# **Expenzor Backend API Documentation**

This document outlines the RESTful API endpoints for the Expenzor expense tracking application.

**Base URL:** http://localhost:8080/api/expense

## **1. Core Expense Management (CRUD Operations)**

These endpoints handle the creation, retrieval, updating, and deletion of individual expense records.

### **1.1. Add New Expense**

* **HTTP Method:** POST
* **URL:** /api/expense/add
* **Description:** Creates a new expense record in the database.
* **Use Case:** Used by the "Add Expense" page to submit new expense details.
* **Request Body:** application/json  
  {  
   "description": "String (e.g., 'Lunch with colleagues')",  
   "amount": "BigDecimal (e.g., 45.75)",  
   "category": "String (e.g., 'Food', 'Transport', 'Utilities')",  
   "expenseDate": "String (YYYY-MM-DD, e.g., '2025-06-04')"  
  }
* **Response:**
  + **201 Created**: Expense successfully added.  
    {  
     "id": "Long",  
     "description": "String",  
     "amount": "BigDecimal",  
     "category": "String",  
     "expenseDate": "String (YYYY-MM-DD)",  
     "createdAt": "String (LocalDateTime ISO format)",  
     "updatedAt": "String (LocalDateTime ISO format)"  
    }
  + **400 Bad Request**: Invalid input data (e.g., missing required fields, invalid amount format).

### **1.2. Get All Expenses**

* **HTTP Method:** GET
* **URL:** /api/expense/all
* **Description:** Retrieves a list of all expense records stored in the database.
* **Use Case:** Primarily used by the "Transactions" page to display a comprehensive list of all expenses.
* **Request Body:** None
* **Response:**
  + **200 OK**: List of all expenses.  
    [  
     {  
     "id": "Long",  
     "description": "String",  
     "amount": "BigDecimal",  
     "category": "String",  
     "expenseDate": "String (YYYY-MM-DD)",  
     "createdAt": "String (LocalDateTime ISO format)",  
     "updatedAt": "String (LocalDateTime ISO format)"  
     }  
     // ... more ExpenseResponseDTO objects  
    ]

### **1.3. Get Expense by ID**

* **HTTP Method:** GET
* **URL:** /api/expense/{id}
* **Description:** Retrieves a single expense record by its unique identifier.
* **Use Case:** To view detailed information about a specific expense, potentially when clicking on a transaction in a list.
* **Path Variables:**
  + id: Long - The unique ID of the expense.
* **Request Body:** None
* **Response:**
  + **200 OK**: Expense found.  
    {  
     "id": "Long",  
     "description": "String",  
     "amount": "BigDecimal",  
     "category": "String",  
     "expenseDate": "String (YYYY-MM-DD)",  
     "createdAt": "String (LocalDateTime ISO format)",  
     "updatedAt": "String (LocalDateTime ISO format)"  
    }
  + **404 Not Found**: No expense found with the given ID.

### **1.4. Update Expense**

* **HTTP Method:** PUT
* **URL:** /api/expense/{id}
* **Description:** Updates an existing expense record identified by its ID.
* **Use Case:** To modify details of an expense (e.g., correct amount, change category).
* **Path Variables:**
  + id: Long - The unique ID of the expense to update.
* **Request Body:** application/json (same as Add New Expense)  
  {  
   "description": "String (updated description)",  
   "amount": "BigDecimal (updated amount)",  
   "category": "String (updated category)",  
   "expenseDate": "String (YYYY-MM-DD, updated date)"  
  }
* **Response:**
  + **200 OK**: Expense successfully updated.  
    {  
     "id": "Long",  
     "description": "String",  
     "amount": "BigDecimal",  
     "category": "String",  
     "expenseDate": "String (YYYY-MM-DD)",  
     "createdAt": "String (LocalDateTime ISO format)",  
     "updatedAt": "String (LocalDateTime ISO format)" // This will be updated  
    }
  + **400 Bad Request**: Invalid input data.
  + **404 Not Found**: No expense found with the given ID to update.

### **1.5. Delete Expense**

* **HTTP Method:** DELETE
* **URL:** /api/expense/{id}
* **Description:** Deletes an expense record from the database.
* **Use Case:** To remove an expense from the system.
* **Path Variables:**
  + id: Long - The unique ID of the expense to delete.
* **Request Body:** None
* **Response:**
  + **204 No Content**: Expense successfully deleted.
  + **404 Not Found**: No expense found with the given ID to delete.
  + **400 Bad Request**: If the ID format is invalid (though the controller now expects Long).
  + **500 Internal Server Error**: For unexpected server issues.

## **2. Dashboard & Reporting Endpoints**

These endpoints provide aggregated and summarized data for the dashboard and reporting features.

### **2.1. Get Total Overall Expense**

* **HTTP Method:** GET
* **URL:** /api/expense/total
* **Description:** Calculates and returns the sum of all expense amounts recorded in the database.
* **Use Case:** To display the "Total Money" on the main dashboard.
* **Request Body:** None
* **Response:**
  + **200 OK**: Total expense amount.  
    BigDecimal (e.g., 12345.67)

### **2.2. Get Total Monthly Expense (Specific Month)**

* **HTTP Method:** GET
* **URL:** /api/expense/total/monthly
* **Description:** Calculates and returns the sum of expenses for a specified year and month.
* **Use Case:** To fetch total expenditure for any given month, useful for historical analysis or custom reports.
* **Query Parameters:**
  + year: int - The year (e.g., 2025).
  + month: int - The month (1-12, e.g., 6 for June).
* **Request Body:** None
* **Response:**
  + **200 OK**: Total expense amount for the specified month.  
    BigDecimal (e.g., 500.25)

### **2.3. Get Total Current Month Expense**

* **HTTP Method:** GET
* **URL:** /api/expense/total/current-month
* **Description:** Calculates and returns the sum of expenses for the current month (based on the server's date).
* **Use Case:** To display the "Current Month Expenditure" total on the dashboard.
* **Request Body:** None
* **Response:**
  + **200 OK**: Total expense amount for the current month.  
    BigDecimal (e.g., 789.10)

### **2.4. Get Category-wise Expenditure for Current Month**

* **HTTP Method:** GET
* **URL:** /api/expense/category-wise/current-month
* **Description:** Retrieves the sum of expenses for each category within the current month.
* **Use Case:** To populate the "Current Month Expenditure" breakdown on the dashboard (Food, Home Rent, etc.).
* **Request Body:** None
* **Response:**
  + **200 OK**: List of category sums.  
    [  
     {  
     "category": "String (e.g., 'Food')",  
     "totalAmount": "BigDecimal (e.g., 150.00)"  
     },  
     {  
     "category": "String (e.g., 'Utilities')",  
     "totalAmount": "BigDecimal (e.g., 200.50)"  
     }  
     // ... more CategorySumDTO objects  
    ]

### **2.5. Get Category-wise Expenditure for Specific Month**

* **HTTP Method:** GET
* **URL:** /api/expense/category-wise/monthly
* **Description:** Retrieves the sum of expenses for each category within a specified year and month.
* **Use Case:** To allow users to view category breakdowns for past months, potentially in a reporting section.
* **Query Parameters:**
  + year: int - The year (e.g., 2025).
  + month: int - The month (1-12, e.g., 5 for May).
* **Request Body:** None
* **Response:**
  + **200 OK**: List of category sums for the specified month.  
    [  
     {  
     "category": "String",  
     "totalAmount": "BigDecimal"  
     }  
     // ... more CategorySumDTO objects  
    ]

### **2.6. Get Recent Transactions**

* **HTTP Method:** GET
* **URL:** /api/expense/recent
* **Description:** Retrieves a predefined number of the most recently added expense transactions (e.g., the top 5).
* **Use Case:** To populate the "Recent Transactions" section on the dashboard.
* **Request Body:** None
* **Response:**
  + **200 OK**: List of recent expenses.  
    [  
     {  
     "id": "Long",  
     "description": "String",  
     "amount": "BigDecimal",  
     "category": "String",  
     "expenseDate": "String (YYYY-MM-DD)",  
     "createdAt": "String (LocalDateTime ISO format)",  
     "updatedAt": "String (LocalDateTime ISO format)"  
     }  
     // ... up to N (e.g., 5) ExpenseResponseDTO objects  
    ]

### **2.7. Get Monthly Comparison Data**

* **HTTP Method:** GET
* **URL:** /api/expense/comparison/monthly
* **Description:** Retrieves total expense summaries for a specified number of recent months (including the current month).
* **Use Case:** To populate the "Previous Months Comparison" chart/section on the dashboard.
* **Query Parameters:**
  + numMonths: int (Optional) - The number of recent months to include in the comparison. Defaults to 3.
* **Request Body:** None
* **Response:**
  + **200 OK**: List of monthly summaries.  
    [  
     {  
     "monthLabel": "String (e.g., 'Apr 2025')",  
     "totalAmount": "BigDecimal (e.g., 120.00)"  
     },  
     {  
     "monthLabel": "String (e.g., 'May 2025')",  
     "totalAmount": "BigDecimal (e.g., 300.50)"  
     },  
     {  
     "monthLabel": "String (e.g., 'Jun 2025')",  
     "totalAmount": "BigDecimal (e.g., 450.75)"  
     }  
     // ... more MonthlySummaryDTO objects based on numMonths  
    ]

### **2.8. Get Transactions for a Specific Date**

* **HTTP Method:** GET
* **URL:** /api/expense/by-date
* **Description:** Retrieves all expense records that occurred on a specific date.
* **Use Case:** When a user clicks on a date in the dashboard calendar, this endpoint would fetch the relevant transactions to display on the "Transactions" page.
* **Query Parameters:**
  + date: String - The date in YYYY-MM-DD format (e.g., 2025-06-04).
* **Request Body:** None
* **Response:**
  + **200 OK**: List of expenses for the specified date.  
    [  
     {  
     "id": "Long",  
     "description": "String",  
     "amount": "BigDecimal",  
     "category": "String",  
     "expenseDate": "String (YYYY-MM-DD)",  
     "createdAt": "String (LocalDateTime ISO format)",  
     "updatedAt": "String (LocalDateTime ISO format)"  
     }  
     // ... more ExpenseResponseDTO objects for that date  
    ]

This documentation covers all the API endpoints and their intended use cases for your Expenzor application.