Conversion Immersion

by Dawn Grow

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Introduction

Calculator App Overview

Goal:

Design the interface for a specialized calculator app that works on a touchscreen smart phone.

Identify a profession or activity that would benefit from a specialized calculator app.

Next, identify the functions your calculator must provide. Then design an appropriate interface using the principles of interaction and user testing. Keep your calculator app simple. It should be more like a basic four function calculator than like a complex graphing calculator. The final project will include a presentation of your app design and a comprehensive process book. This assignment explores observation, conventions, and feedback—three important concepts in interaction design.

Requirements

Project Steps

Make sure to follow all the project steps in order to pass the project.

The steps may be rearranged or repeated as your individual project requires.

Calculator App Design

Design for smart phone screen size

Design both portrait and landscape versions

Design 5 to 10 screens to demonstrate functionality

Presentation

Keep your presentation to a five minute time limit

Highlight the goals you established for your calculator app

Discuss how user tests affected your final app design

Present your final calculator app

Process book (print, pdf, or web site)

Cover

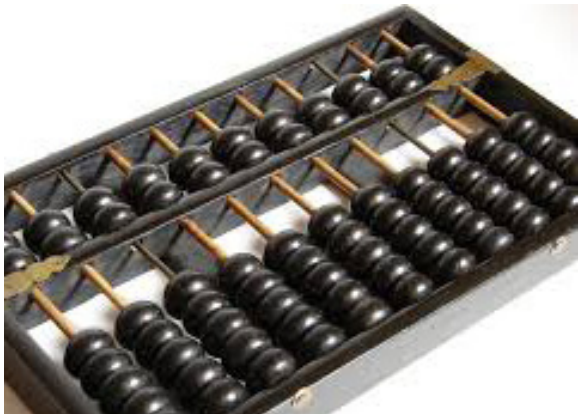
Table of Contents

Summary Section (“five minute presentation” version)

Comprehensive Section (include research, design exploration, usability testing, refinements, etc.)

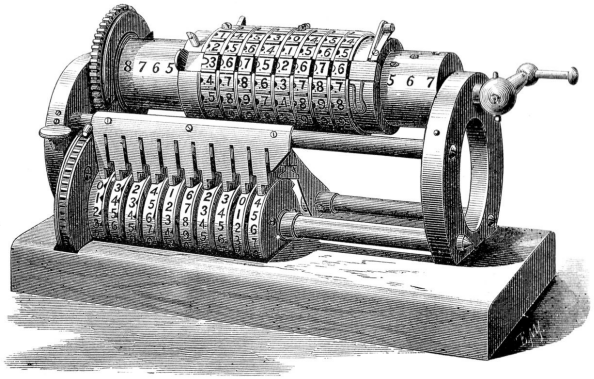
Exploration: History

The first known tools used to aid arithmetic calculations were bones, pebbles and counting boards, and the Abacus, known to have been used by Sumerians and Egyptians before 2000 BC. Development of computing tools arrived near the beginning of the 17th century: Geometric-military compass by Galileo, Logarithms and Napier Bones by Napier, slide rule by Edmund Gunter.



In 1642, the Renaissance saw the invention of the mechanical calculator by Wilhelm Schickard and several decades later Blaise Pascal. Pascal's Calculator could add and subtract two numbers, multiply and divide by repetition. Schickard's machine, constructed several decades earlier, used a clever set of mechanised multiplication tables to ease the process of multiplication and division with the adding machine as a means of completing this operation. Gottfried Leibniz spent forty years designing a four-operation mechanical calculator, inventing in the process his leibniz wheel, but who couldn't design a fully operational machine.

The Grant mechanical calculating machine 1877 is displayed on the right.



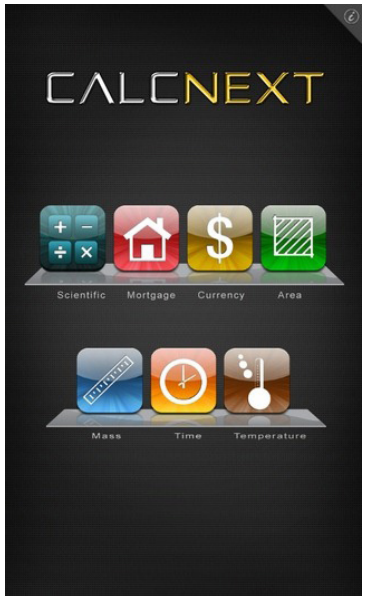
The 18th century saw the arrival of some interesting improvements, the Arithmometer, invented in 1820 as a four-operation mechanical calculator, was released to production in 1851 as an adding machine and became the first commercially successful unit.

It wasn't until 1902 that the familiar push-button user interface was developed, with the introduction of the Dalton Adding Machine, developed by James L. Dalton in the United States.

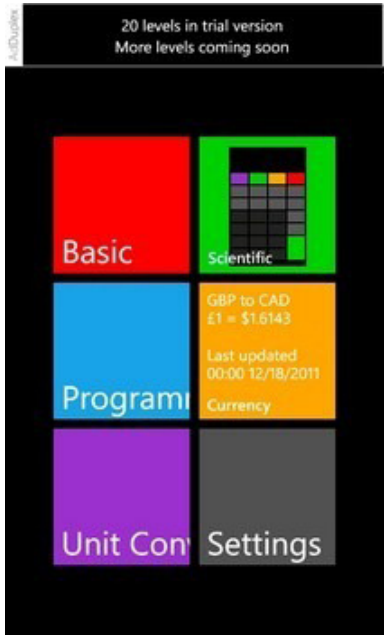
Today we have the advanced to the use of an app on our modern smart phones.

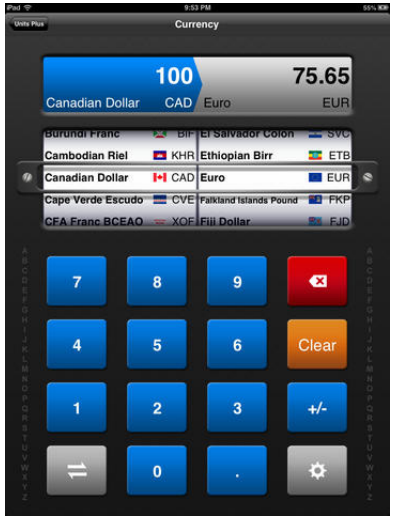
Special thanks to Wikipedia for the research information.

Exploration: Research



Searching through the smart phone for calculator apps yielded the following miscellaneous styles of calculator apps.





- Percent
- Script
- Graphing
- Conversion
- Tip
- Pregnancy
- Fertility
- Mortgage
- Fraction
- Weather
- Fitness
- Anime stats
- Payroll
- Food
- Currency
- Photo
- Quick loan
- Stocks
- Taxes
- Nutrition
- Relationship
- Scientific

Exploration: Smartphones Do

Smartphones Replace:

50 pounds of books (via Kindle, iBooks)

Kindle e-reader

daily newspaper

pocket digital camera (via built-in camera)

holga film camera (via Instagram, ToyCamera app)

pocket foreign language dictionaries

scanner (via Genius Scan)

bank ATMs (via USAA's app, which allows deposits via snapshot)

GPS device

road maps / printouts from Mapquest and Google Maps

reporter's notebook (I find tapping out notes isn't any slower than writing them)

voice recorder

handwritten grocery lists (via DropBox-syncing Plaintext)

Nintendo DS

iPod

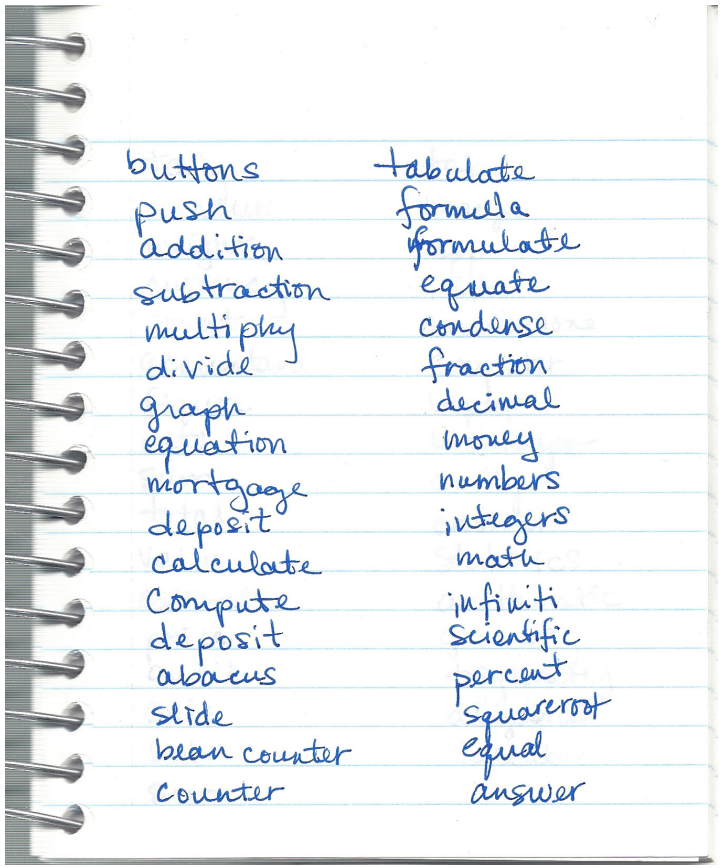
radio (via NPR app / Hype Machine / iTunes / Spotify / Pandora)

paper comics (via Comixology)

set-top box remote (via the Roku app)

paper receipt file (via EZ receipts)

Word Lists


buttons
push
addition
subtraction
multiply
divide
graph
equation
mortgage
deposit
calculate
Compute
deposit
abacus
slide
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tabulate
formula
formulate
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fraction
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percent
squareroot
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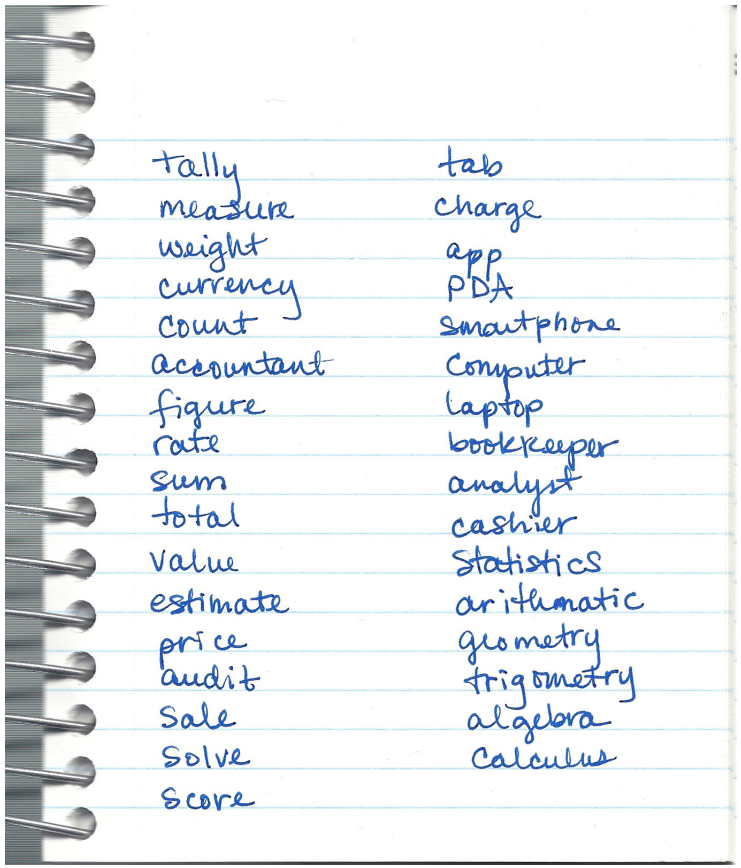

tally
measure
weight
currency
count
accountant
figure
rate
sum
total
value
estimate
price
audit
sale
solve
score

tab
charge
app
PDA
smartphone
Computer
laptop
bookkeeper
analyst
cashier
Statistics
arithmatic
geometry
trigometry
algebra
Calculus

Persona 1

The app would be useful for people of all literate ages.

This app would be useful for a person who were traveling and needed help with currency ...

Name: Julia Smith
Age: 35
Lives: Chicago, Illinois
Occupation: Sales Executive

Julia is a working mother who travels a lot for work. She has a demanding job and it makes her tired especially with jetlag.

She doesn't have the patience or time to deal with converting her currency or figuring out what temperature it is in the current country.

She wants an app for her phone that allows her to compute the correct amount of money for her taxi ride, dinners out and temperature in other countries.

Persona 2

for measuring distances ...

Name: Rob Brown
Age: 37
Lives: Denver, Colorado
Occupation: Insurance Salesman

Rob has a job he enjoys and a great love of the outdoors. Rob uses every chance he gets to travel and see places normal people don't see. He also likes to search with his friends on maps and go geocaching.
He has a hard time judging distance and speed in the other counties with their version being in kilometers.
Rob needs an app for his smartphone that will convert the kilometers to miles or miles to kilometers so he has an idea where he is or how fast he is going.

Persona 3

or had a cookbook from another country with different measurements.

Name: Dean Baker

Age: 62

Lives: San Francisco, California

Occupation: Retired

As a new retiree, Dean and his wife, Joan, like to cook and experiment with new recipes.
Dean recently bought a new European book of recipes that has all the recipe measurements in liters and milliliters. He needs an app for his smartphone that will show the measurements in a measurement he has in his kitchen.

Similar App Pages

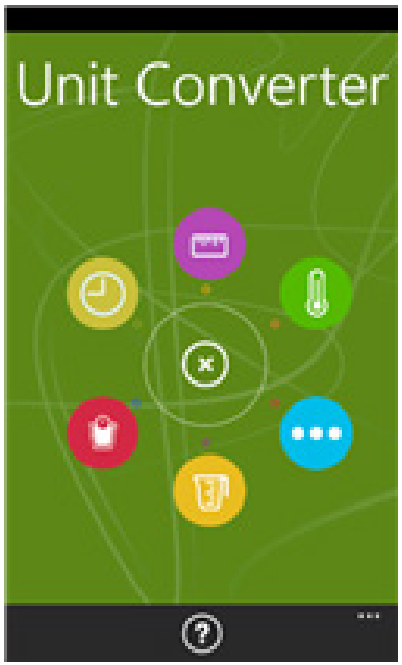
App Requirements

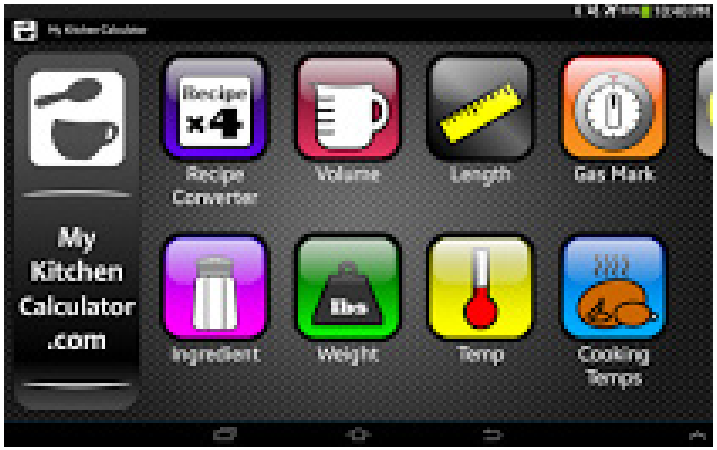
Currency
- United States
- Canada
- Mexico

Temperature
- Celsius
- Fahrenheit

Distance
- Meters
- Inch
- Feet
- Mile

Measurements
- Cup
- Quart
- Milliliters
- Liters





Brainstorming

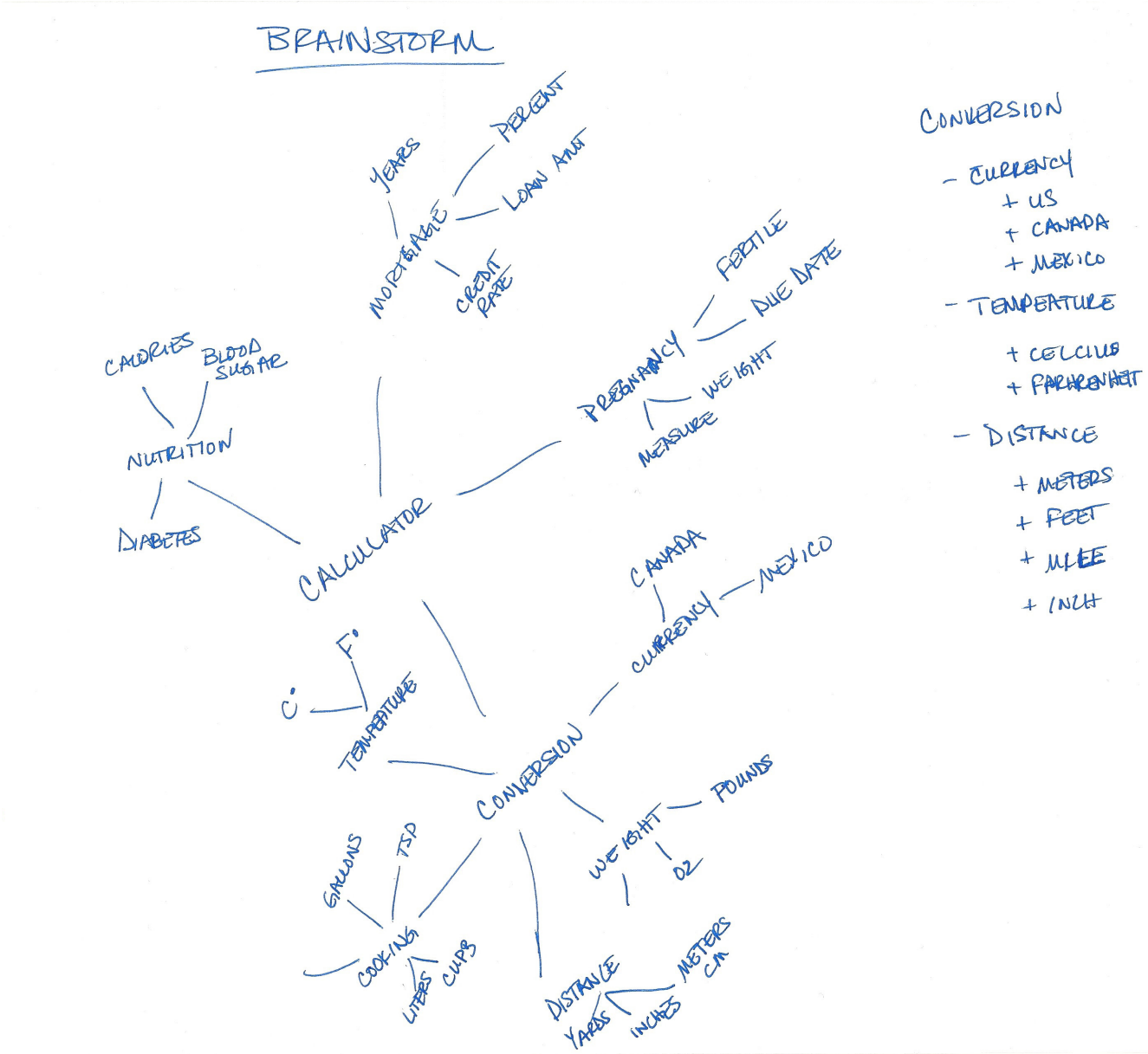
Goal:

Design the interface for a specialized calculator app that works on a touchscreen smart phone.

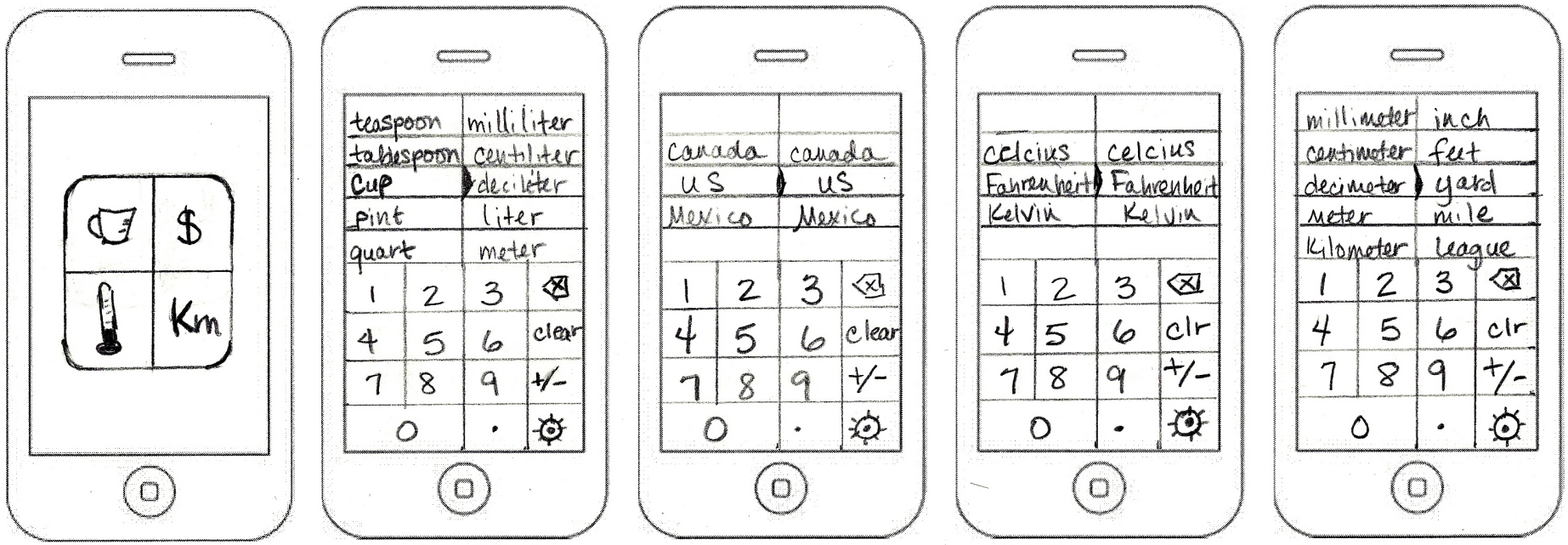
After brainstorming the topic, it was decided that this app would be for conversion. This app will convert currency, temperature, distance and volume.

The app must be:

- Simple, uncluttered
- Easy to use
- Easy to understand
- Legible



Sketches: Portrait



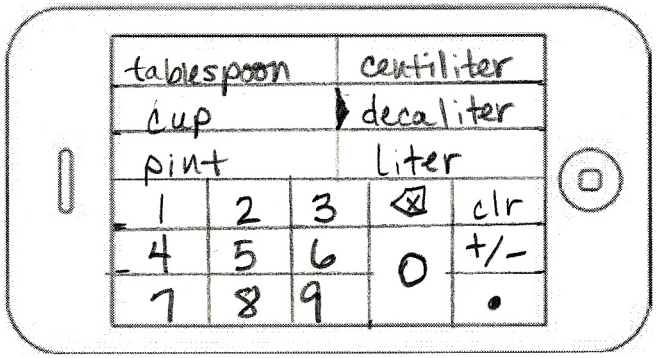
This shows some possible ideas sketched of an iphone and the way the app could look upon the screen in a portrait view.

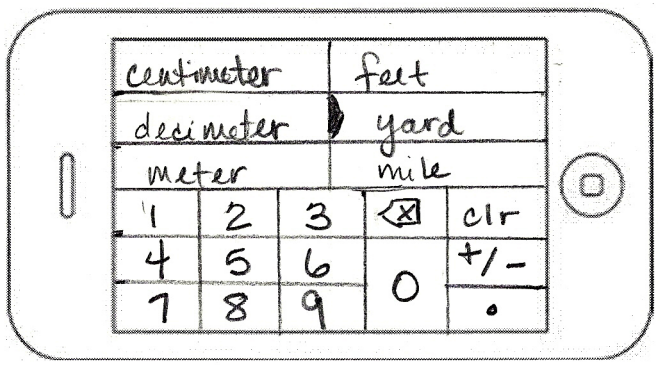
The main thought of these would be a calculator number pad on the bottom with the units to be converted on the top. The user could scroll through the left units list to find the desired unit to convert and the right list of the unit they want to convert to.

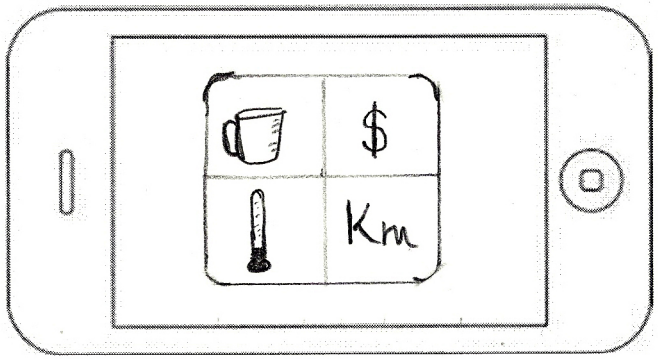
Sketches: Landscape

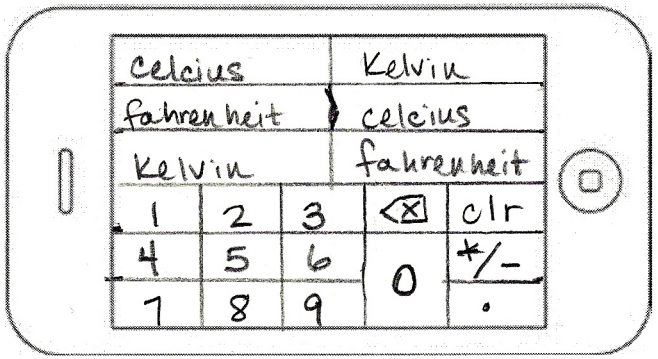
This shows more possible ideas sketched of an iphone and the way the app could look upon the screen in a landscape view.

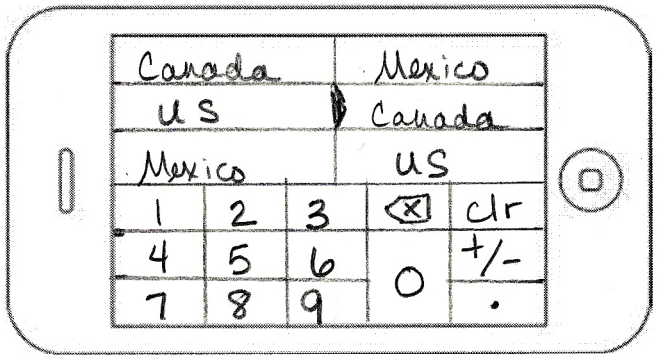
The calculator number pad would still be on the bottom with the units to be converted on the top. In this view, they would have less shown on the unit lists but the number pad would be wider buttons.











Scenarios

SCENARIO 1

Julia has been traveling all morning and just arrived at the airport in Mexico. She is tired and doesn't want to figure out how to convert money in her head. She gets a taxi to her hotel and needs to pay the man. She gets out her smartphone and brings up her app to calculate the amount of money she needs to pay him. She opens up the app, clicks on the button with the $, scroll through he countries to find the right ones and type in the money amount. Within a few flicks of her finger she has the correct amount along with a generous tip for his promptness and assistance.

SCENARIO 2

Rob is on a trip that his friends recently took. They gave him directions to an awesome restaurant they highly recommend. He looks at the directions and sees they are given in miles but the car his is driving only clocks the distance in kilometers. He remembers that he has the app on his smartphone that converts the distance. Bringing up the app, he clicks the 'km' button, scrolls through for the miles, finds the corresponding kilometers and types in the miles written down. He notes the correct distance and is able to follow all the instructions correctly. He sends his friends a thank you letter for the suggestion since the food was really good true native cuisine.

SCENARIO 3

Dean and his wife were given a new recipe book for Christmas. It is full of history of the leaders of the world and includes some of their favorite recipes. They are excited to start trying a few of them. They note that most of them are in metrics. Dean gets out his smartphone and finds an app that will be able to help them. After downloading the app, they are able to open the app, click on the measuring cup and convert the measurements so they can try out the new dishes. As they are waiting for it to cook and while they are eating, they read some of the stories that go along with these yummy dishes. What a great date night!

Usability Tests

SCENARIO 1

1. Open the app
2. Click on the money ($) button
3. Scroll to the country you are need money for
4. Type in the amount of money you need converted
5. Scroll to the country you have money for
6. Your input will show up on the left column near the country, your answer will show up on the right column near the country
7. Finish your transaction

SCENARIO 2

1. Open the app
2. Click on the measure (km) button
3. Scroll to the measurement you have
4. Type in the number of measurement you need converted
5. Scroll to the measurement you need
6. Your input will show up on the left column near the measure, your answer will show up on the right column near the measure
7. You now know how far you need to travel

SCENARIO 3

1. Open the app
2. Click on the measure cup (cup symbol) button
3. Scroll to the measurement amount type you have
4. Type in the amount you need converted
5. Scroll to the measurement amount type you need
6. Your input will show up on the left column near the amount, your answer will show up on the right column near the measure
7. You now have the needed amount
8. Repeat steps 3 through 6 until you have all the ingredients for the recipe

Usability Questionaire

Questions

- Was the main page easy to understand?
- Did you understand that the left and right columns rolled to other options?
- Did you get to your selection easily?
- Did you understand where the numbers you typed went to?
- Did you see your results?
- Did you have any problems with the app?
- What changes would you make if you could?

Usability Results

Test subject for Julia

name: Kiara

age: 19

Questions

- Was the main page easy to understand? Yes
- Did you understand that the left and right columns scrolled to other options? Yes
- Did you get to your selection easily? Yes
- Did you understand where the numbers you typed went to? Yes
- Did you see your results? Yes
- Did you have any problems with the app? No
- What changes would you make if you could? Nothing, it was wonderful

Test subject for Rob

name: Evan

age: 20

Questions

- Was the main page easy to understand? Yes
- Did you understand that the left and right columns scrolled to other options? Yes
- Did you get to your selection easily? No, it's paper
- Did you understand where the numbers you typed went to? Yes
- Did you see your results? I think so
- Did you have any problems with the app? No
- What changes would you make if you could? Using a real phone

Test subject for Dean

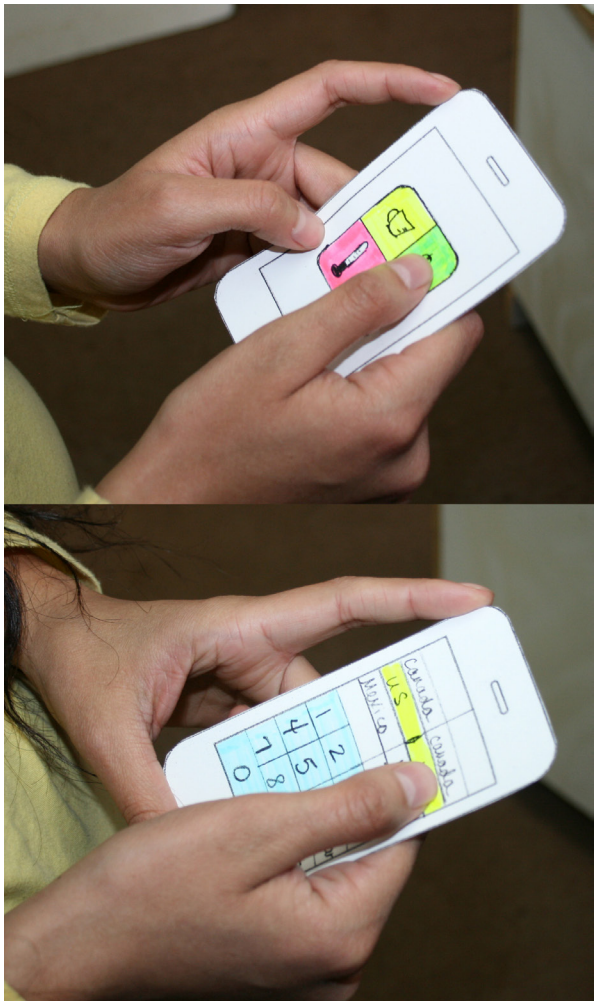
name: Neil

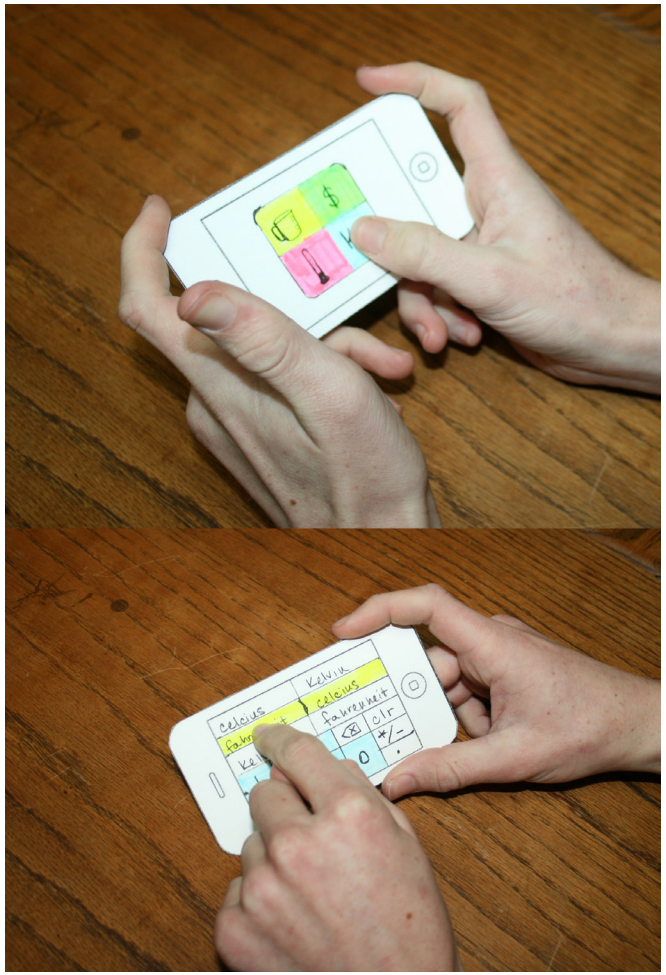
age: 50

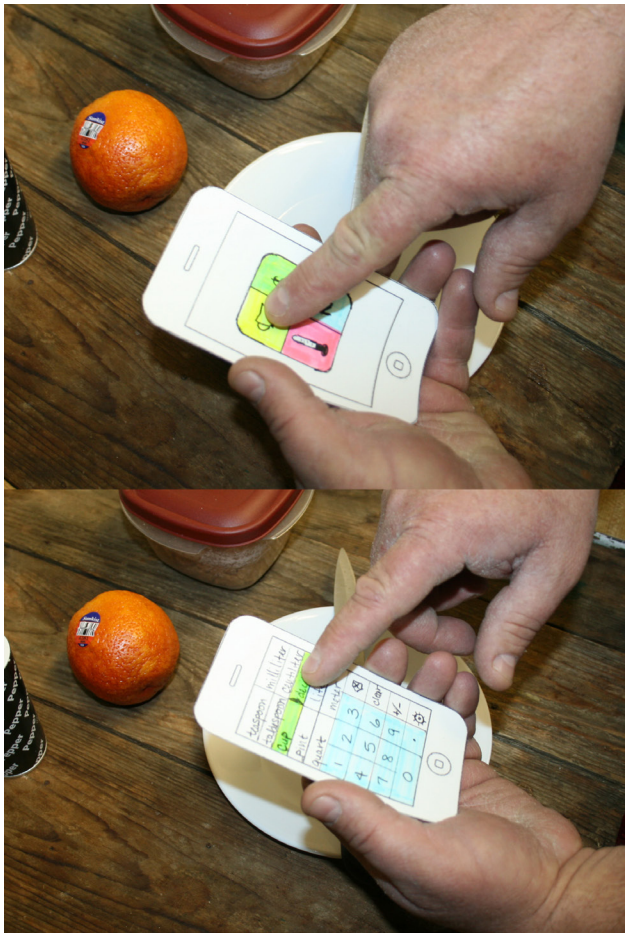
Questions

- Was the main page easy to understand? Yes
- Did you understand that the left and right columns scrolled to other options? It made it easy
- Did you get to your selection easily? Very quickly
- Did you understand where the numbers you typed went to? Indeed
- Did you see your results? No, it's paper
- Did you have any problems with the app? None whatsoever
- What changes would you make if you could? No changes

Usability Results







Draft Feedback

These were feedback from January 16, 2015

Dawn,
I think you have a great concept! I think your app is helpful for a wide audience. I think you have great variety in your scenarios.
The only thing I saw that would be a suggestion would be to fix exploration...on your table of contents page it is spelled without the "l." But aside from that, it looks great!!
Kendra

Dawn,
Really great work here. I really like your three different scenarios, and also the direction you are taking with your app. I would recommend that you run a spell check as Kendra suggests to make sure everything is spelled right. Visually I feel like your process book is week in a few things–just some adjustments. Your italic blue letterspaced headers do not feel professional looking. When you use italics and letterspacing it really feels odd, and may be harder to read. I would suggest to not letterspace the headers. I think this will make them easier to read. Second the gray background dulls the overall feel of the page. I would suggest loosing it and just have white. Keep it simple and clean–it will be easier to read. Let me know if you have any questions.
Kyle

Good job dawn. You have a good start here. I think you process book is nice and you are set up for a great project.
Becky

Great start Dawn! This was a lot to tackle in a short amount of time and I know that I am not done quite yet either. I agree with Bro Iman that the Italics seems out of place along with the gray background on some of the pages. I really like your font and alignments!
Sarah

Dawn, I think this looks like a good start! I have since seen what you have added and fixed and I think you have done a great job improving it. I wish I had some suggestions but I think it looks pretty good.
Preslee

Hey Dawn!
I'm so glad you were able to come up with a concept. I really like that you look at all different forms of conversion for the app. I think this will help give you the ideas you need to execute the required (3) functions and also have fun doing it. What does the screen look like when a different country? I like the ideas but the interface sketches are a little hard to go through. Are you going to have an area that the user can see what they are typing?
Jacky