

## 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 | INT            | Unique ID for transaction (also serves as primary key)           |
| date           | DATE           | Date of transaction  |
| payee_id       | INT            | Unique ID of PAYEE (or payer) - relates to PAYEES table          |
| description    | STRING         | Variable length string describing the transaction                |
| amount         | FLOAT with 2dp | Value of transaction - negative for expense, positive for income |

### Transaction Breakdown Table

The transactions 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:

| breakdown_transaction_id | transaction_id | description                         | amount | category_id |
|--------------------------|----------------|-------------------------------------|--------|-------------|
| 1                        | 1              | Train ticket: Aberdeen to Cambridge | 46.85  | 1           |

| breakdown_transaction_id | transaction_id | description | amount | category_id |
|--------------------------|----------------|-------------|--------|-------------|
| 2                        | 2              | Apples      | 3.00   | 2           |
| 3                        | 2              | Milk        | 1.00   | 3           |
| 4                        | 2              | Bread       | 1.42   | 3           |

The columns are:

| Column name              | Data type      | Description   |
|--------------------------|----------------|---|
| breakdown_transaction_id | INT            | Unique ID for transaction (PRIMARY KEY)                   |
| transaction_id           | INT            | Links to transaction in TRANSACTIONS table                |
| description              | STRING         | Variable length string describing item                    |
| amount                   | FLOAT with 2dp | Value of item - negative for expense, positive for income |
| category_id              | INT            | Unique ID of category - relates to CATEGORIES table       |

## 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    | INT       | Unique ID for Payee (PRIMARY KEY) |
| payee_name  | STRING    | 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 by colons, so “food:fruit” and “food:staple” are both subcategories of the “food” category.

| category_id | category     |
|-------------|--------------|
| 1           | travel:train |
| 2           | food:fruit   |
| 3           | food:staple  |

The columns are:

| Column name | Data type | Description                          |
|-------------|-----------|--------------------------------------|
| category_id | INT       | Unique ID for category (PRIMARY KEY) |
| category    | STRING    | Category name                        |