Criterion B: Design

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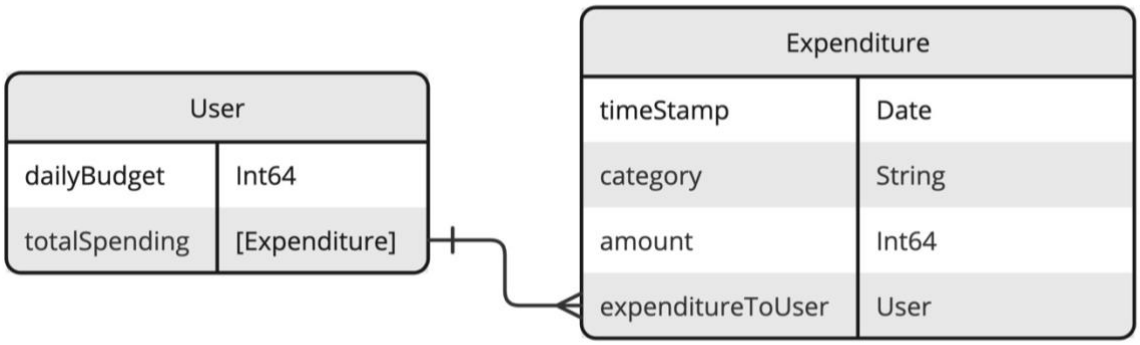
Design Overview

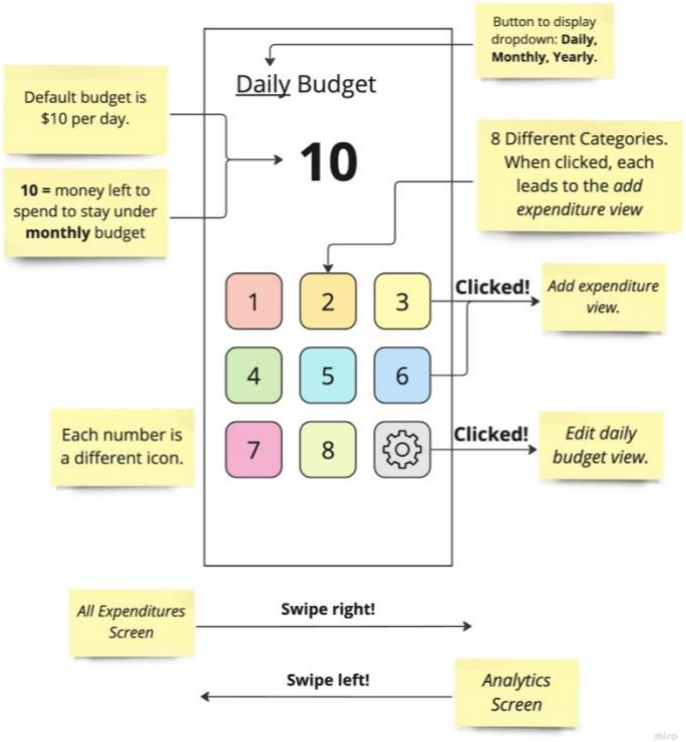
Database Schema

This app will use a simple relational database with two entities: User and Expenditure. A User has a one-to-many relationship with expenditures and can access all his expenditures through the totalSpending property which returns a list of Expenditures.

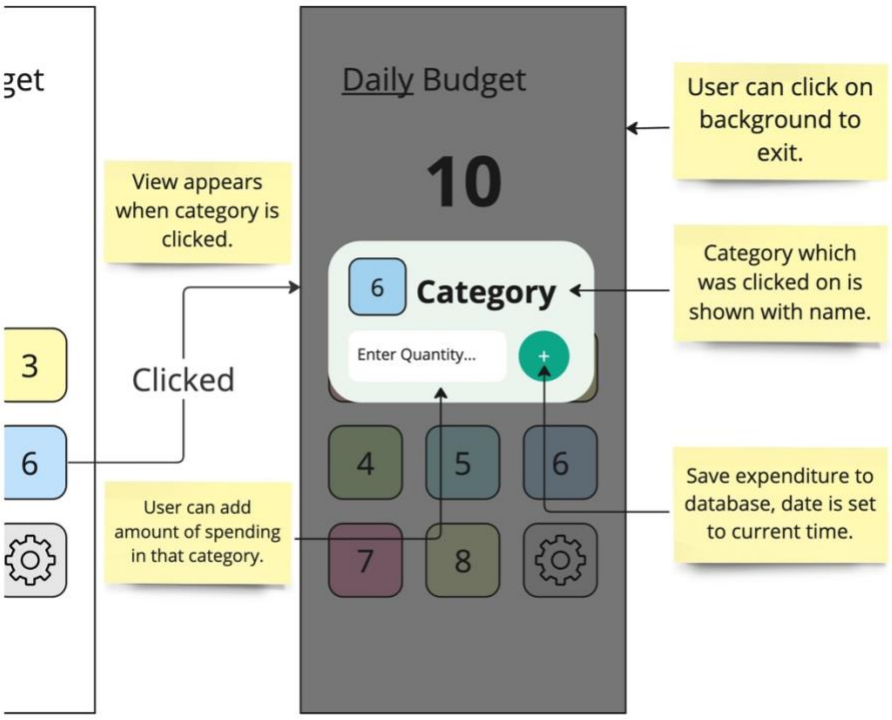


Wireframe Diagrams

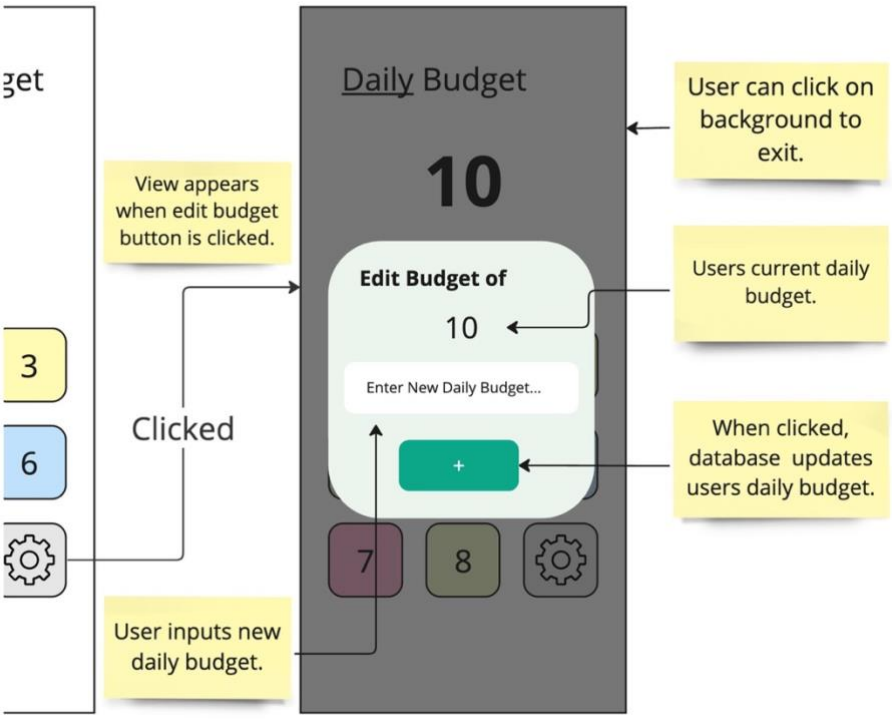
Home Screen



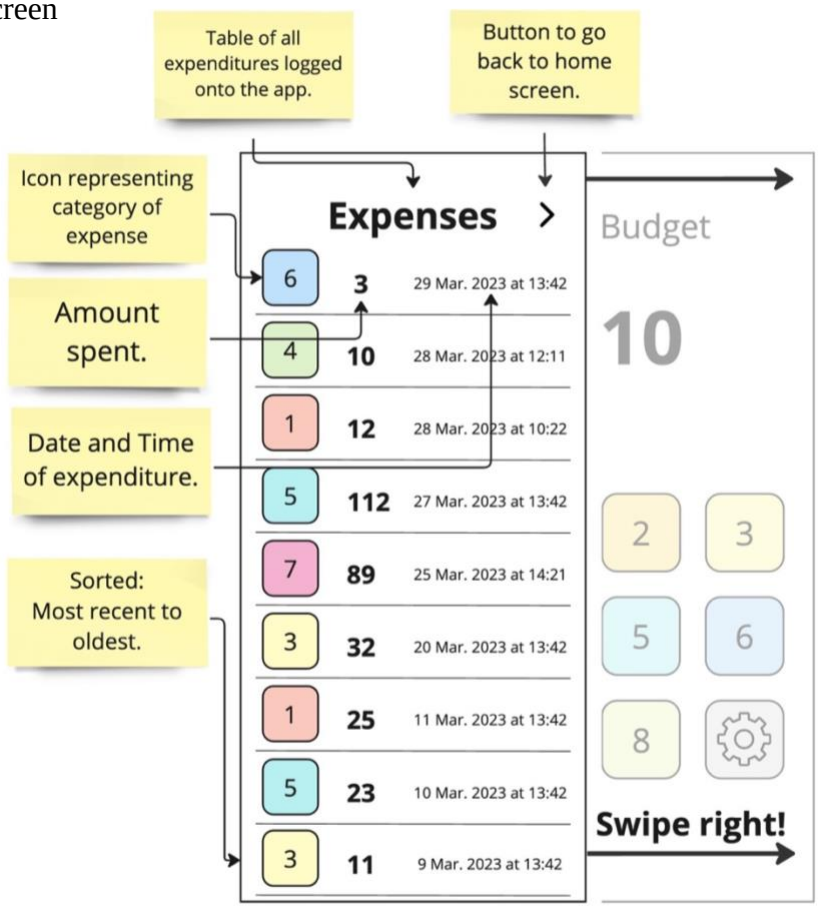
Home Screen: Add Expenditures View



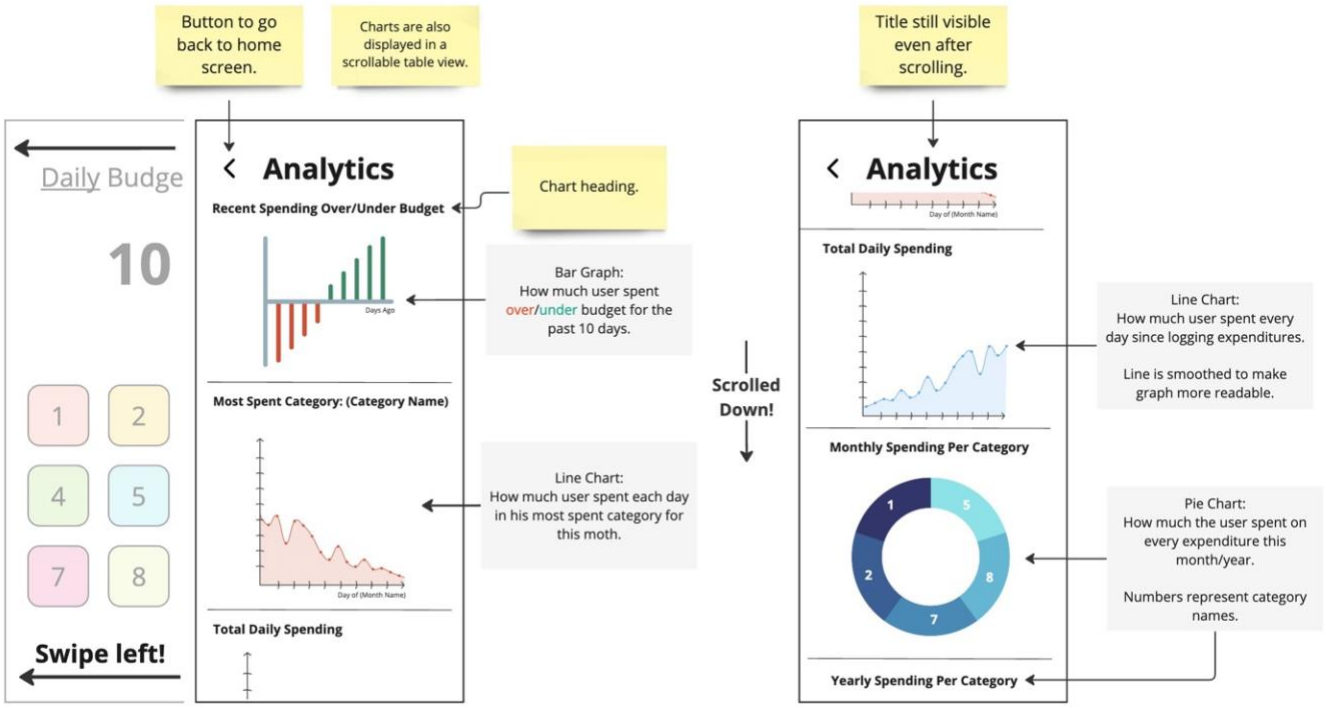
Home Screen: Edit Daily Budget View



All Expenditures Screen



Analytics Screen

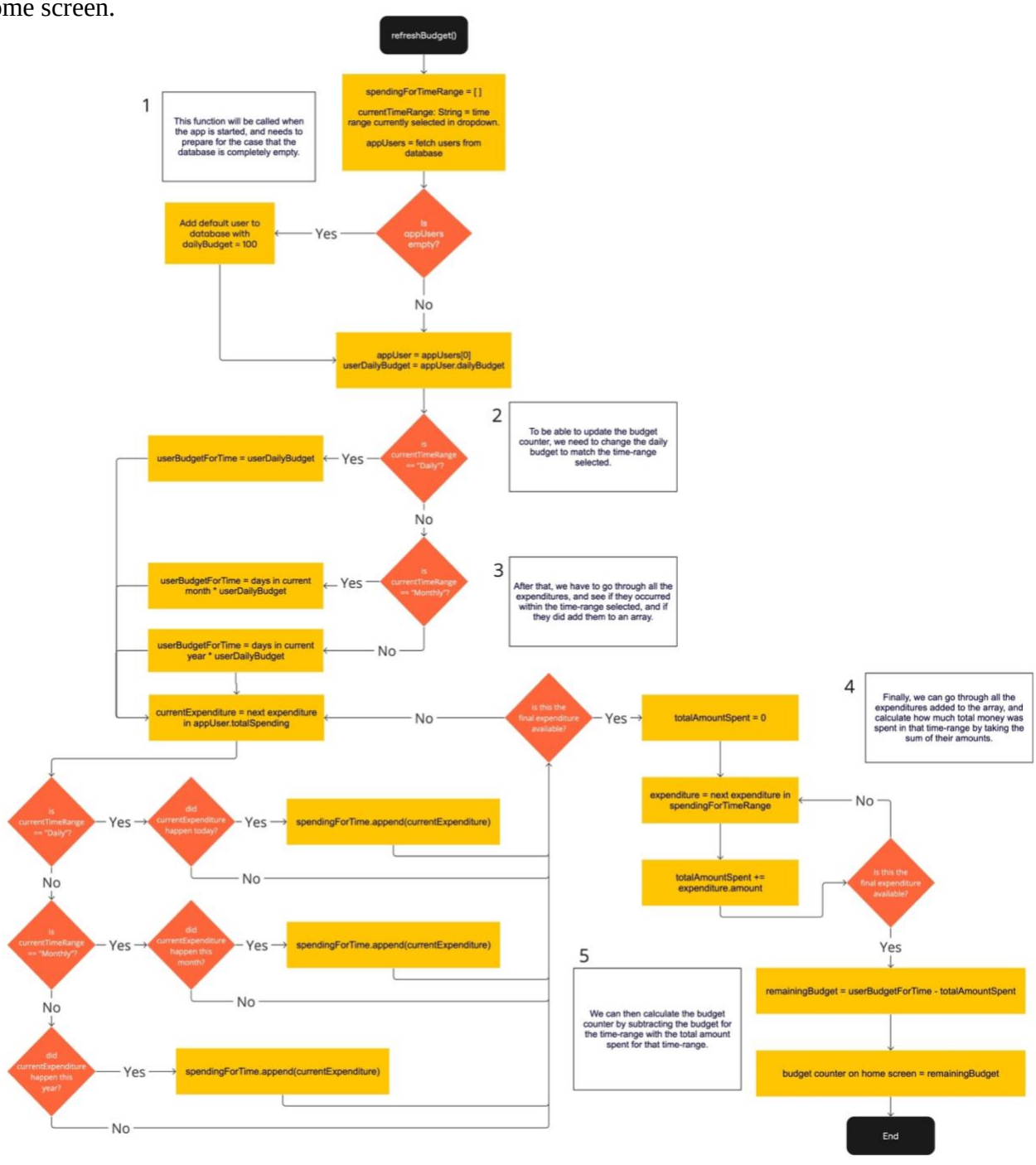


Flowcharts

For more advanced algorithms in the application, flowcharts are necessary to help create effective and organized code.

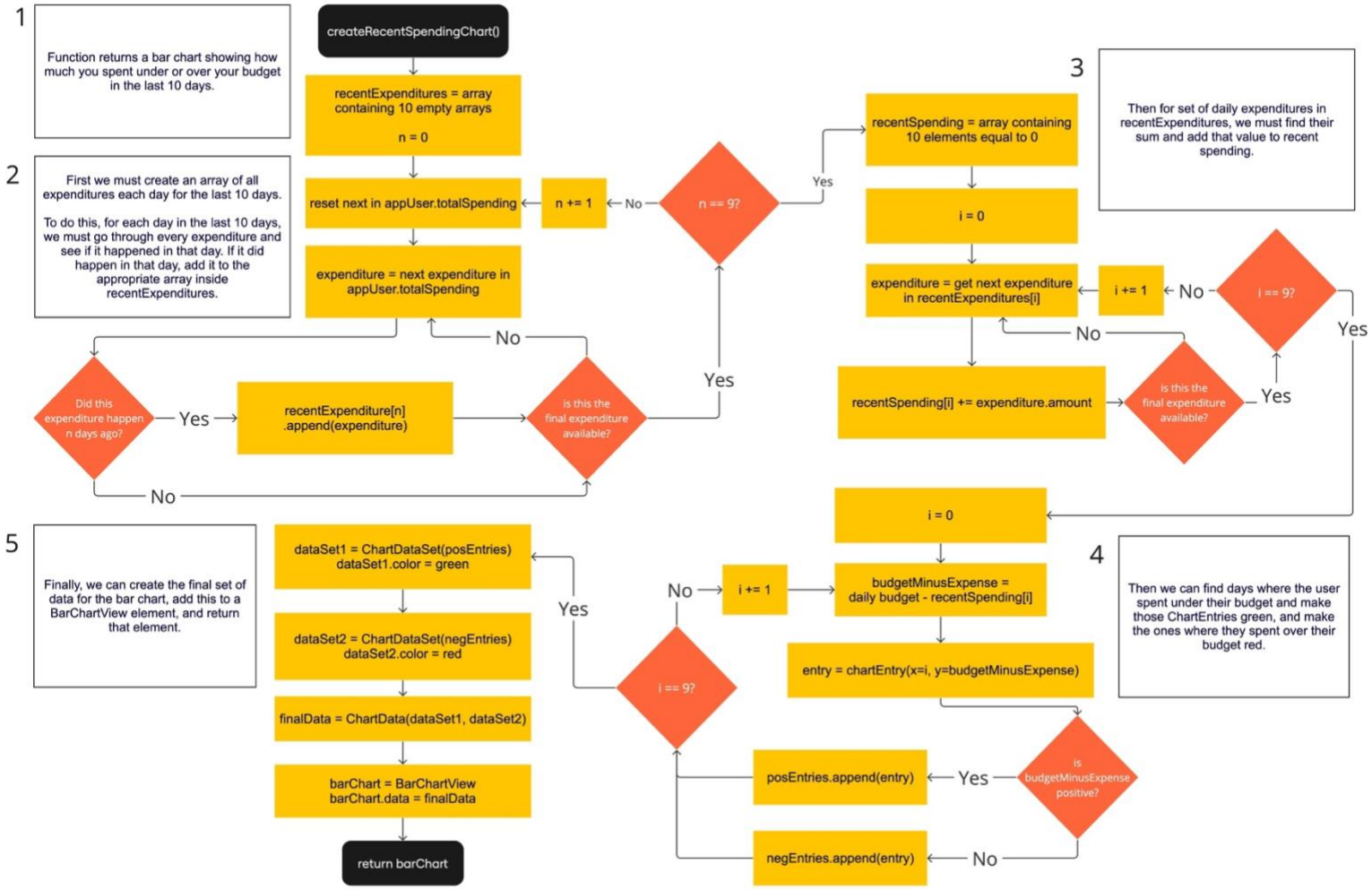
Refresh Budget Counter

After a new expenditure has been added, or the time-range selected has been changed, a function must be called to update the budget counter (how much budget is remaining) shown on the home screen.



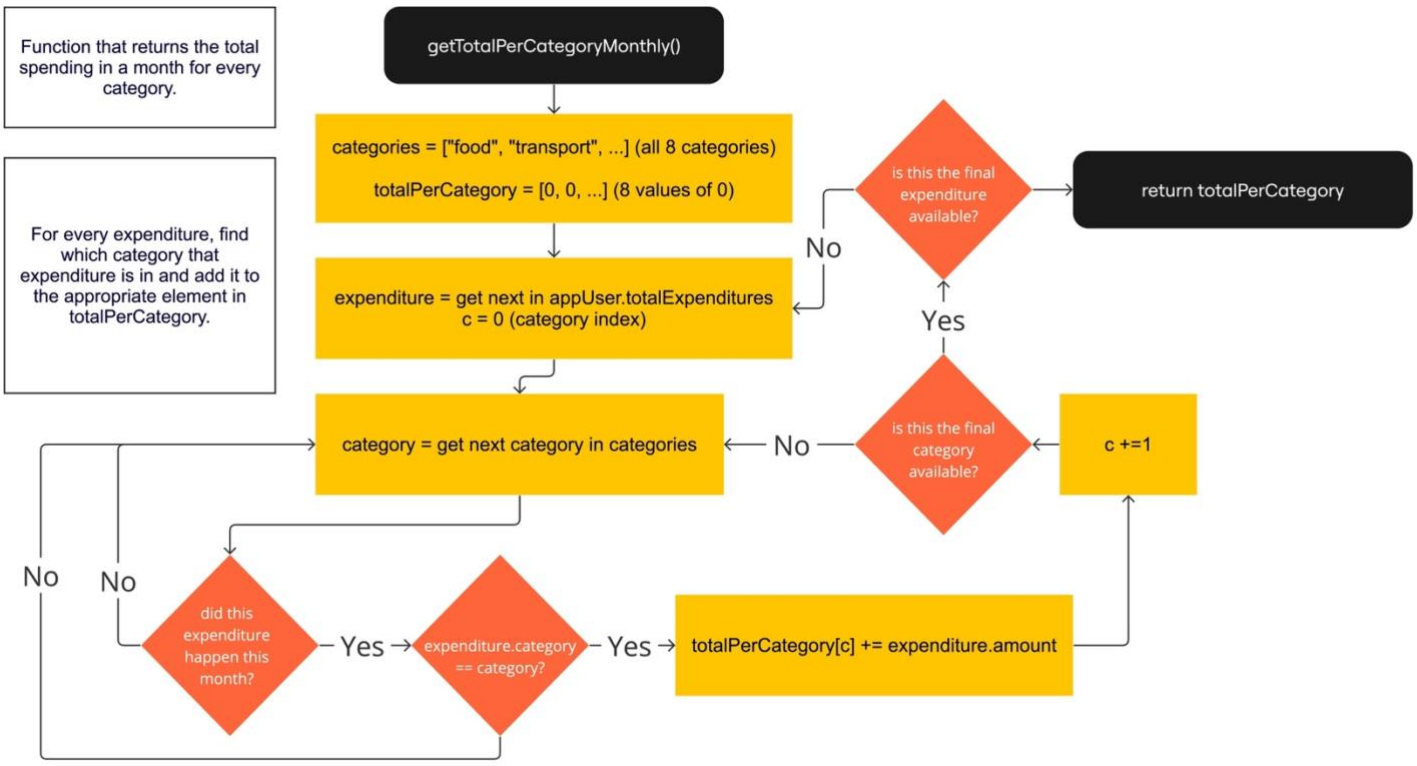
Create Recent Spending Over/Under Budget Bar Chart

When researching how to make charts in iOS I found the DGCharts library, which greatly simplifies the process. Thus, I created the flowchart in accordance with how charts are created using that library.



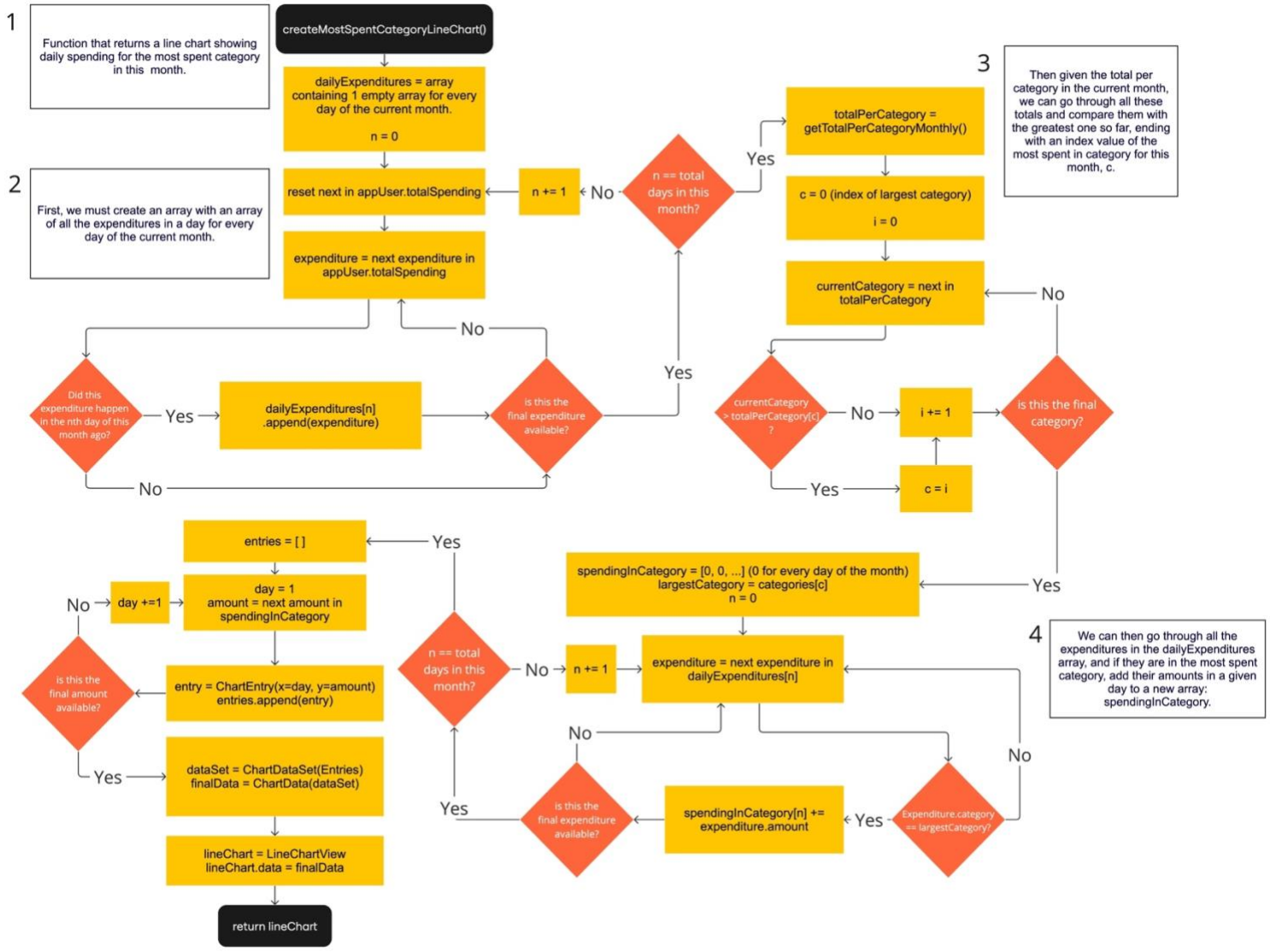
Total Per Category Monthly

When thinking about the creation of these charts, I found that for all the charts that have to do with spending in each category (including the Most Spent Category Line Chart), I must find the total spending in each category, preferably in the form of an array (which can be matched up with another array with category names at the same index). Accordingly, I made a flowchart for this function.



Create Most Spent Category Line Chart

When thinking about how to create the remaining graphs, I found they were just a modification of previous graphs or largely used the getTotalPerCategoryMonthly function, which made them much simpler to program than the other ones which required a flowchart.



Testing Plan

Success Criteria	Feature	Action	Expected Result
1	User can add an expenditure in 2 button clicks.	Open application, click on category button, input amount, click "+" button.	Category button should bring up add expenditure view. Clicking plus button added expenditure to database, therefore within 2 button clicks.
2	User can log Amount, Date & Time, and category (from 8 categories).	For the 8 categories available click the category button, input random expenditure amount, and click "+" button.	For every expenditure the database records the amount, the current date & time, and the selected category. Remaining budget, All Expenditures table, and charts are updated with correct inputted data.
3	User can see list of all expenditures.	Swipe right and scroll down.	All Expenditures table screen is displayed showing amount, category, and date & time information about every expenditure logged. Dates are organized from most recent (top) to oldest (bottom)
3	All Expenditures table updates when new expenditures are added.	Add an expenditure, swipe right.	All Expenditures table was updated, and the topmost expenditure is the expenditure that was just added.
3	Expenditures can be removed.	Add an expenditure, swipe right, locate expenditure in All Expenditures table, then swipe it to the left. Click "delete".	Selected expenditure was removed from table and database; accordingly, remaining budget and charts are updated.
4	Remaining budget for today is shown.	Select "Daily" from title dropdown.	Remaining budget shown only consider expenditures made in that one day and should be the daily budget the user set minus all expenditures made in that one day.
4	Remaining budget for this month is shown.	Select "Monthly" from title dropdown.	Remaining budget only considers expenditures made in the current month and subtracts these from your daily budget multiplied by the days in the month. Thus, shows how much you can spend in the remaining days of the month to stay under your budget.
4	Remaining budget for this year is shown.	Select "Yearly" from title dropdown.	Remaining budget only considers expenditures made in the current year and subtracts these from your daily budget multiplied by the days in this year.
5	Recent Spending Over/Under Budget bar chart is shown.	Swipe left.	Analytics screen is displayed, first chart is a bar chart showing how much of your budget was spent in the last 10 days (negative values meaning money spent over budget). Bar chart shows accurate data that reflects the expenditures logged by the user.

6	Daily Spending in Most Spent Category This Month line chart is shown.	Swipe left.	Analytics screen is displayed. Second chart is a line chart with a title saying which category the user spent the most in for the current month. The line chart displays the total spending each day of the month in this category. Line chart displays accurate data that reflects expenditures logged by user.
6	Total Daily Spending Over All Time, line chart is shown.	Swipe left, scroll down.	Analytics screen is displayed. Third chart is a line chart that shows the total spending each day x days after the first expenditure was logged. Line chart displays accurate data that reflects expenditures logged by user.
7	Total Spending in Categories this Month and year, pie charts are shown.	Swipe left, scroll down.	Analytics screen is displayed. Fourth and fifth charts are pie charts that display total spending in each category this month or year respectively. User can click on the pie chart for exact information. Pie chart displays accurate data that reflects expenditures logged by user.