

Piggy Bank Express

Team Jeniuses

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Overview:

For individuals who need help tracking expenses, PiggyBankExpress is an expense tracker that not only keeps track of how much you are spending per week or per month, but also shows how much you will be making over time if you keep up your spending habits. Unlike our competitors who are specialized for a whole company, our product is specialized for each individual. We set out to provide the user a means to have their transaction data analyzed, however, due to time constraints we didn't complete this on time. Team Jeniuses set out to develop a fully-functional piece of software. However, due to time constraints we were unable to do so. We were able to have fully functional GUI, but we were unable to implement a means for the user to sort data in specific ways (i.e. by category). Although we didn't what we set out to do, we were able to offer the customer a basic budget tracking program.

Motivation

As a college student balancing academics, sports and social functions is extremely difficult. The last thing I want to do is worry about keeping track of all of my expenses. Day-to-day struggles I've faced with tracking expenditures include, but are not limited to, lack of time, loss of purchase receipts, etc. We sat in silence brainstorming solutions to the problems we face daily. We wanted to develop a solution to the problem we faced as a college student and that so many people throughout all age groups face on a regular basis. We want to design and implement a piece of software to be extremely simple and easy to use for everybody. In order to solve the problems faced by many Americans daily, we created Piggy Bank Express, which is designed to solve all of these grueling problems.

Four Sprints

The four sprints completed by Technical Jeniuses were the person and problem scenario sprint, motivation sprint, usability sprint and architecture sprint. In the next four sprints, you will witness the development process behind Piggy Bank Express.

Persona and Problem Scenario Sprint

The persona and problem scenario sprint set out to discover the scenarios in which problems are encountered. We set out with the intention of researching problems people encounter with expense tracking and create a fleshed-out story describing them. We developed five fleshed-out persons that we feel embody the different users that will use Piggy Bank Express.

Cassie the College Student



Cassie the college student is an 18 year old freshman at College State University Community College of America. She was extremely excited to start her journey into adulthood at this school, it was her first choice of colleges and she already made some friends when she visited over summer. Before she started her first semester, she wanted to have a good amount of money saved up so she could enjoy herself. In order to have this nest egg, she worked a minimum wage summer job and managed to save up almost \$2000. This was more money than she had ever managed to save, so she decided she can spend some of this wealth on eating out with friends. She eventually found herself eating out and going to bars almost every night, this was quickly draining her bank account, but she decided that she must have enough money, after all it was almost \$2000. She continued having fun without a care in the world for about a month before she finally decided to look at her bank account and see what the damage was. She was shocked to learn she had just under \$1000 left. Obviously she knew she couldn't keep going out and partying every night, so she decided to be proactive and try to better manage her money. She started trying to go out to eat and party only a few nights every week instead of every night. This went well at first, but she soon found herself slipping back into her old ways of spending money every night. She's never had to save money before so she's struggling to know where to even begin to make real changes. Even after she started trying to save money, she was still spending roughly \$150 per week. She needs help figuring out how to stop spending so much money or she'll be broke before Thanksgiving break

Thinks	<ul style="list-style-type: none"> • I would love to have more money saved up • I wish I could eat at that new Chinese place everyday • I would have loved to have made more money during the summer • I wonder what I should reduce my spending on? • When I go out to eat with my friends, should I spend less money? • How much longer can I keep going out? • Should we look for other places to eat? • I wonder if my friends can cover more of the tab when we go out to eat. • Should I be looking to work a job during the semester?
Sees	<ul style="list-style-type: none"> • I can not see how I spent the money. • I can not plan to spend this money well within my expectations. • I can not see how much money I will have left if I keep doing this. • I can not see my remaining money anytime, anywhere.
Feels	<ul style="list-style-type: none"> • I feel like I could be saving more money than I am. • I feel like I don't know when/if I'll run out of money. • I'm afraid that I'll run out of money and won't be able to afford food. • I feel overwhelmed by the need to go out and spend time (and money) with friends.
Does	<ul style="list-style-type: none"> • I have to estimate/guess how much money I can spend weekly. • I blew through all of my money and now I have to ask my parents for money. • Balancing my academic life and social life is extremely overwhelming. • I spend countless hours manually creating a budget in Excel. • I spend too much money on monthly subscriptions that I forget about because I forgot to update my spreadsheet.

Problem Scenarios	Current Alternatives	Value Proposition
Spends too much	Tried to limit how often she goes out	Advice on how to better save money
Bad at saving money	Tried to stop spending money every day	

Howard the Hardware Store Worker



Howard the hardware store worker currently works at Rowe's Deput. Howard works as the greeter as he enjoys interacting with the customers that come in. Despite having already retired two years ago, he is back working as he felt like he was not being productive at home and feels lonely since he is the only one in the house. He is also back in the workforce in order to provide more money for his children. As a divorced dad, Howard is constantly looking out for his kids. With two of his children, Jakob and Jessica, currently in college and the third, Ronnie, attending graduate school, he wants to be able to financially support them. Every 2 weeks, Howard gives a portion of his paycheck to his children. Although it is not a lot, he is happy to be able to support his children. While he does give them money, he also provides food to them. Since all of his children are closeby, Howard will cook nice meals for them once a week and deliver it to them. Things have been going well until he noticed just how costly this all has been for him. Between donating a portion of his paycheck, buying extra groceries to prepare meals, and buying gas from the several trips he makes, Howard is spending a lot more money than what he feels comfortable with. While Howard wants to provide for his children, he also does not want to live off scraps. Howard wants to be able to track just how much he is spending each week. Ronnie recommended to use expense tracking software to adjust how much he is spending. However, being technologically inept, all of the programs he has looked at have been too confusing and complicated for him to use. Although Howard wants to use some other method of tracking his expenses, Ronnie is adamant about Howard using software to do it. Howard just wants software that is easy to use and is not cluttered with features; he just wants to track expenses.

Thinks	<ul style="list-style-type: none"> • Should I work more hours at work? • I wish I could provide more to my children? • Should I search for a new job that pays more? • Should I donate less money to them? • How can I cut expenses? • I wish I could find software that is more accessible to people like me. • Should I lower the portions of their meals?
Sees	<ul style="list-style-type: none"> • I can't see exactly how much money I am spending on my children. • I see the faces of people I greet light up when they recognize me. • I cannot see how much longer I can keep supporting my children in this fashion.
Feels	<ul style="list-style-type: none"> • I feel so lonely while I am at home. • I love my children so much. • I am disappointed I can't provide more to my children. • Although it does not pay much, I enjoy greeting people at my job as it is nice to interact with people.
Does	<ul style="list-style-type: none"> • Every weekend, I go to the grocery store down the street to buy food to prepare meals for my children. • After preparing these meals, I drive around the town to deliver these meals to my children. • I sometimes go hunting with my longtime friend Walter during the weekend. • While at home, I usually just spend the evenings and nights watching TV.

Problem Scenarios	Current Alternatives	Value Proposition
Wife divorced him	Eats less	Where and how much money is being spent
Retired (no career, but a part time job)	Donates less money	
Donates part of his paycheck every week	Working extra hours	

Emily the Excel User



Emily the Excel-user is an executive of a financial goods company, which has a high income, and she never worries about spending money. She spends money in many different ways. For example, she likes to go shopping at the mall and buy a lot of things, which makes her feel very excited every time. But when she is finished shopping, she needs to input every item she spent into an Excel spreadsheet, which often took her a lot of time. She was happy to do it at the beginning, but after a period of persistence, she became more and more disgusted with it and wanted to save time. She sometimes becomes frustrated or bored entering in numbers, especially when she has spent money on a lot of items during the week. Also, since she enters her information back on her computer at her home, she sometimes forgets to update her excel sheet. This causes even more headaches for her and begins to wonder if it is even worth continuing to do this. She wants an easier/more accessible way of inputting and monitoring this data.

Thinks	<ul style="list-style-type: none"> • Should i stay at home rather than go shopping? • Should I find some free hobbies ? • How can I reduce my expenses ? • Should I choose a better way to record my expenses ?
Sees	<ul style="list-style-type: none"> • I can not keep track of my spending. • I can not control my desire to spend money well. • I do not know how to better record my spending.
Feels	<ul style="list-style-type: none"> • I often feel very upset because I can not remember exactly where my money is spent. • I was annoyed because recording expenses was time-consuming. • I often get a headache when I forget to update these forms.
Does	<ul style="list-style-type: none"> • I go shopping every week. • I keep track of my expenses every day. • I usually stay at home except for going out.

Problem Scenarios	Current Alternatives	Value Proposition
Spends too much	Stays at home sometimes (makes her sad though)	Automatically puts in spending data
Too hard to track spending habits	Uses Excel to save money but has trouble keeping up	

Sally the Spender



Sally the spender has always had trouble with spending money on things she doesn't need. Sally is a 25 year old nurse who has never had to worry about a budget. She loves to indulge in monthly subscriptions like Netflix, Hulu, Apple Music, gift boxes, etc. that she doesn't use consistently. On top of constantly spending money on subscriptions, Sally loves to go out with her friends. She eventually found herself going to the movies, bars, restaurants and parties on a regular basis. She makes purchase after purchase, without being aware of how much money she has spent. Later, when she goes to check her balance, she is shocked to see that she has a lot less than she previously believed. Now, Sally has to pay monthly bills (i.e. rent, electricity and utilities) that she never had to worry about when her parents were footing the bill. She really wants to embrace being independent from her parents and take charge of her finances. On top of her new expenditures, Sally believes she should make use of the money she has leftover, but she doesn't want to be frugal either. Now that Sally is supporting herself for the first time in her life without any assistance, she wants a way to help her know what she should spend less money on.

Thinks	<ul style="list-style-type: none"> • How can I efficiently manage a budget? • Did I forget about anything that I am currently not using? • Should I pick up an extra shift? • How can I cut expenses? • How can I manage monthly subscriptions? • Should I not go out with friends as often? • How much longer can I keep going out? • Should we look for other places to eat? • I would love to save money for a vacation to Guam.
Sees	<ul style="list-style-type: none"> • I can't see how many active monthly subscriptions I currently own. • I see how difficult it is to manage a budget when you have a fixed income. • I cannot see how much longer I can keep support myself without any assistance. • I can't see how much money I will have left if I keep doing this.
Feels	<ul style="list-style-type: none"> • I feel like going out with friends all the time is costing me too much money. • I feel so lonely while I am at home. • I feel like I need a new wardrobe every season. • I feel independent and I am happy I have control over my life. • I work a lot of hours, so I feel that I can spend a lot of money with the little free time I have.
Does	<ul style="list-style-type: none"> • After every shift, I go out with friends for happy hour. • I buy new gift boxes because the products are beneficial to my needs. • While at home, I usually just spend the evenings and nights watching TV. • I have to estimate how much money I can spend weekly. • I spend too much money on monthly subscriptions that I forget about

Problem Scenarios	Current Alternatives	Value Proposition
Has to know where her money is going	Spend less money when she can	A way to track where her money is going
Has never had to save money before	Puts change in a piggy bank	A list of where recurring payments are going

David the Dad



David the dad is a 40 year old man that is married with 3 children. He and his wife met in college where they were on the same floor together in their freshman year. They were fast friends and soon became deeply in love. When they graduated college, they immediately got married and each found stable jobs and worked to save up some money. They never planned to have any children, but one day his wife found out she was pregnant and that was that. They had their first child and they loved them so much. All of David's children were unplanned, but that just made it more special in his mind. David was a good dad, he drove all of his kids to school, he made dinner every night, and he always tried to provide for his family. The stable job that David got right out of college had since turned into a very specialized career, it wasn't quite as stable and not too many people were hiring, but it was very good money. One day David was called into his boss' office and told in no uncertain terms that the company no longer needed his services and he was being let go. They offered him a severance package which would last for a little while, but now David had to find a new job. Half a year has passed since then and David is still looking for work. His severance ran out a couple months ago and he is under pressure to make more money for his family. He has found a new job but it doesn't pay nearly as well as previous position and he is having trouble adjusting to his new financial situation. He needs to figure out where he can spend a little less money. With three kids money can seem to simply disappear and he isn't bringing in as much as he used to. David needs a software that can help him know where all of his money is going, and where he could be spending less.

Thinks	<ul style="list-style-type: none"> • Should I work more hours at work? • Should I look for a better job ? • Should I be satisfied with more than one job ? • How can I control my spending ? • How can I save my money ?
Sees	<ul style="list-style-type: none"> • I do not know if I make enough money to support my expenses. • I can not see where all my money went. • I do not know where I can spend as little money as possible.
Feels	<ul style="list-style-type: none"> • I often feel anxious about my present situation. • I love my family so much. • I feel useless. I can not give my family a good life. • I have tried my best, but I still can not reach the best.
Does	<ul style="list-style-type: none"> • I drive the children to school every day. • I go home on time every day to prepare dinner. • I go to town every week to prepare the next week's food. • I go fishing with my friends on weekends.

Problem Scenarios	Current Alternatives	Value Proposition
Severance ran out (low income)	Spend less	Figure out what he could be spending less on so he can better learn how to save money where he can.
Three kids	Part time job to supplement income	

Motivation Sprint

The motivation sprint was done by researching/interacting with people to check how the customers' interests and needs might be captured in the scenarios, and by any designs, software etc. that have been developed so far. We used the five fleshed-out personas to develop a list of features that could help users in tracking their expenses. We considered 4/5 of the fleshed-out personas we developed.

Team Name: Technical Jeniuses

Sprint Master: CJ Williams

Sprint Dates: 11/6/2019 - 11/11/2019

Overview:

We have created fleshed-out personas that we believe will accurately portray the possible wants and needs of future users. Using these personas, we were able to create propositions that could accurately portray solutions to possible problems that they might experience.

Inputs:

- Be able to track recurring payments made by Sally.
- Have the feature to automatically put in spending data from previous months.
- Make the program as streamlined as possible to make it simple and easy to use.
- Give advice to users on how to save more money.

Outputs:

- Set payments as recurring in app so they appear in future months.
- Before listing the spendings for the next month, ask the user if they would like to use the data for the previous month.
- Implement only the most necessary of features to avoid cluttering.
- Based off their spending, provide general spending advice that would be helpful to the user.

What?

We will consider the propositions for Cassie, Emily, Howard, and Sally.

Why?

We felt like these personas provided the most robust propositions as they would encompass concerns or problems that a lot of our users would have.

How?

Make sure our features work and have people with no prior understanding of our program to test them.

Charter for this Sprint

The purpose of the charter is to brief your team using the notes you will prepare here. Fill out the boxes:

What is/are the basic value hypothesis/hypotheses we are testing	We are testing the propositions mentioned above to see whether our features solve their problems.
What will we do with what we learn?	Ensure that our propositions accurately portray possible concerns that our users could have and implement the features necessary that will assist them.
Where is the working document for personas and notes?	https://docs.google.com/document/d/18-RoUiwvkDrs3TSzxgeaQGpa5wPED6jP_VAEBtcnmyk/edit?ts=5dad0b33
What existing work should participants review in advance?	Review the problem propositions of the personas mentioned above.
What is the convention for making changes with shared access to the document?	We have a section contributing our own ideas and document who does what.

Notes:

Monday	1.
Tuesday	<ol style="list-style-type: none">1. Created google doc - CW2. Charter for the sprint - RZ3. Overview - TC4. Inputs/outputs/etc. - ALL
Wednesday	<ol style="list-style-type: none">1. Grammar and spell check - PG
Thursday	<ol style="list-style-type: none">1. Refined the document - CW
Friday	1.

Usability Sprint

The third sprint was the usability sprint. The usability sprint was where we discover the potential for customers to like and use the product when it is developed. In this sprint, we used the persona of Howard the Hardware Store worker because we feel he is a great representation of our target audience. Other than Howard, we conducted interviews with students and faculty throughout Washington College to see if they would like and use our expense tracking software. From the interviews we conducted, Team Jeniuses identified core features possible users like and would want to see in our software.

Team Name: Technical Jeniuses

Sprint Master: Ryan Zwier

Sprint Dates: 11/12/19 - 11/19/19

Overview: *(In this sprint, the team considers the key user stories, test patterns and comparables, and interface ideas, and test all of them in the context of how the user might approach them and/or like them. The sprint has)*

In this sprint, we will utilize the persona describing Howard the hardware store worker. This persona embodies our target audience for the software and we will use this in order to fully flesh out our core features.

Inputs:

User stories that regard usability, specifically Howard the hardware store worker.

Outputs:

Implementing the information we learned from analyzing these personas and conducting interviews, then turn them into simple to use features.

What?

Avoid cluttering our program from features that aren't vital to the user needs or wants.

Why?

We want to become more familiar wants and needs of everyday people, so we can make this program as simple as possible. We want to simplify everything so we can reach a wider, more diverse target audience.

Where?

How?

Develop a list of descriptive software features and test these features in a hand-drawn demo, then we will ask common day people for their input.

Charter for this Sprint

The purpose of the charter is to brief your team using the notes you will prepare here. Fill out the boxes:

What is/are user stories we are testing	Howard the Hardware Store Worker
What will we do with what we learn?	<i>We can learn how to streamline features, but still make them robust and usable.</i>
Where is the working document for personas and notes?	https://docs.google.com/document/d/18-RoUiwvkDrs3TSzxgeaQGpa5wPED6jP_VAEBtcnmyk/edit?ts=5dad0b33

What existing work should participants review in advance?	<i>The personas Technical Jeniuses have developed.</i>
What is the convention for making changes with shared access to the document?	<i>We have a section contributing our own ideas and document who does what.</i>

Notes: Make them in a shared document by the day. Each contributor adds his/her initials to their note.

Monday	1. None
Tuesday	1. Created google doc – RZ 2. Identified personas - RZ, CW 3. Contributed to the usability sprint template – CW, RZ
Wednesday	1. Ran different scenarios based on TJ's developed personas and random peoples input. - EVERYONE
Thursday	1. Tested the ideas in a hand drawn demo to see which ideas we should begin with and which ideas could possibly be dropped. - EVERYONE
Friday	1.

Architecture Sprint

The fourth and final sprint was the architecture sprint. The architecture sprint is where the actual code is designed and built. The architecture sprint consisted of three stages: design, implementation and results. In the architecture sprint, we split up into two different teams. The front-end development team consisted of CJ and myself. The back-end development team consisted of myself. Me and CJ developed and implemented the entire Piggy Bank Expese tracking software.

Team Name: Technical Jeniuses

Sprint Master: Pengqi Geng

Sprint Dates:

Overview: *(In this sprint, the team spends a week designing the architecture to meet the understanding of the previous three sprints. The sprint has)*

We will be using our personas and the previous sprints to create an optimal design for our product. This includes making our architecture as simple as possible in order to help our customers use our product. We will also be creating a UML diagram for us to fully understand how each piece of our product will interact.

Inputs: *(value propositions, user narratives, user interface components with usability notes)*

We will be using the value propositions that we gained through our personas, specifically those related to design.

Outputs: *(a breakdown of the key modules and a diagram of the architecture)*

A UML that shows the optimal design for our product and an interface that complements it.

What? *(specific inputs to consider)*

- Make the design simple
- Include features that are more complex for users that are interested
- Try not to clutter the software with too many features (avoid mud-balling)

Why? *(What was the reason for choosing these; what do we expect to accomplish?)*

- We want to make sure our product is as easy to use as possible to reach as many users as possible.

How? *(what will our tests be? What is the suite of tests for each module?)*

- We will keep the more complex features in a different section of the software, so there will be a more simple area and a more advanced area of our software.

Charter for this Sprint

The purpose of the charter is to brief your team using the notes you will prepare here. Fill out the boxes:

What is/are the personas and user stories we are working on	https://docs.google.com/document/d/18-RoUiwykDrs3TSzxgeaQGpa5wPED6jP_VAEBtcnmyk/edit
---	---

What will we do with what we learn?	We will edit our overall design and plan for the software according to our output
Where is the working document for personas, user stories, usability, and notes?	https://docs.google.com/document/d/18-RoUiwvkDrs3TSzxgeaQGpa5wPED6jP_VAEBtcnmyk/edit
What existing work should participants review in advance?	They should review the personas and value propositions.
What is the convention for making changes with shared access to the document?	<i>We make changes separately in our own sections.</i>

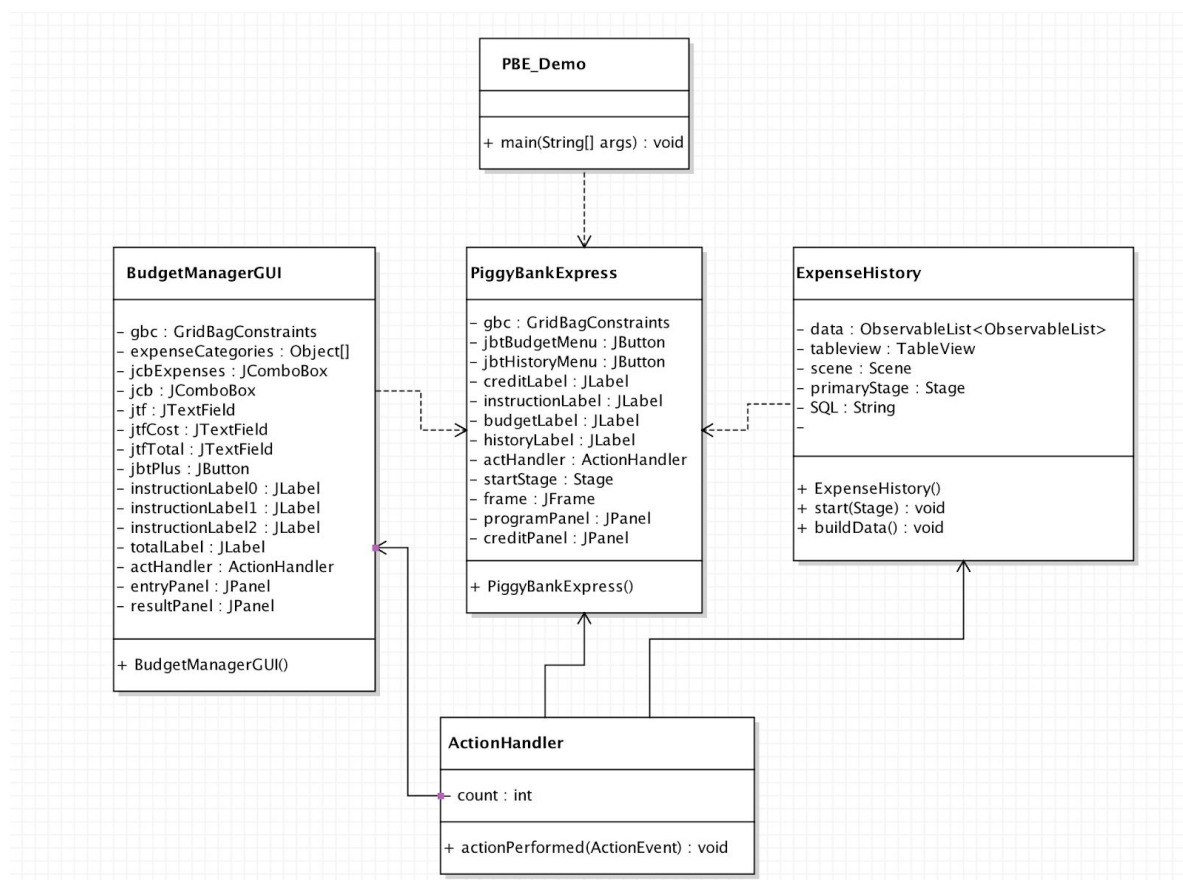
Notes: Make them in a shared document by the day. Each contributor adds his/her initials to their note.

Monday	1.
Tuesday	1. Worked on this document, filling out all sections.
Wednesday	1.
Thursday	<ol style="list-style-type: none"> 1. Designed and implemented database - RZ 2. Designed and implemented ExpenseTracker GUI - RZ 3. Designed and implemented Menus - CW
Friday	1. Designed and implemented UML - RZ

Design

The design process consisted of taking everything we've done up to this point and develop a physical product. As a team, we decided to implement a pieces of software with three seperate screens. The first screen is a main menu screen is what the user will see when he/she launches the program. From the main menu screen, the user will be able to navigate to the other two screens. The second screen is the expenditure input screen, which is where the user will input transaction history to update the database. The third screen is a transaction history screen. This screen will have a populated table with all of the users transaction history. In order to use a MySQL database within the program, we used Java Database Connectivity API (JDBC). In order to launch the program, the user must go to PBE_Demo and launch it from this class.

The UML diagram shows how Team Jeniuses decided to implement out software. There are five classes. PBE_Demo is the class designated to launch the program. BudgerManageGUI is the class that implements the expenditure input screen to populate the database. ExpenseHistory is the class that creates the table with the transaction history data. In this class, we use JDBC and SQL queries to populate the table with user data. PiggyBankExpress is the class that creates the main menu. ActionHandler is the class that handles all the events. The UML implementation is shown in the screenshot below:



Implementation

Since I focused on the backend development of this piece of software, this implementation section will focus on the work I completed. The following code fragment is used to populate the table with the results of the SQL query.

```
String SQL = "SELECT TransDate, FirstName, LastName, Category, Cost\n" +  
    "FROM user INNER JOIN transaction ON user.PersonID = transaction.PersonID \n" +  
    "ORDER BY TransDate desc";
```

This code fragment selects that data to be displayed in the table, the data is from multiple tables so the INNER JOIN allows for the use of multiple tables and the data is ordered by transaction date. The following code fragment is used to establish a connection with the database. The program uses Java Database Connectivity API (JDBC) to allow the use of a database in our program.

```
public void buildData() {  
    Connection conn2 = null;  
  
    try {  
        String url2 = "jdbc:mysql://localhost:3306/piggybank?user=root&password=baseball";  
        conn2 = DriverManager.getConnection(url2);  
        if (conn2 != null) {  
            System.out.println("Connected to the database test2");  
        }  
    }  
    catch (SQLException ex) {  
        System.out.println("An error occurred. Maybe user/password is invalid");  
        ex.printStackTrace();  
    }  
    // Connection c = null;  
    data = FXCollections.observableArrayList();  
}
```

The next code fragment we will look at is how to populate the table.

```
// Populate the table  
for (int i = 0; i < rs.getMetaData().getColumnCount(); i++) {  
    //We are using non property style for making dynamic table  
    final int j = i;  
    TableColumn col = new TableColumn(rs.getMetaData().getColumnLabel(i + 1));  
    col.setCellValueFactory(new Callback<CellDataFeatures<ObservableList, String>, ObservableValue<String>>() {  
        public ObservableValue<String> call(CellDataFeatures<ObservableList, String> param) {  
            return new SimpleStringProperty(param.getValue().get(j).toString());  
        }  
    });  
}
```

The next code fragment is the tables created in MySQL Work Bench. There are two tables: users and transaction. The table *user* stores the information about the user so multiple users can use this application. The table *transaction* stores the information about the transaction.

```

drop database if exists piggybank;

-- Create new database and connect it
create database if not exists piggybank;
use piggybank;

CREATE TABLE if not exists user
(
    PersonID    CHAR(5)          NOT NULL,
    FirstName   VARCHAR(15)      NOT NULL,
    LastName    VARCHAR(15)      NOT NULL,
    WeeklyAllow NUMERIC(6,2)      NOT NULL,
    Income      NUMERIC(7,2)      NOT NULL,

    PRIMARY KEY (PersonID) );

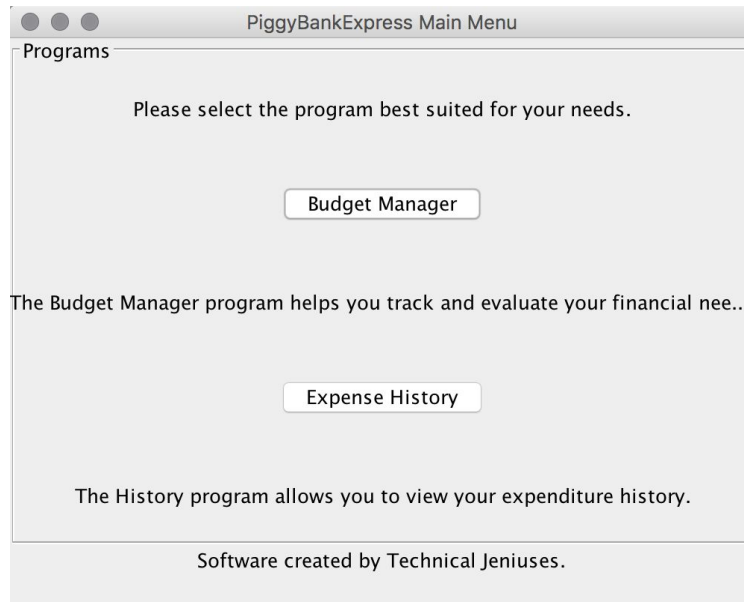
CREATE TABLE if not exists transaction
(
    TransID    CHAR(5)          NOT NULL,
    PersonID    CHAR(5)          NOT NULL,
    Category    VARCHAR(25)      NOT NULL,
    Description  VARCHAR(25)      NOT NULL,
    Cost        NUMERIC(6,2)      NOT NULL,
    TransDate   DATE              NOT NULL,

    PRIMARY KEY (TransID),
    FOREIGN KEY (PersonID) REFERENCES user(PersonID) );

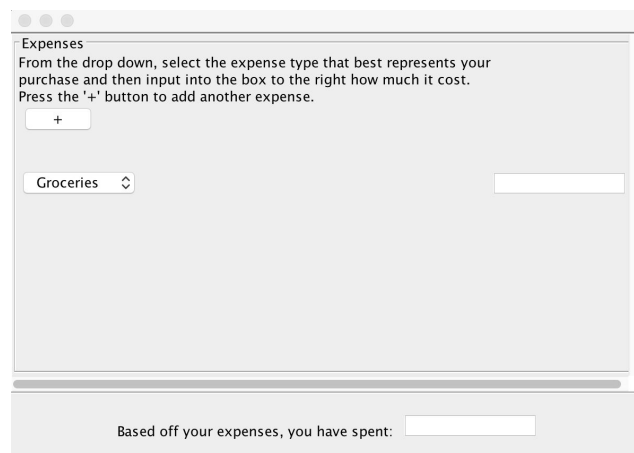
```

Results

Once Piggy Bank Express is launched, the first screen that appears is the main menu. The main menu enables the user to toggle between two other screens. The first screen labeled “Budget Manager” is the budget manager program that helps the user track and evaluate your financial needs. This button takes you to a new screen titled “Expenses”. The other button labeled “Expense History” is the history program that allows the user to view all of your expenditure history.



Expenses is a screen that has a plus, a combo box and a text field. When the “+” button is pressed, a new combo box and text field will appear directly beneath the already existing fields. The combo box holds values for the categories that describe the purchase. The text field is used to store the amount.



Once the “Expense History” button is pressed by the user on the main menu, it will redirect you to this scene. On this screen, the user will be able to view all transactions he/she has made.

teams were split up into front-end and back-end. CJ was assigned the front-end and I was assigned the back-end. Other than developing and implementing the back-end, I also had to design and implement half of the front-end of the project.

During this software engineering development process, many things were learned. The first being how to use Java Database Connectivity API. Other than technical skills gained from this process, I learned a lot about working in teams using Agile methodologies. We learned how to work as a team focusing on the needs of the customers. We developed customer stories that embodied the overall features that were to be implemented into the program. One thing this entire process taught me is that the customer is the main focus. We are developing a product for the customers, not ourselves. So during the development process, the software engineer has free will to create it as he wishes, but the customer's needs and wants have to be prioritized.

Some future work we would like to complete is finishing everything we were unable to complete during the duration of this class. Other future work would include implementing a more visually appealing GUI. We would like the pop-up screens to be more appealing to the users' eyes. Also, the best possible