W11 Team Activity Designer

**Project Report: Personal Finance Manager**

**Approach**

The approach for the Personal Finance Manager project employs object-oriented principles to create a robust and scalable system. The class diagram illustrates a clear inheritance hierarchy, defining all necessary classes for seamless functionality.

**Class Diagram**

The class diagram outlines the following classes:

* **Transaction**: Acts as the base class for financial transactions, with subclasses **Income** and **Expense** inheriting from it.
* **Tithing**: Manages the calculation and allocation of 10% of income towards tithing commitments.
* **SavingsGoal**: Tracks and monitors savings goals, providing users with a method to plan for future financial objectives.

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Description automatically generated

**Behaviors**

All essential behaviors required for efficient financial management are clearly defined within the project.

**Key Behaviors**

* **Transaction Management**: Includes methods to add, edit, and delete transactions (income and expenses).
* **Tithing Calculation**: Automatically computes and manages 10% of income as tithing, ensuring adherence to financial commitments.
* **Expense Categorization**: Allows users to categorize expenses for better financial tracking and reporting.

**Attributes**

The project defines all necessary attributes to support comprehensive financial management and tracking.

**Essential Attributes**

* **Transaction Attributes**: Includes date, amount, category, and description for both income and expenses.
* **Tithing Attributes**: Stores calculated tithing amounts and manages distributions.
* **Savings Goal Attributes**: Tracks goal amount, progress, and completion status for savings goals.

**Interaction**

The interaction among elements of the design is well-documented to ensure clarity in relationships and functionality.

**Interaction Overview**

* **User Interface Interaction**: Describes how users input income, categorize expenses, and set savings goals through intuitive interfaces.
* **Backend Interaction**: Illustrates how data flows between classes like Transaction, Tithing, and SavingsGoal to provide comprehensive financial insights.

**Personal Finance Manager Project Description**

**Project Option: Open-ended Project**

**Description:** The Personal Finance Manager is designed to empower individuals in managing their finances effectively. It tracks income, expenses, and savings goals while automating the calculation and management of tithing, which represents 10% of income per paycheck or earnings.

**Features**

* **Income and Expense Tracking**: Enables users to record and categorize financial transactions.
* **Automated Tithing Management**: Calculates and manages tithing obligations based on income entries.
* **Savings Goals**: Facilitates setting, tracking, and achieving savings objectives.
* **Reporting**: Generates detailed reports to analyze spending habits and financial health.

**Object-Oriented Implementation**

The project leverages object-oriented programming principles:

* **Abstraction**: Uses classes like Transaction and its subclasses to manage financial data.
* **Encapsulation**: Ensures data security and integrity by encapsulating data within classes.
* **Inheritance**: Implements inheritance for specialized classes like Income, Expense, and Tithing to inherit common functionalities from Transaction.
* **Polymorphism**: Overrides methods in subclasses to handle specific transaction types effectively.