Bill Splitter

Test Plan

Version #1

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# Revision History:

2023-04-06: Initial Version for Deliverable 7a

# Introduction

This document describes the usability evaluation plan for Bill Splitter. This plan includes the following sections:

* Purpose and goals of the usability evaluation
* Target audience
* Design of the usability evaluation
* Data collection methodology
* Deliverables
* Resources
* Schedule

# Purpose of the Usability Evaluation

The purpose of a usability evaluation of the Bill Splitter is to predict the expected performance of the actual customer using the current product and materials, as well as detect any serious problems prior to the release of the product. The features that will be tested through the usability evaluation process are group formation, scanning a receipt, manually inputting items, assigning items to people, and paying an invoice.

### Usability Evaluation Goals

The goals of usability evaluation include establishing a baseline of user performance for future usability evaluation, establishing and validating user performance measures, and identifying potential design concerns to be addressed in order to improve the efficiency, productivity, and end-user satisfaction. Specific usability goals allow for the creation of evaluation scenarios and tasks that will let us evaluate the extent that you are meeting those goals, and what measures can help us determine if in fact the participants are having trouble completing the tasks. Consider any areas of the design where you may have particular usability concerns.

This evaluation will be based on the following usability goals:

* New users will be able to successfully pay an invoice within their first two attempts.
* Users will be able to invite another user into a group within 15 seconds of opening the relevant page.
* 50% of users will avoid unnecessary screens when creating their second and subsequent trips.
* Users will only misidentify non-button text as buttons up to one time.

We will also use a questionnaire to determine pre and post-test subjective information such as emotional reactions.

* How frequently do users split bills?
* How have users split bills previously?
* How long does splitting bills using other methods usually take (including time spent determining how to split the bill and how to pay the bill or repay a single payer)?
* How long does it take for others to pay the bill splitter back?
* What parts of the app did you find most confusing?
* What other payment methods should we support?

# Target Audience

### Subject Selection Criteria

The selection of participants whose background and abilities are representative of the product's intended end user is a crucial element of a successful usability evaluation. The evaluation will be valid only if the people evaluated are typical end users of the product, or as close to a selected set of characteristics as possible.

The participants' responsibilities will be to attempt to complete a set of representative task scenarios presented to them in as efficient and timely a manner as possible, and to provide feedback regarding the usability and acceptability of the user interface. The participants will be directed to provide honest opinions regarding the usability of the application, and to participate in post-session subjective questionnaires and debriefing.

The following list shows the key characteristics of the end users that are considered as critical differentiators for successful adoption, and use, of Bill Splitter. These characteristics are the basis for participant selection for the usability evaluation.

* College Student
* Splits Bills with Other College Students (Groceries, Restaurant Bills, etc.)
* Basic Experience with Mobile Application Usage

# Design of the Usability Evaluation

Individual evaluation sessions will take place in the following order:

* A performance evaluation in which each participant is asked to perform a series of real-life tasks
* A questionnaire and an interview after each performance evaluation to gather additional insights about Bill Splitter and demographic information from the participants.

## Evaluation Team Roles

The roles involved in a usability test are as follows. An individual may play multiple roles and tests may not require all roles.

Trainer

Provide training overview prior to usability testing

Facilitator

* Provides overview of study to participants
* Defines usability and purpose of usability testing to participants
* Assists in conduct of participant and observer debriefing sessions
* Responds to participant's requests for assistance

Data Logger

Records participant’s actions and comments

Test Observers

* Silent observer
* Assists the data logger in identifying problems, concerns, coding bugs, and procedural errors
* Serve as note takers.

## The Evaluation Process

The usability evaluation process is as follows:

### Participant Greeting

Each participant will be personally greeted by the evaluation facilitator and made to feel comfortable and relaxed. The issue of confidentiality will be explained and the participants will be asked to sign the consent form indicating their agreement to volunteer in the evaluation.

### Orientation

The participants will receive a short, verbal scripted introduction and orientation to the evaluation. This material will explain the purpose and objective of the evaluation, and additional information about what is expected of them. They will be assured that the product is the center of the evaluation and not themselves, and that they should perform in whatever manner is typical and comfortable for them. The participants will be informed that they are being observed.

### Performance evaluation

The performance evaluation consists of a series of tasks that are evaluated separately and sequentially. The individual participants complete the tasks while being observed by the usability specialists. The scenario is as follows:

* After the orientation, the participants will be asked to sit down at the computer. The evaluation administrator will give the participants the task scenario packet and instruct them on the use of the task scenarios, where the participant will complete the tasks one at a time in the order provided in the packet.
* After the participants begin working through the evaluation scenario, they will be encouraged to work without guidance except for the provided material and the product itself. The evaluation administrator may ask the participant to verbalize his or her thoughts if the participant becomes stuck or hopelessly confused. These occurrences will be noted by the evaluation administrator, and will help to pinpoint the cause of the problem.

### Participant Debriefing

After all tasks are complete or the time expires, each participant will be debriefed by the evaluation facilitator. The debriefing will include the following:

* Completion of a brief post evaluation questionnaire in which the participants share their opinions on the product’s usability, appearance of application screens, and general impressions of the product
* Participant’s overall comments about his or her experience
* Participant’s responses to probes from the evaluation facilitator about specific errors or problems encountered during the evaluation

The debriefing session serves several functions. It allows the participants to say whatever they like, which is important if tasks are frustrating. It provides important information about each participant’s rationale for performing specific actions, and it allows the collection of subjective preference data about the application and its supporting documentation.

After the debriefing session, the participants will be thanked for their efforts, and released.

## Logistics

Evaluations will be done in a location the participant finds comfortable (likely their dorm/apartment) at a time they find suitable. Participants will use a phone or laptop to control the app. Forms/questionnaires for the participant/logger/observers will be available (probably electronically). No specific data will need to be entered into the app.

# Data Collection Methodology

Data will be collected through the use of a “thinking aloud”/verbal protocol, observation of behavior, and a timer. We will use the UX target table in **Appendix B** for reporting quantitative and qualitative measurement data. Document the measurements you identify below in the table.

Measures to be collected include the following:

1. The mean number of attempts it takes a user to pay an invoice.
2. The average amount of time it takes a user to add a new member to a group.
3. The number of users that encounter an unnecessary screen when creating a trip their second time.
4. The mean number of times a user interacts with a non-interactable element of the GUI.

# Deliverables

At the completion of the usability evaluation, a formal analysis will be performed. A final evaluation report will be included in the project presentation. The analysis will detail the significant problems and observations detected during the usability evaluation, and recommendations to address the findings.

# Schedule

The usability evaluation will be conducted April 7th–18th 2023. The following is an estimate for the total schedule.

| **Activity** | **Person Responsible** | **Time (Hours)** | **Date(s) Conducted** |
| --- | --- | --- | --- |
| Planning for the evaluation, including creation of evaluation materials | Ryan | 2 | 4/9 |
| Arranging logistics | Will | 1 | 4/12 |
| Piloting the materials and procedure | Glenn | 1 | 4/12 |
| Running the evaluations | Joe | 3 | 4/17 |
| Analyzing data | Ryan | 1 | 4/19 |
| Preparation of final report and peer review | Glenn | 2 | 4/21 |
| Preparation of final presentation | Joe | 1 | 4/24 |
| Total Time |  | 11 |  |

# Appendix A – Task Scenarios

* Group Formation
  + Navigate to Groups Page
  + Add Group
  + Name Group
  + Select Group Type
  + Add Member
  + Search User
  + Add User
* Scan Receipt
  + Navigate to Trips Page
  + Add Trip
  + Select Group
  + Name Trip
  + Select “Scan Receipt”
  + Scan Receipt
* Manually Input Items
  + Navigate to Input Manually
  + Add Item(s)
  + Select “Next”
* Assign Items to Users
  + Navigate to Assign Items Page
  + Select User
  + Assign Items to User
  + Confirm
  + Repeat Previous Three Steps as Desired
  + Select Done
  + Select Confirm
  + Select Done
* Pay Invoice
  + Navigate to Invoices Page
  + Select an Invoice to Pay
  + Select Payment Type
  + Select Confirm
  + Select Done

# Appendix B – UX Target Table

| **User Role** | **UX Goal** | **UX Measure** | **Measuring Instrument** | **UX Metric** | **Baseline Level** | **Target Level** | **Observed Results** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Bill Payer | Pay an Existing Invoice | Learnability | Pay an Invoice | Number of Attempts | 2 | <3 | Evaluation Not Complete |
| Bill Splitter | Add a Member to a Group | User Performance | Add a Group Member | Time spent on task | 30 | <15s | Evaluation Not Complete |
| Bill Splitter | Create a Trip | Memorability | Create a (Second) Trip | Number of Users Encountering Unnecessary Screens | 75% | <50% | Evaluation Not Complete |
| Any User | Use the App | Understandability | Use the App | Average Number of Non-Buttons Pressed | 1 | <1 | Evaluation Not Complete |

User Role – user category, work role

UX Goal – high level UX usability design objective

UX Measure – UX usability characteristic to be measured; e.g., learnability

Measuring Instrument – the benchmark task(s) or survey question to generate test data

UX Metric – test measurement values to be collected; e.g., error count

Baseline Level – performance of current system if relevant

Target Level – minimum value for success

Observed Results – measured values

# Appendix C – Questionnaires

Pre Questionnaire

* How frequently do users split bills?
* How have users split bills previously?
* How long does splitting bills using other methods usually take (including time spent determining how to split the bill and how to pay the bill or repay a single payer)?

Post Questionnaire

* How long does it take for others to pay the bill splitter back?
* What parts of the app did you find most confusing?
* What other payment methods should we support?