Term Project

Technical Spec

CS 151: Object-Oriented Design
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Team number	6	**Section**	5
Team Members	1. Fengwei Ban 2. Zeyu Cheng 3. Katie Nguyen		
Software Name	Wallet Manager		

1. Introduction

1.1. Objective

Due to the advancement of online fast payment technology and online shopping popularity, people no longer need to use cash or bank cards. While improving technology and efficiency, people usually ignore their excessive spending. Simple consumption methods often do not make consumers feel that they are spending money to consume more than their budget. We hope that with the help of this software, users can better manage their finances, understand their consumption level and the proportion of necessary expenses to avoid the impact of excessive consumption on their lives. Our target audience will be the people who want to save money or have better management of their finances.

The document is a Technical Specification, it will contain the introduction of the software, the problem we want to solve, the basic functions in the software, the user we target, the technology we plan to use, diagrams to introduce our design details, and user interface to have a prototype of the project.

1.2. References

The pie chart for the mockup was created with www.meta-chart.com. For the actual program, the chart is generated with JavaFX

1.3. Acronyms, and abbreviations

JDBC	Java Database Connectivity
GUI	graphical user interface
SQL	Structured Query Language
Statement, entry, transaction, purchase	These terms are used interchangeably to refer to any record that the user adds to the database

2. Software overview

1.4. Problem statement

The problem is …

- People are making more online purchases lately due to many physical stores being closed or less accessible.
- It is inconvenient to keep all those invoices and receipts from different sources or stores for finance management.
- Currently, total expenses are not aggregated and bills from different stores must be manually collected and calculated.
- Online bank statements do not show details about transactions.
- Sometimes, people may exceed the budget they plan to spend because of those transactions that have not been processed and show up in the bank account.
- It can be difficult to figure out why the budget is being exceeded when looking at all transactions all together.
- Keeping track of the transactions and managing money becomes simpler with a purchase tracking software.

Vision

- A purchase manager software can simplify the task of organizing purchases.
- Users will be able to add titles to transactions for easy identification. They will be conveniently viewable by category and pie chart on one single page.
- Users will be able to record and calculate their total purchases by category, such as type or purchase. Users will be able to modify the transaction record eg. add or delete.
- Users will be able to view total money they have spent in every specific catalogue. The information can be displayed with a pie-chart.
- The user will be able to view this information for a specified time period or categories.
- Users will be able to set financial plans with catalogues based on their balance. The application will have the ability to set the budget limit for individual categories or overall for their spending.
- Users will be able to calculate how potential purchases will affect their finances. Before making a purchase, the user can refer to the application to calculate how much will be left in their budget.

1.5. Domain

The target users are the people who want to save money or have better management of their finances. This software will target consumers who have some basic computer skills. The user must input their transactions, so the user must have access to purchase records such as receipts, order invoices, etc.

1.6. Technological Requirements

This application utilizes Java 8, JavaFX, SQLite, and SceneBuilder. The programming language is Java 8, which supports JavaFX. JavaFX is used for the GUI. We used SceneBuilder to generate the base of the FXML.

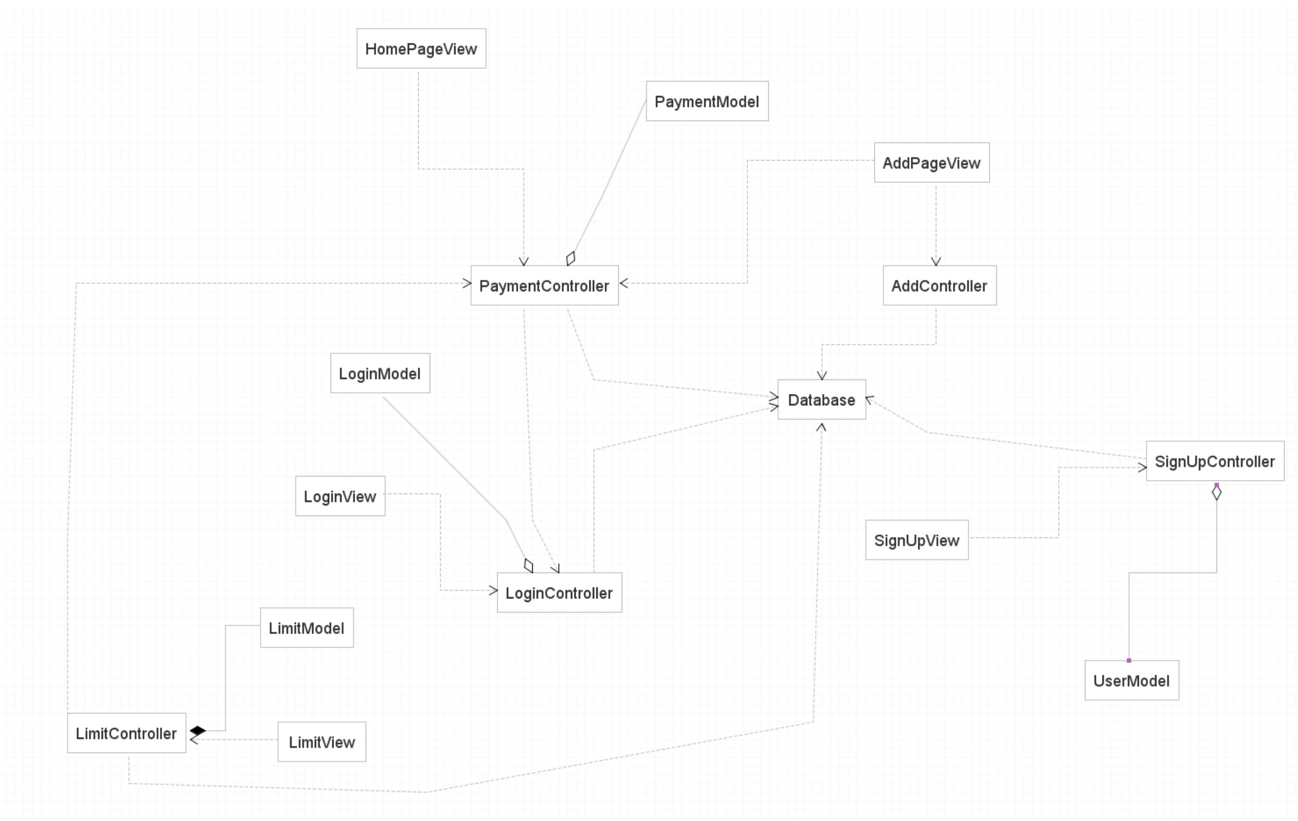
We chose SQLite as our database management system. The SQLite database stores all the user and payment data and is accessed using JDBC (Java DataBase Connection).

We used Eclipse IDE version 4.19 and GitHub during development to compile and collaborate on the code. Adobe XD was used to create the mockups.

This software is a Windows/Mac OS desktop application. To run this application, the user’s device should have a Java 8 environment.

3. Detailed Design

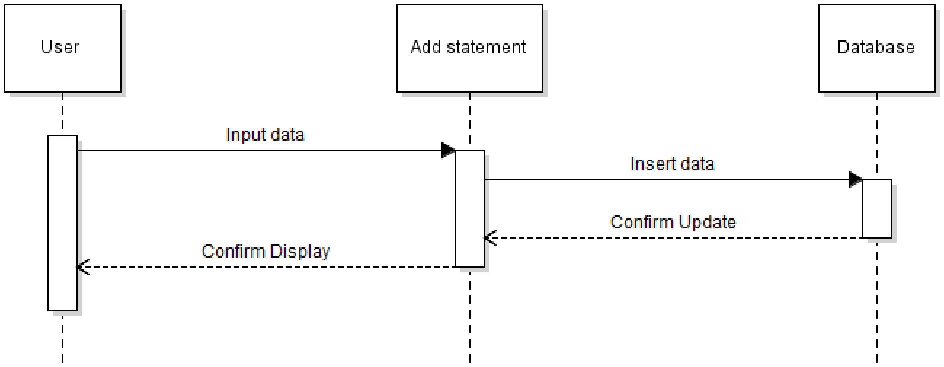
1.7. UML Class diagrams



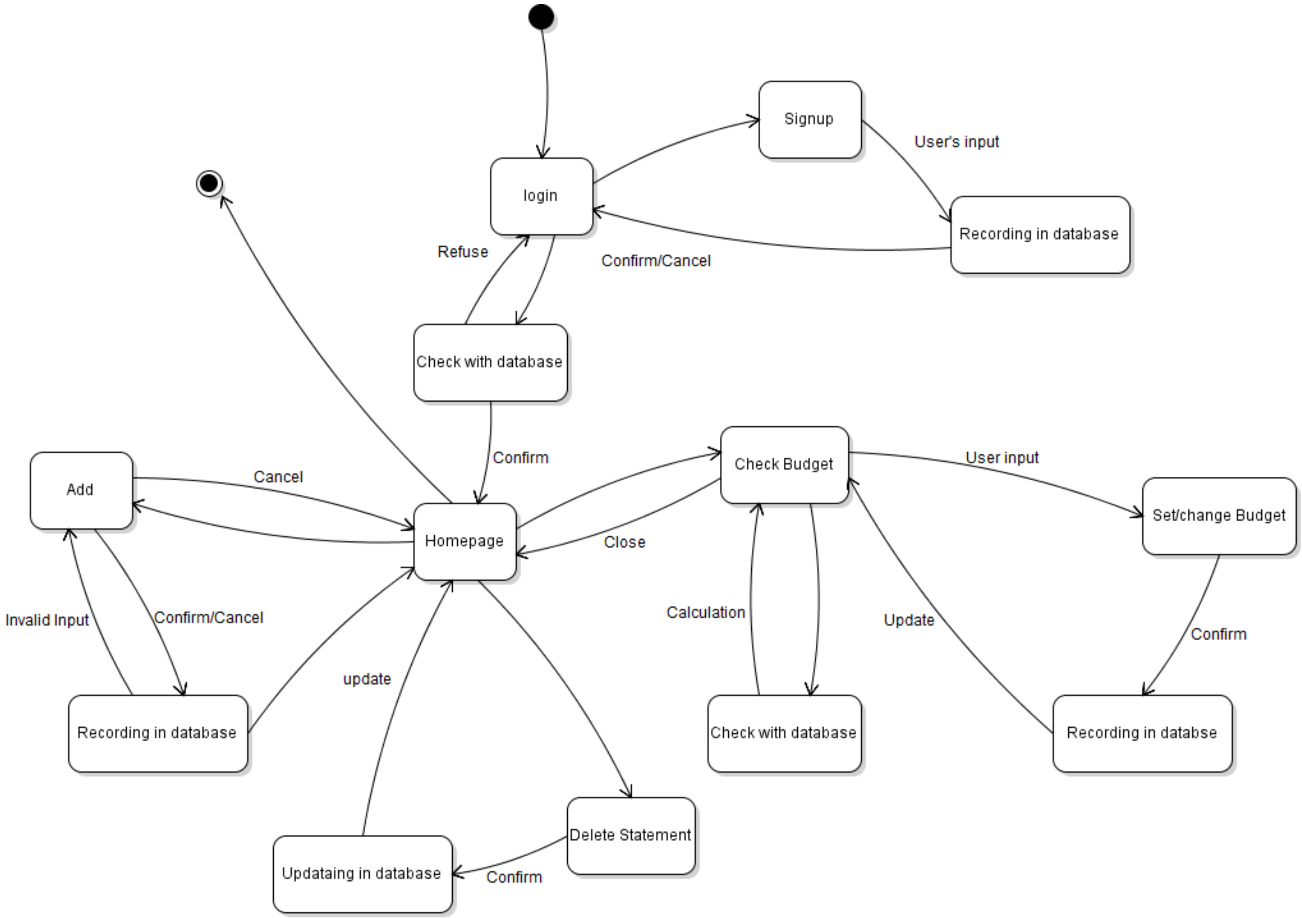
1.8. UML Sequence and state diagram

UML Sequence for getting total spent in specified time period
This is the getTotal(start_time, end_time) method of the OverviewCost class.

Sequence diagram:

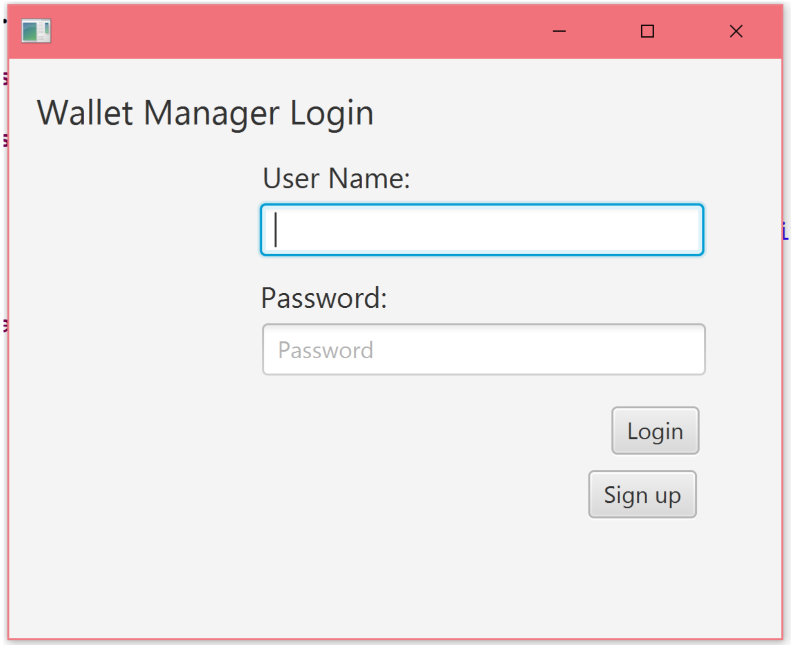


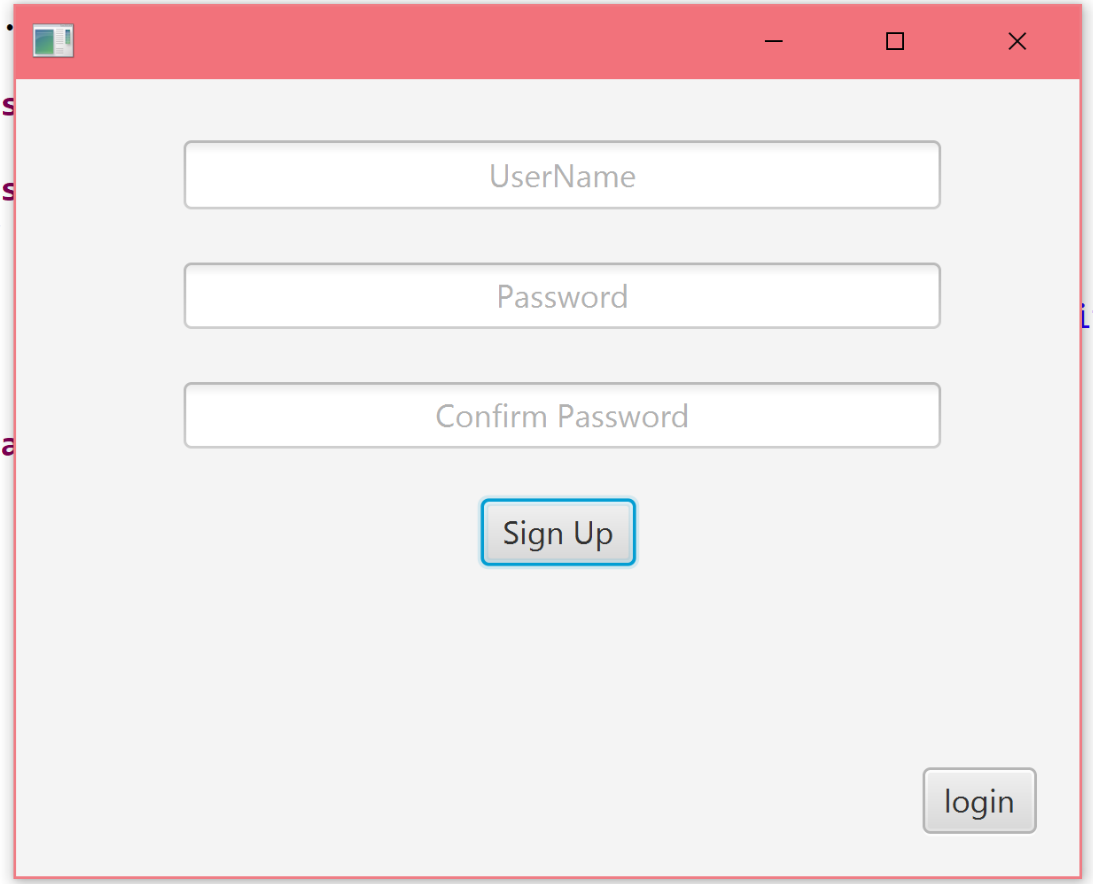
State diagram:



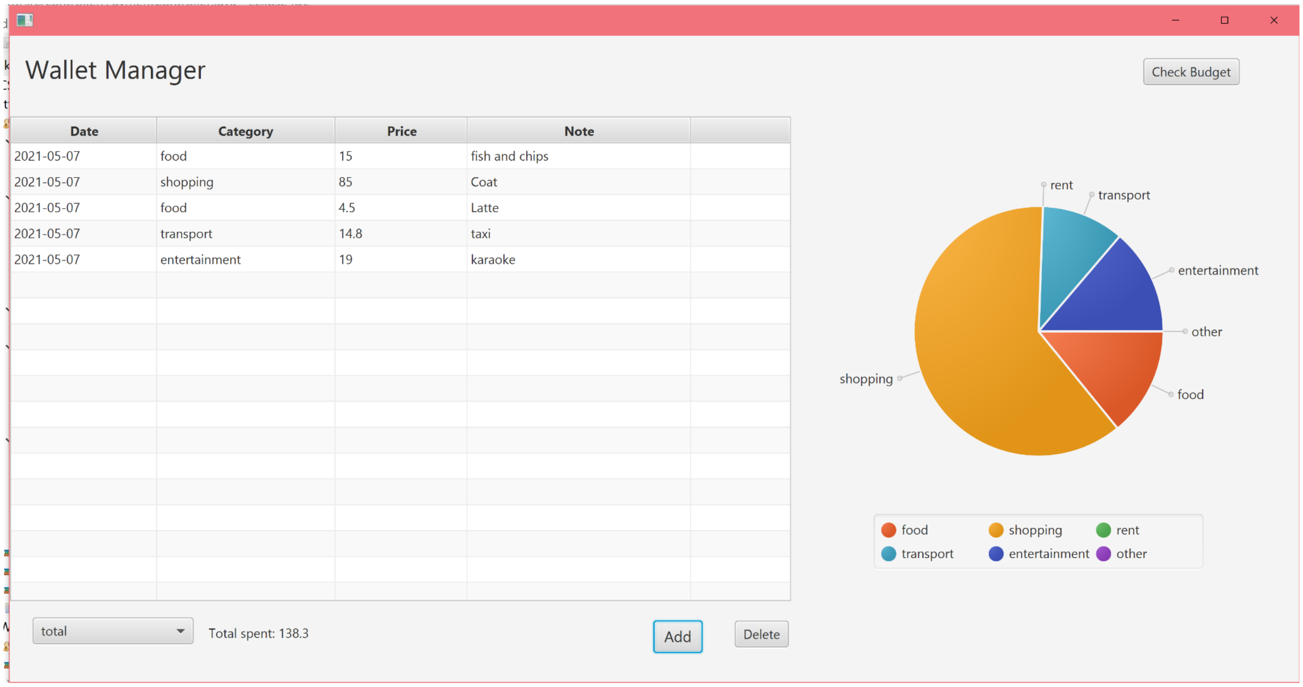
1.9. User Interface

The user login page is the first page upon running the application. A new user needs to sign up to access the program.





The homepage lists the user’s recorded purchases. The pie chart generates a visual representation of how much of each category a user spends. A category can be selected from the drop down menu to filter the purchases. The user can select a purchase to delete from the home page.

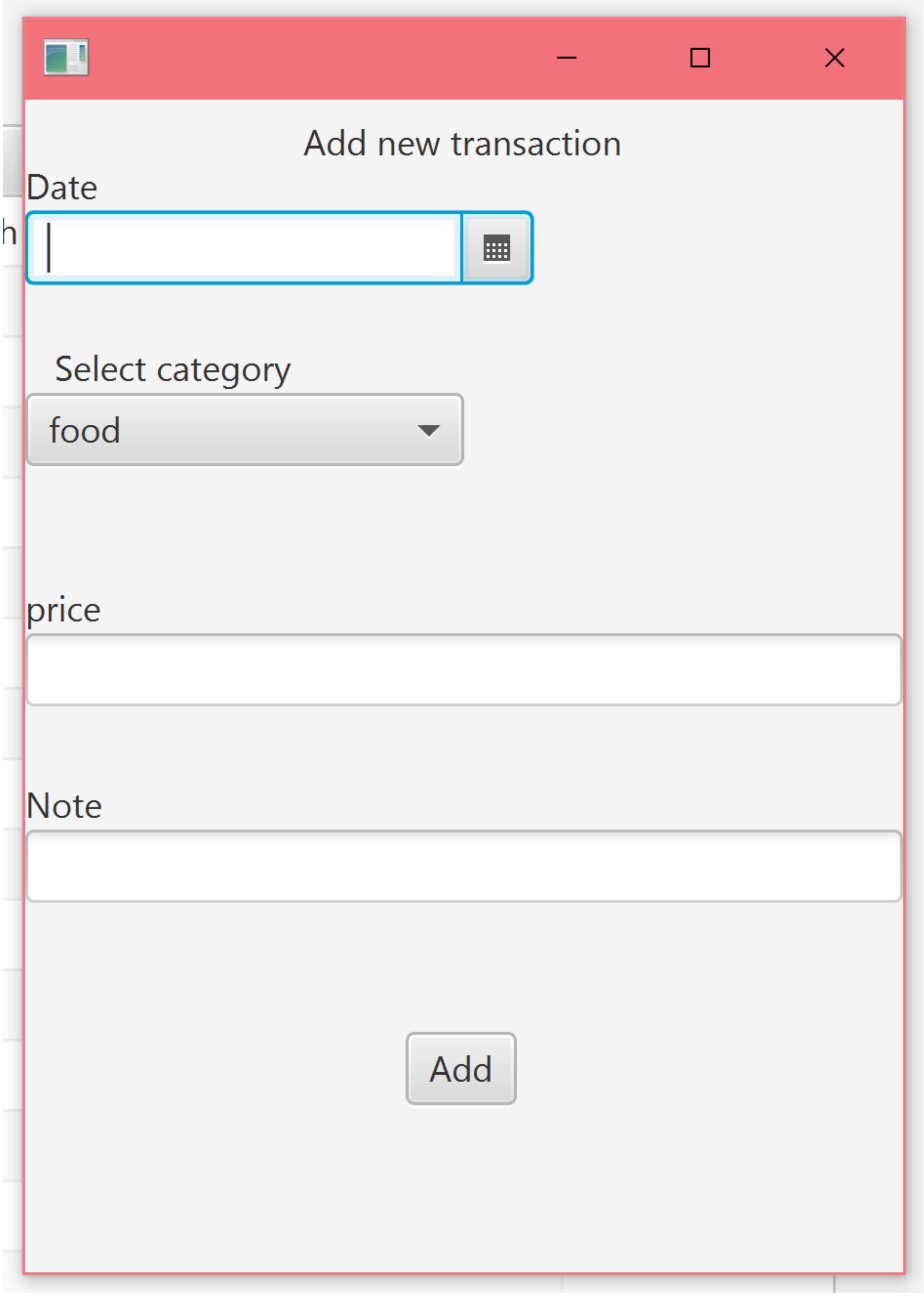


Date	Category	Price	Note	
2021-05-07	food	15	fish and chips	
2021-05-07	shopping	85	Coat	
2021-05-07	food	4.5	Latte	
2021-05-07	transport	14.8	taxi	
2021-05-07	entertainment	19	karaoke	

total

Total spent: 138.3

The user can add a new product by selecting add from the home page.



Add new transaction

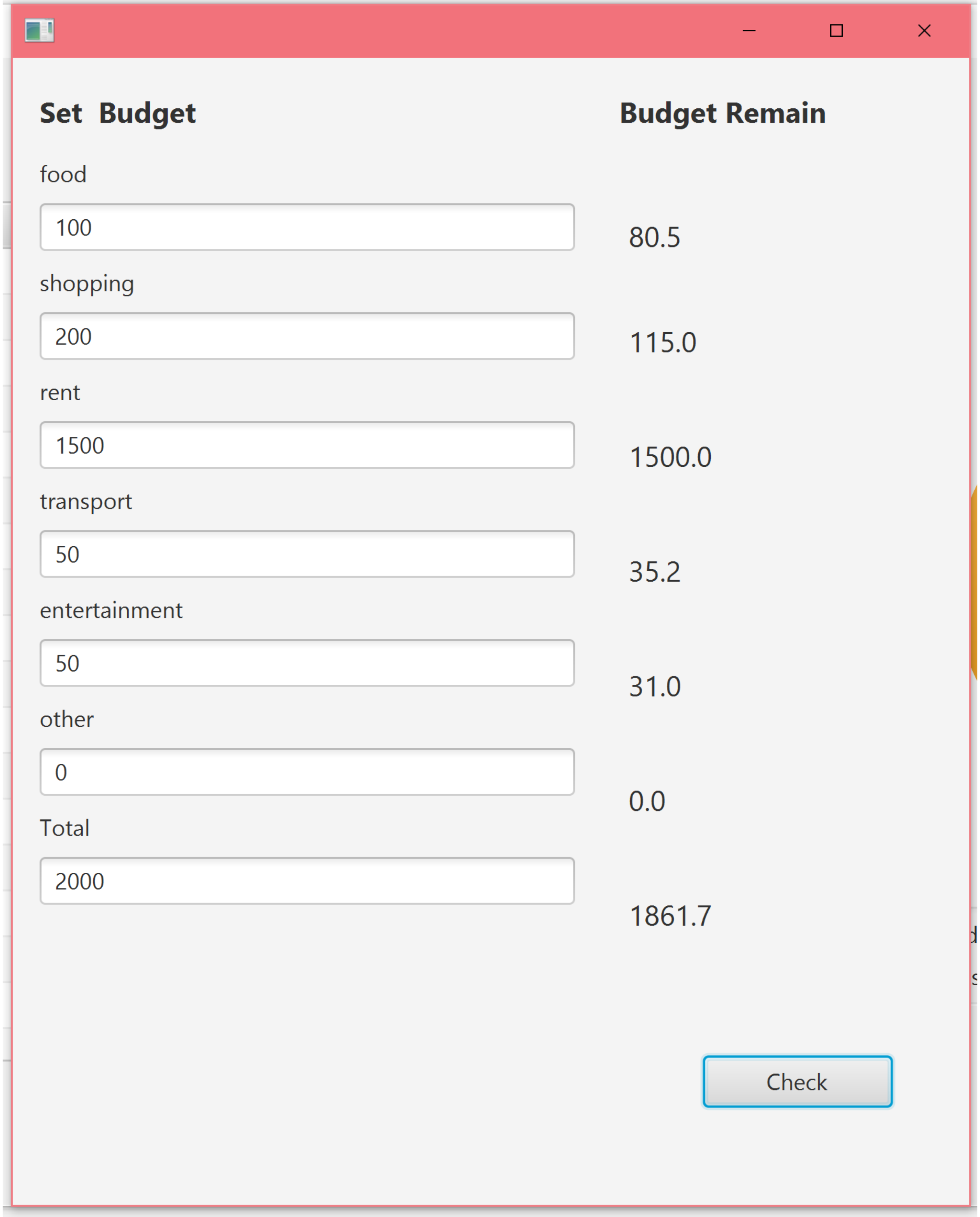
Date:

Select category: food

price:

Note:

The user can manage their budget by selecting check budget.



Set Budget		Budget Remain
food	100	80.5
shopping	200	115.0
rent	1500	1500.0
transport	50	35.2
entertainment	50	31.0
other	0	0.0
Total	2000	1861.7