional features or visual cues).

## **Component Architecture Diagram**

App (Next.js)

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├── AuthProvider (Context)

│ ├── Firebase Auth

│ └── useAuth()

│

├── DashboardPage

│ ├── SubscriptionForm

│ ├── SubscriptionsDisplay

│ └── SubscriptionSummary

│

├── ReportsPage

│ ├── SubscriptionTable

│ ├── SubscriptionPieChart

│ └── PDF Export Button

│

└── Firebase (Firestore)

└── Subscriptions Collection

## **Data Model (Firestore)**

Each document in the subscriptions collection includes:

{

"userId": "abc123",

"name": "Netflix",

"category": "Streaming",

"cost": 15.99,

"currency": "USD",

"billingFrequency": "Monthly",

"paymentMethod": "Credit Card",

"startDate": "2024-06-01",

"status": "Active",

"notes": "Shared with family",

"premium": true,

"createdAt": "2024-06-01T00:00:00Z"

}

## **Key Design Patterns Used**

* **Encapsulation**: The Subscription class wraps access to props and derived data (like formatted cost).
* **Inheritance & Polymorphism**: PremiumSubscription extends Subscription to support extra logic.
* **Context API**: Manages authentication state and subscriptions globally.
* **Hooks**: Manages UI state and side-effects like fetching subscriptions.