6170
Fall 2014
btracker: A new way for budget tracking

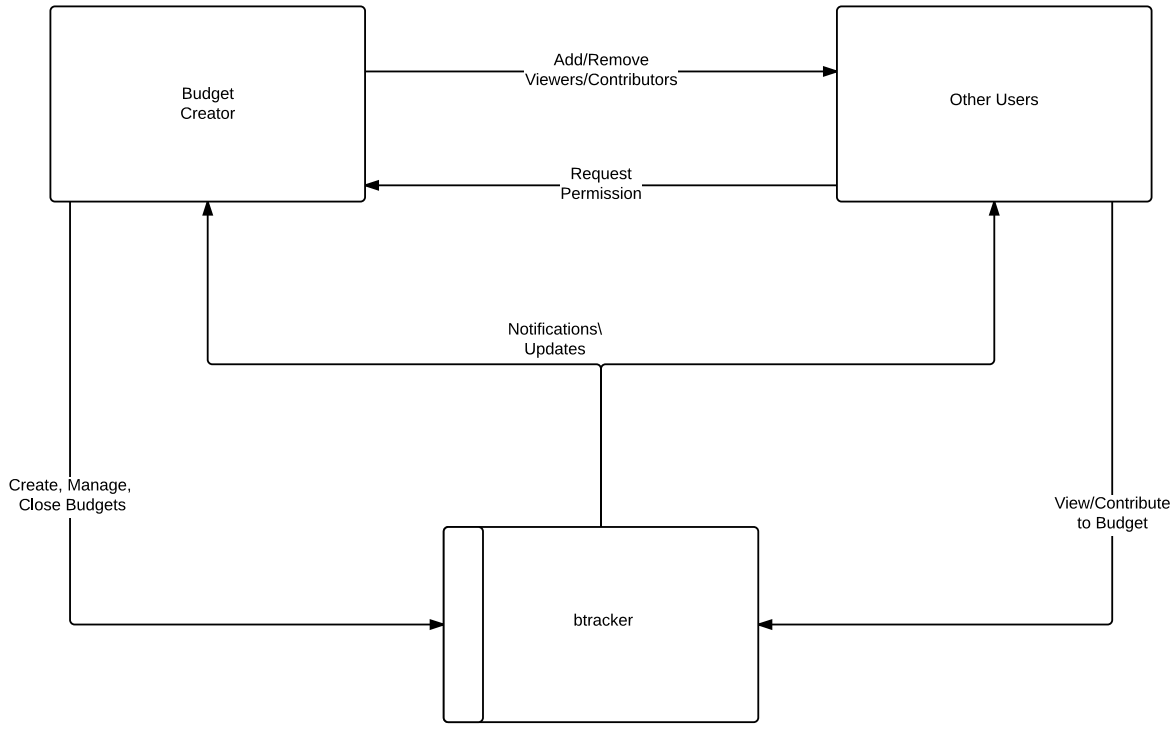
Motivation

btracker is an online application that allows for multiple users to create and maintain budgets. It supports creating budgets, following budgets, updating budgets, labeling purchases with section tags, and closing budgets with a final budget analysis. It does not sync budgets with credit card/ bank transactions or sync with Gmail, Apple Mail, or other 3rd party organization tools.

The purposes of btracker are:

- **Create a collaborative setting for maintaining budgets.**
- **Simplify the labeling of purchases when adding items to a budget.**
- **(Potentially) provide visualization templates for created budgets.**

Context Diagram



Concepts

Section Tag: Allows for better, more efficient organization in a budget. Each budget will have a list of section tags with it that corresponds to different sections of spending in the overall budget. These ‘sections’ are made of smaller budget

Budget Item: An Item represents an individual purchase that should be accounted for in the budget. All items will have a name, a short description, and a 'section tag' to be added in a specific section bin in the budget. All items start with the section tag 'misc.'.

Sharing Budget: A shared budget is the representation of the budget being created. It allows for multiple people to view and/or contribute to a single budget. There is exactly 1 admin.

Design Challenges

How often should a budget update when multiple people are collaborating? This would be a more dire concern if the budget was a real time update, instead of a 'per budget item created' structure, but is still a concern.

Potential Solutions:

- Send a push notification to all users viewing/contributing to the budget when a new budget item is added to the budget.

What happens if multiple people are attempting to edit a single budget item? With any collaborate web application comes concurrency issues. The potential solutions to this problem can be also applied to any other potential concurrency issue in the application.

Potential Solutions:

- Multi-treading. I am under the impression that javascript does not support multithreading, but I am not familiar with 3rd party frameworks that could support this.
- Only the original author can edit the create item. This does reduce collaboration abilities, but removes a large burden in regard to potential concurrency issues.
- When someone edits a budget item, they remove the old one and create a new one (all budget items are immutable). Memory management becomes problem as budgets get larger, and btracker will also have to decide when budget items are deleted/replaced. Can no longer use object id's for identification because new object is created. Greatly increases the number of database calls for replacing an object.