Testing Results

Procedure

Over the course of three weeks, the prototype for Tipper was tested with 7 different users and included both a paper prototype and an interactive digital prototype. During each session, the participant was introduced to the application and then prompted to complete steps in a procedure. Observations were noted as each user completed each step. As a result, a number of adjustments were made to the application design to improve usability.

Results

The paper prototype round included 3 users and was conducted very informally. The following results were found (with corresponding revisions noted):

- The interface overall communicated clearly to the user group with strong success rates in the intended activities.
- Two users paused significantly when investigating the keypad before entering a bill amount, suggesting that it did not fit their conceptual model. After further questioning, we determined that the keypad needed to be revised. (#2)
- Other comments suggested some improvements to increase readability. (#1)

A few updates were made as a result of these findings and the digital prototype was built. 4 more users participated in a more formal series of test sessions in which the following was found:

- Overall the interface designs were successful again.
- One user suggested we clarify the name on the first button to point more directly to the task at hand. (#3)
- Several users in this group got to the prompt to choose a percentage and round up and verbalized that they would simply do the math themselves at this point. After further prompting, they did find the other features. Implications were noted. (#4)

Updates

As a result of testing, the following updates were made:

1. The transition from paper prototype to digital prototype cleared up much of the readability concerns. No further comments were made on this matter in the digital testing round.
2. The keypad initially included only numbers and a backspace command, while the input field was intended to automatically hold the decimal place. Users who paused at this input step suggested that a keypad with the decimal key would be easier to understand and use.

3. The button the first screen initially read, "Start a new bill" which one user suggested was vague. We plan to adjust this to, "Calculate a tip" to point more directly to the goal a user should have when starting the operation.

4. To help users understand that they have rounding options, we considered two future enhancements:
    - The application could have an introductory tutorial linked from the main screen that explains the features including the rounding options.
    - The icons for the rounding options are not common symbols and therefore not easily recognized. Once users knew the feature existed they did guess correctly. To help, we plan to consider adding text labels on the buttons for these options to help, while also hoping to balance the visual simplicity of the design.

Attached: Questionnaire and samples of data collected.

Protocol: Prototype User Test 1

MOD: Thank you for being willing to participate in this session to test using my application design. I'm planning an app that helps you calculate tips such as for a bill at a restaurant.

I am not recording this session in any way other than my written notes on a protocol sheet I've prepared in advance. Even so, I'm tracking this information without any reference to you personally, so your actions during this session are anonymous. If at any time you wish to stop the session, please feel free to do so.

» Do you have any questions before we begin?

MOD: All right, let's begin.

MOD: I have here a prototype of my application that you can imagine is the actual application on a real device. This is called a wireframe, and it depicts the general placement and labels for features of the application.

I'm going to as you to complete tasks step-by-step and observe your response. I'll make changes to what you see here to show how the application might respond based on your actions.

Know that you cannot really make "mistakes" here. I'm hoping you can help me figure out if the features are positioned well and whether they communicate clearly to you, the user, what they do and how they can be used to accomplish your goals. If you do something I didn't expect I see it as an opportunity to improve the design.

[continue to next page]

[present the prototype in the starting position]

Prompt	Intended Response	Observations/Redirect notes
Here you can see the main screen of the application that appears when you've first opened it. Imagine that you've just been given a bill at a restaurant to which you want to add a tip. **» What would you do to get started?**	☐ [user presses the "calculate tip" button]	
» What do you expect to do now?	☐ [enter amount from the bill]	
OK, let's say the bill is $21.90. **» How would you enter this amount?**	☐ [press number buttons from left to right… 2, 4, ., 9, 0]	
» Was there anything unusual about this step to you?	☐ [no]	
» All right, what would you do next?	☐ [press "go" button]	
OK, let's say you'd like to give a tip of at least 20%, but you typically like to round up to a cleaner number. **» What would you do now?**	☐ [press the "round up" option]	
» Confirm the option you like best.	☐ [press the option rounded up from 20%]	
» Now, do you feel you know what to put on the bill?	☐ [yes]	

MOD: Excellent. Thank you for your time. You provided helpful feedback that I can use as I move forward with the design.

» Do you have any other questions or suggestions?

MOD: Thanks again for your help!

[present the prototype in the starting position]

Prompt	Intended Response	Observations/Redirect notes
Here you can see the main screen of the application that appears when you've first opened it. Imagine that you've just been given a bill at a restaurant to which you want to add a tip. » **What would you do to get started?**	☒ | x | x | [user presses the "calculate tip" button]	• *Curious about settings*
» **What do you expect to do now?**	☒ | x | x | [enter amount from the bill]	• *Not sure whether its*
OK, let's say the bill is $24.90. » **How would you enter this amount?**	☒ | x | x | [press number buttons from left to right… 2, 4, ., 9, 0]	
» **Was there anything unusual about this step to you?**	☒ | X | X | [no]	
» **All right, what would you do next?**	☒ | X | X | [press "go" button]	
OK, let's say you'd like to give a tip of at least 20%, but you typically like to round up to a cleaner number. » **What would you do now?**	☐ | [press the "round up" option]	• *Round up or some* • *Round* • *+tttt %-then round up*
» **Confirm the option you like best.**	☒ | X | X | [press the option rounded up from 20%]	
» **Now, do you feel you know what to put on the bill?**	☒ | X | X | [yes]	