Database design

Database records financial transactions with the following data:

- Date
- Payee
- Category
- Description
- Amount

It would be useful to track individual items within a transaction, for example if shopping, as different purchases in a single transaction may have very different categories. A separate purchase table should therefore be used.

Transactions Table

The transactions table is the core of the database, and has a form as following:

transaction_id	date	payee_id	description	amount
1	2015-01-02	1	Train ticket	46.85
2	2015-01-03	2	Shopping	5.42

The columns are:

Column name	Data type	Description
transaction_id	SERIAL	Unique ID for transaction (also serves as primary key)
date	DATE	Date of transaction
payee_id	BIGINT UNSIGNED NOT NULL	Unique ID of PAYEE (or payer) - relates to PAYEES t
description	VARCHAR(100)	Variable length string describing the transaction
amount	DECIMAL(10,2)	Value of transaction - negative for expense, positive for

The SERIAL data type is an alias for BIGINT UNSIGNED NOT NULL AUTO_INCREMENT UNIQUE and is therefore very useful for PRIMARY KEYS.

The DECIMAL(10,2) data type is an “exact” floating point number with 10 digits, two decimal places (meaning up to 8 digits before the decimal place).

Transaction Item Table

The transaction item table has 2 purposes: 1. For transactions with multiple purchases or items, these can be broken down into the sub-transactions (e.g. different items while shopping). 2. Transactions may be categorised using the breakdown table. The breakdown table relates transactions to categories, through sub-purchases if these exist. This allows different items in a single purchase to receive different categories. The table has this form:

transaction_item_id	transaction_id	description	amount	category_id
1	1	Train ticket: Aberdeen to Cambridge	46.85	3
2	2	Apples	3.00	4
3	2	Milk	1.00	5
4	2	Bread	1.42	5

The columns are:

Column name	Data type	Description
transaction_item_id	SERIAL	Unique ID for transaction (PRIMARY KEY)
transaction_id	BIGINT UNSIGNED NOT NULL	Links to transaction in TRANSACTIONS table
description	VARCHAR(100)	Variable length string describing item
amount	DECIMAL(10,2)	Value of item - negative for expense, positive for
category id	BIGINT UNSIGNED NOT NULL	Unique ID of category - relates to CATEGORIE

Payees table

The payees table contains information about payees, which is referenced by their unique IDs in the transactions table.

payee_id	payee_name
1	National Rail
2	Sainsbury's

The columns are:

Column name	Data type	Description
payee_id	SERIAL	Unique ID for Payee (PRIMARY KEY)
payee_name	VARCHAR(100)	Name of payee

Categories table

The categories table contains categories/tags for the transactions. These allow spending to be tracked by different budget areas. Categories are grouped hierarchically through parent categories.

category_id	parent_id	category_name
1	NULL	travel
2	NULL	food
3	1	train
4	2	fruit
5	2	staple

The columns are:

Column name	Data type	Description
category_id	SERIAL	Unique ID for category (PRIMARY KEY)
parent_id	BIGINT UNSIGNED	ID of parent category
category_name	VARCHAR(100)	Category name