**User Manual**

This is a general step-by-step flow of this application:

1) Choose your currency

2) Choose your month

3) Enter your after-tax income

4) Enter your conditional Percentages for the 3 spending categories (50/30/20 default or a different combination that sums to 100

4.1) Confirm whether all previous inputted data is correct. If not, repeat 1-4)

5) Begin entering your events! Continue until you have entered them all

5.1) Enter in the event date

5.2) Enter in the event type

5.3) Enter in the event monetary amount

5.4) Enter in the event name

5.5) If needed, enter in an event note

5.6) Confirm whether all previous event inputted data is correct. If not, repeat 5.1-5.5

6) After initial event input, if needed, can now modify existing event & budget data. Modification phase!

7.1) Add an additional event (repeats steps 5.1-5.5)

7.2) Delete an event at Index I

7.3) Change an event's monetary amount at Index I

7.4) Change an event's spending type at Index I

7.5) Change an event's name at Index I

7.6) Change an event's note at Index I

7.7) Change the conditional percentages for the spending types of the budget

7.8) Change total after-tax income

7.9) Change currency used (for-ex - foreign exchange operation)

8) Can continue modifying events and budgets as needed

**Input Guide**

For all inputs for monetary amounts, percentages, and Event indexes (Event amount, Budget after-tax income, Budget 3 conditional percentages for spending types, (7.2, 7.3, 7.4, 7.5, 7.6) in the modification phase), any input that starts with non-numbers (letters, symbols, etc.) is interpreted as 0. For those variables, any input that begins with numbers but then switches to letters like “34.44sdf344”, the program will read it as 34.44. And lastly, for those variables, all input is immediately rounded to the nearest hundredth, so “34.99999999” will be read as 35. One last input example: “34.999asdfsdf9dfge49i5ty” will be first read as “34.999”, which then gets rounded to the nearest hundredth and become 35.

For the Budget 3 conditional percentages for spending type input, they must collectively sum to 100. Thus, using the aforementioned input rules for percentages, inputs of 34.225, 40.225, and 25.55 will not work because even though they technically sum to 100, 34.225 will round to 34.23 and 40.225 will round to 40.23 and together they will sum to 100.01. If you really wanted to a percent combination like that, then I’m afraid looking at a college sophomore’s class final project may be the wrong place for that!

For Event name and Event note input, the program will be able to take input of multiple words and including spaces. For all other input, it is not recommended doing so.

In the unusual case of entering wrong input, the program has been coded to robustly handle all cases, such as entering letters when numbers were expected, entering negative numbers when positive ones are expected, entering decimals when whole integers are expected, entering numbers beyond the expected and legal range of values, and etc. In each case, the incorrect input is obvious invalid, and you will be prompted to re-enter your data again.

If you accidentally enter in the wrong input, do not worry! The program has built-in multiple checkpoints where you confirm the correctness of your data and can choose to re-enter them as necessary, such as 4.1, 5.6, 6, and 8 in the general step-by-step. Additionally, in the modification stage, each modification option will ask you to confirm your data before it performs the modification.

**Output Guide**

Each print of a budget will be delineated by a line of “--------“ above and below the actual budget printout and will serve as a border for the budget. At the top is the header, you will see the Budget’s currency, month, and total number of events. The middle will be a listed printout of all the Events so far currently in the budget with each Event’s order in the list, date, name, amount, spending type, note is displayed in that order. And on the bottom, the right third signifies how much money and the percentage of the total after-tax income has been allocated to each spending type, the middle third signifies how much money has already been spent for each category and the percentage of its allocated funds already used, and the right third signifies how much allocated money is still left in each category and the percentage of its allocated funds still left. The very bottom line signifies the totals and percentages of how much money is still left, has been spent, and is there in total.

Some nice, automatic features about this program are its calculations. From the user-inputted after-tax income and 3 conditional percentages, the program can then calculate how much of the total after-tax income should be allocated to each spending category. For example, if my after-tax income is $3,000 and my percentages are the default 50/30/20, then the program will calculate that 3000 \* .50 = $1500 are allocated for fixed spendings, 3000 \* .30 = $900 are allocated for variable spendings, and 3000 \* .20 = $600 are allocated for savings, and that would be my bottom right third.

After every new input or data change, the program automatically calculates for each category, how much many has been spent and how much money is still left, and its corresponding conditional percentage. From the previous example, if I choose to spend $100 on a fixed spending, then my total current fixed cost spending is $100, and I have $1400 left to spend for fixed costs. I have spent 100 / 1500 = 6.66666% => 6.67% (round to nearest hundredth) of my total money allocated for fixed spendings (middle third), and I have 1400 / 1500 = 93.33% of my fixed spending money still left to spend (left third).

Additionally, the program calculates the total amount and percentages for how much money has been spent and how much money is still left in total. Building again from the previous example, if I spend $50 on a variable spending, then I have spent 100 + 50 = $150 in total and have 3000 – 150 = $2850 left to spend (left third). I have spent 150 / 3000 = 5% of my total after-tax income (bottom line middle third) and have 2850 / 3000 = 95% of my total after-tax income to spend (bottom line left third).

My favorite function of the program is the for-ex operation, where using a few exchange rates found online, one can convert their budget freely between US Dollars, Chinese Renminbi, Euros, and British Pounds. None of the conditional percentages are modified as the relative amounts do not change, but all the monetary amounts themselves are modified based on the corresponding exchange rate.

During the modification phase, when an event amount, type, or the budget after-tax income, currency, or 3 conditional percentages are modified, all the conditional and total calculations are updated accordingly.

Happy budgeting!