

Team Unit-Genie

A Mobile Unit Conversion App

Final Project Submission And Information Guide

Date: 12/08/2024

Team Members and roles:

Brad Byard: Project Lead

Reem Rizk: Software Developer

Kevin Williams: Software Developer

Sankalp Rajeev: Software Developer

Project Description

The Unit Genie App is a versatile and user-friendly tool designed to simplify conversions across four major unit label groups: Length, Weight, Temperature, and Volume. Users can input values, select their "from" and "to" units, and instantly see accurate conversion results. With support for common units like meters, feet, kilograms, pounds, Celsius, Fahrenheit, liters, and gallons, the app ensures broad usability for students, professionals, and everyday users. Its intuitive interface allows for quick navigation and seamless selection of unit groups and options, making it an ideal companion for a variety of tasks, from academic work to practical measurements.

What sets the app apart is its focus on transparency and learning through its detailed features. Every conversion includes a breakdown of the mathematical steps involved, helping users understand the process behind the results. Additionally, the app tracks conversion history, letting users revisit past calculations and results at any time. Whether you're learning unit relationships, needing quick conversions on the go, or simply keeping a record of conversions for future reference, the Unit Genie App combines functionality and educational value into one reliable tool.

Main Application Features List

User Registration and Login:

- Users can create accounts (email, password, and security question).
- Includes a "Forgot Password" feature to reset passwords securely.

Unit Conversion Tool:

- Supports conversions across Length, Weight, Temperature, and Volume labels.
- Allows users to select "From" and "To" units and input values for conversion.
- Provides accurate results with a mathematical breakdown of the conversion process.

Conversion History:

- Displays the Top 5 Most Recent Conversions on the main screen.
- Full conversion history is accessible through a left-side drawer menu.
- Users can delete specific entries or clear their history.

Mathematical Transparency:

- Every conversion includes a detailed breakdown of the formula used, making it an educational tool for understanding unit relationships.

Admin Dashboard:

- Admins can view users' conversion history and monitor user activity.
- Allows admins to delete user accounts, with notifications sent to the user upon deletion.

Application Technical Specifications

Platform

- Operating System: Android (Version 8.0 and above)
- Programming Languages:
 - Java for core application logic
 - Kotlin for supporting activities and modern UI components
- Database: SQLite

Development Tools

- IDE: Android Studio ([Download Link](#))
- Version Control: Git
- Libraries & Frameworks:
 - AndroidX for UI components and compatibility
 - Material Design for consistent UI/UX
 - SQLiteOpenHelper for database management
- Tools:
 - XML for UI Layouts
 - RecyclerView for efficient list management
 - SharedPreferences for lightweight data storage

Architecture

MVC (Model-View-Controller):

- Model: `UserDatabaseHelper.java` (Manages user authentication, data storage, and retrieval logic).
- View: XML layout files (`activity_login.xml`, `activity_register.xml`, `activity_home_screen.xml`, etc.).
- Controller: Java/Kotlin classes (`HomeScreen.java`, `LoginUser.java`, `RegisterUser.java`, etc.)

How to Deploy and Install Application

Prerequisites

Before proceeding, ensure you have the following tools installed:

1. Java Development Kit (JDK) - Version 8 or above
2. Android Studio - Latest stable version
3. Git - For version control
4. Android Device or Emulator - Running Android 8.0 or above

Step 1: Clone the Repository

1. Open up a terminal
2. Navigate to the directory where you want to clone the app.
3. Run the command "git clone https://github.com/srajeev234/ConversionsApp.git"

Step 2: Open the Project in Android Studio

1. Launch Android Studio.
2. Click on File > Open.
3. Browse to the cloned repository folder and select it.
4. Allow Android Studio to sync and build the project.

Step 3: Set Up the Emulator

Open AVD Manager in Android Studio (Tools > AVD Manager).

Create a virtual device (select a device model and API level ≥ 23).

Start the emulator.

Step 4: Build and Run the App

1. In Android Studio, select the emulator in the top toolbar.
2. Click the run button
3. Android Studio will build the project and deploy the app onto the selected device.

Troubleshooting

- Ensure all dependencies are synced in `build.gradle`.
- Use File > Sync Project with Gradle Files.
- If the app crashes, check Logcat for any errors.

Application Walkthrough and Instruction

Here's a step-by-step walkthrough for a standard user of Unit Genie:

Step 1: Registration

1. Open the app and navigate to the registration screen.
2. Enter the required details:
 - Email: Provide a valid email address (must have @).
 - Password: Create a strong password.
 - Security Question: Select a security question.
 - Security Answer: Enter the answer to the security question.
3. Click Register to create your account.

Step 2: Login

1. On the login screen, enter your registered email and password.
2. If you've forgotten your password:
 - Click on Forgot Password?
 - Enter your registered email and answer the security question.
 - Follow the prompts to reset your password.

Step 3: Navigation After Login

1. Once logged in, the app displays the main conversion screen.
2. Top Navigation Bar:
 - On the right, under the user icon, access the user menu for options to logout, reset password, or delete an account.
3. Left Drawer Menu:
 - Tap the left hamburger menu icon to open a drawer displaying all your conversion history.

Step 4: Using the Conversion Feature

1. On the main screen:
 - Select Conversion Type: Choose a unit label group (e.g., Length, Weight, Temperature, Volume).
 - From Unit: Pick the unit to convert from (e.g., Meters).

- To Unit: Select the unit to convert to (e.g., Kilometers).
 - Enter Value: Input the amount you want to convert.
- 2. Click Convert to perform the calculation.

Step 5: Viewing Conversion Results

1. Conversion Result:
 - The app instantly displays the result or answer.
2. View the Math:
 - The app shows a breakdown of the mathematical formula used for the conversion.

Step 6: Recent Conversion History

1. At the bottom of the screen, see the Top 5 Most Recent Conversions.
 - Each entry shows the input value, converted value, and units.
 - Use the trash icon to delete specific entries.
2. Full Conversion History:
 - Access the drawer menu on the left to view all past conversions.

Step 7: Logout

1. When finished, click the user icon in the top-right corner.
2. Select Logout to end your session securely.

Walkthrough for Admin Users in Unit Genie

Step 1: Login with Admin Credentials

1. Navigate to the login screen.
2. Enter the admin email and password.
 - If you've forgotten your password:
 1. Click on **Forgot Password?**
 2. Enter your admin email and answer the security question.
 3. Follow the prompts to reset your password.

Step 3: Access the Admin Dashboard

1. After logging in, the admin dashboard will display the following:
 - A list of all the current users of the app.
 - The **Top Admin Log Bar** with account management options.
 - A **Logout button** for secure session termination.

Step 4: Monitoring User Activity

1. From the dashboard:
 - View the **conversion history** of each user.
 - Use the **integrated search bar** in a user's history to:
 1. Filter by **conversion label**, **numeric value**, or **unit type**.
2. Error validation occurs if:
 - Invalid characters are entered in the search bar.
 - No results match the search criteria.

Step 5: Managing User Accounts

1. To delete a user:
 - Select a user profile.
 - Click the **red delete button** next to their name.
 - Users will be notified of account deletion when they attempt to log in.

Step 6: Review Admin Logs

1. Click the **View Admin Logs** button displayed on the main dashboard to:
 - View a detailed log of your recent admin activities.
 - Review logs of user actions, including conversion details and timestamps.

Step 7: Logout

1. When finished:
 - Click the **user icon** in the top-right corner.
 - Select **Logout** to end your session securely.

Number Of Hours Per Team Member

Below is a list of hours for the overall project by each team member. Work was split up pretty evenly and each team member was a good contributor.

Name	Hours
Brad Byard	14.5 Hours
Sankalp Rajeev	14 Hours
Kevin Williams	14 Hours
Reem Rizk	13 Hours

All Meeting Dates

- All Team meetings for Project:
 - 09/29: Project Proposal Meeting 1 Hour
 - 10/09: Requirements Meeting 1 Hour
 - 10/14: Requirements Submission 1 Hour
 - 10/20: Product Backlog Meeting 1.5 Hours
 - 10/31: Iteration 1 Workload Discussion 30 Mins
 - 11/05: Iteration 1 Checkup 45 Mins
 - 11/06: Development Setup Troubleshooting 1 hour
 - 11/19: Discuss Iteration 2: 1 Hour
 - 12/05: Discuss Iteration 3: 45 Minutes
 - 12/10: Discuss and work on Final Project submission as team: 2 Hours
- Pair Programming Meetings
 - Brad And Sankalp :
 - 11/04 - Iteration 1: 4 Hours
 - 11/07 - Iteration 1: 2 Hours
 - 11/21 - Iteration 2: 3 Hours
 - Kevin and Reem:
 - 11/10 - Iteration 1: 2 hours
 - 11/11 - Iteration 1: 4 hours
 - 11/20 - Iteration 2: 3 Hours
 - Brad and Kevin
 - 12/08 - Iteration 3: 4 Hours
 - Sankalp and Reem
 - 12/07 - Iteration 3: 5 Hours

Completed Development Iterations / Milestones

Iteration 1

- Milestone 1: User Registration and Profile Creation:
 - Users can create a profile with their name, email, and password and will receive confirmation on successful registration.
- Milestone 2: Forgot Password Implementation:
 - Users can click the forgot password button. Once they click this button, they will be redirected to the reset password page where they can enter their email and this will be checked against the user table if it is a registered user.
 - Once this is validated, users can enter a new password and the password will be updated in the user table.
- Milestone 3: User Login and Password Authentication:
 - Users can login using a valid email and password and the
 - Once logged in, they will be redirected to the home screen where they can perform conversions and view their conversions history.
- Milestone 4: Users will be able to remain logged in for a certain period of time.
- Milestone 5: Users will be able to select a unit to convert, from a set of available units, to perform the selected calculations.
- Milestone 6: Users will receive a clear error message if a conversion cannot be performed.
- Milestone 7: Users will be able to see the results of a conversion based on selected calculations.

Iteration 2

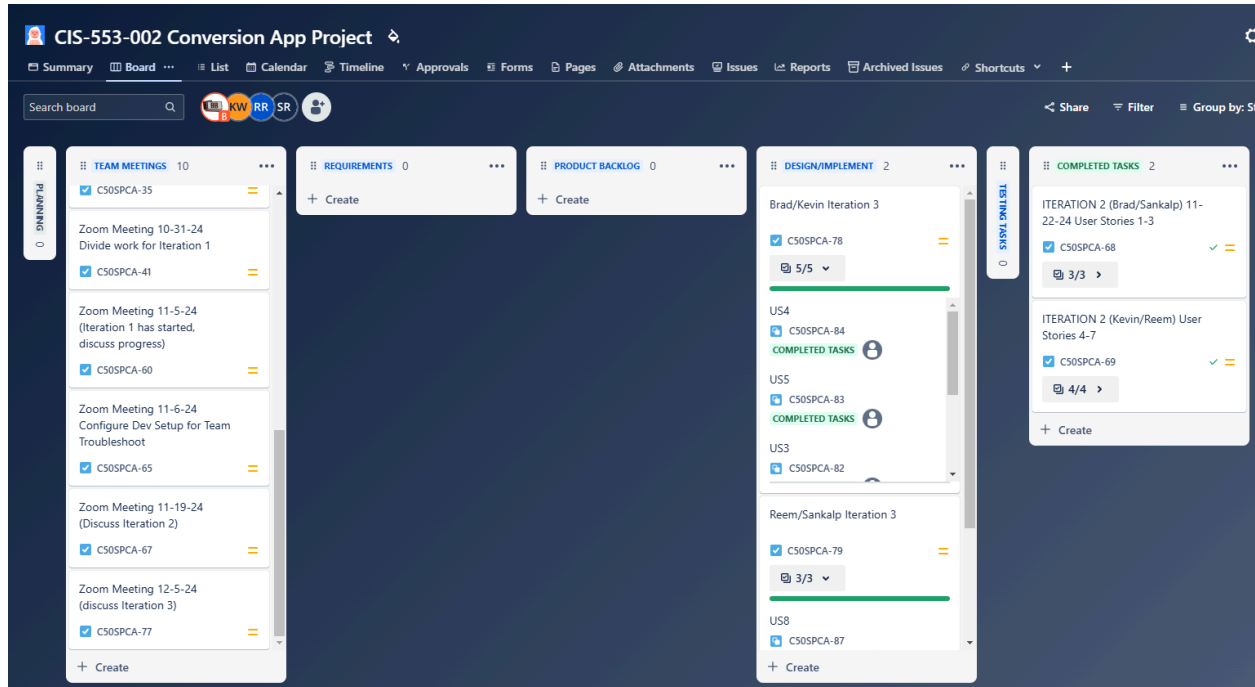
- Implement all conversion types with regard to SI units.
- Implement labels (Weight, Volume, Length and Temperature).
- Allow the users to view their conversion history.
- Allow users to view the mathematical steps behind the conversions.
- Improve UI for enhanced user experience.

Iteration 3

- Implemented an admin system with a functional dashboard
- Allow administrators to monitor user activity and view users' conversion history
- Allow administrators to notify users when their account has been deleted at login
- Implemented search bar feature in the conversion history
- Implemented the ability to search by label, numeric value, or unit

Overall Jira Board and Information

We used Jira to manage the project. We had different buckets on our board in this order: Planning, Team Meetings, Requirements, Design/Implement, Testing Tasks, and Completed Tasks. As we went through each portion of the project we moved and created tasks within each bucket. When they were finished we moved them to completed tasks



Overall View of GIT in Github

Code look with contributors

srjeev234 / ConversionsApp

<> Code

Issues

Pull requests

Actions

Projects

Security

Insights

ConversionsApp

Private

Watch 1

Fork 0

Star 0

master 1 Branch 0 Tags

Go to file

Add file

<> Code

btbyard Brad and kevin Search and Conversion History 4dd204b · 1 hour ago 13 Commits

.idea	show math, UI changes	2 weeks ago
app	Brad and kevin Search and Conversion History	1 hour ago
gradle	conversion history and edits	2 weeks ago
.gitignore	Initial commit	last month
build.gradle.kts	Initial commit	last month
gradle.properties	Initial commit	last month
gradlew	Initial commit	last month
gradlew.bat	Initial commit	last month
last.logcat	Sankalp and Reems work	4 hours ago
settings.gradle.kts	Initial commit	last month

README

About

No description, website, or topics provided.

Activity

0 stars

1 watching

0 forks

Releases

No releases published

[Create a new release](#)

Packages

No packages published

[Publish your first package](#)

Contributors 4

srjeev234

btbyard Brad

reemrizk Reem Rizk

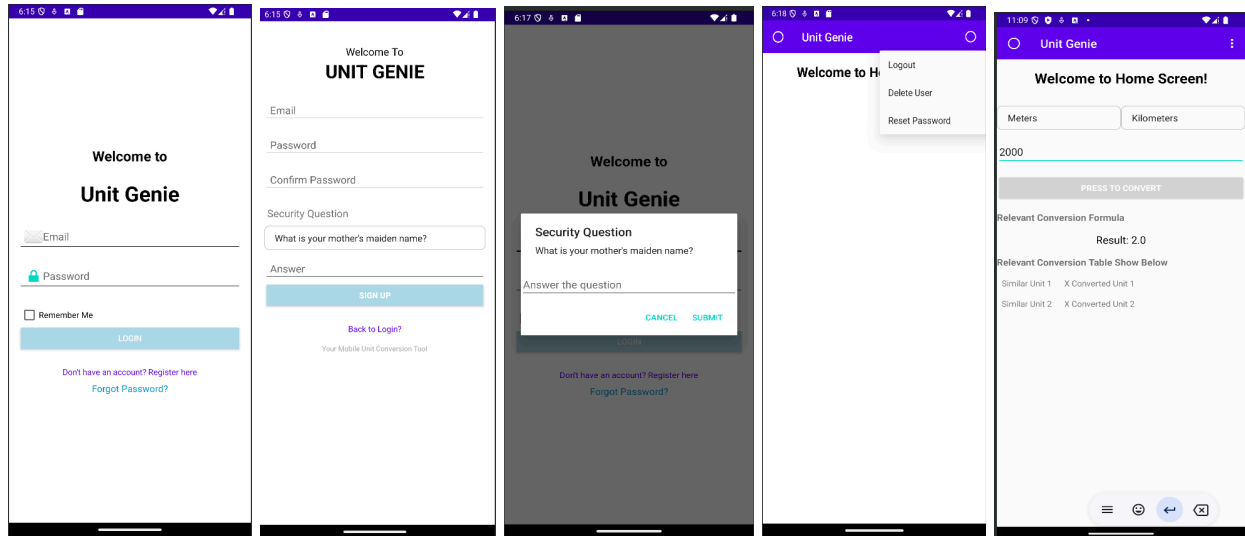
FordCantDrive

Commits (14 total)

Commits on Dec 10, 2024	<div><div>login update and home grey</div><div><div></div>btbyard committed 1 hour ago</div></div> <div>783619d</div> <div><div></div><></div>						
Commits on Dec 8, 2024	<div><div>Brad and kevin Search and Conversion History</div><div><div></div>btbyard committed 3 days ago</div></div> <div>4dd284b</div> <div><div></div><></div>						
Commits on Dec 7, 2024	<div><div>Sankalp and Reems work</div><div><div></div>srjeev234 committed 3 days ago</div></div> <div>c33ffbf</div> <div><div></div><></div>						
Commits on Nov 23, 2024	<div><div>Sankalps work</div><div><div></div>srjeev234 committed 3 weeks ago</div></div> <div>76c84cf</div> <div><div></div><></div>						
Commits on Nov 21, 2024	<div><div>conversion history and edits</div><div><div></div>btbyard committed 3 weeks ago</div></div> <div>afb8275</div> <div><div></div><></div>		<div><div>show math, UI changes</div><div><div></div>btbyard committed 3 weeks ago</div></div> <div>fd6d584</div> <div><div></div><></div>		<div><div>Reem's work</div><div><div></div>reemrizk committed 3 weeks ago</div></div> <div>4cd3af6</div> <div><div></div><></div>		<div><div>Kevin's work</div><div><div></div>reemrizk committed 3 weeks ago</div></div> <div>45fa8a9</div> <div><div></div><></div>
	<div><div>show math, UI changes</div><div><div></div>btbyard committed 3 weeks ago</div></div> <div>fd6d584</div> <div><div></div><></div>						
	<div><div>Reem's work</div><div><div></div>reemrizk committed 3 weeks ago</div></div> <div>4cd3af6</div> <div><div></div><></div>						
	<div><div>Kevin's work</div><div><div></div>reemrizk committed 3 weeks ago</div></div> <div>45fa8a9</div> <div><div></div><></div>						
Commits on Nov 11, 2024	<div><div>Kevins Work</div><div><div></div>FordCantDrive committed last month</div></div> <div>36c6844</div> <div><div></div><></div>		<div><div>Team Reem's Work</div><div><div></div>FordCantDrive committed last month</div></div> <div>c9234e5</div> <div><div></div><></div>				
	<div><div>Team Reem's Work</div><div><div></div>FordCantDrive committed last month</div></div> <div>c9234e5</div> <div><div></div><></div>						
Commits on Nov 8, 2024	<div><div>brad and sankalp iteration 1</div><div><div></div>srjeev234 committed on Nov 8</div></div> <div>66351ff</div> <div><div></div><></div>						
Commits on Nov 5, 2024	<div><div>project updates with brad_latest</div><div><div></div>srjeev234 committed on Nov 5</div></div> <div>d1793ea</div> <div><div></div><></div>						
Commits on Nov 4, 2024	<div><div>project updates with brad</div><div><div></div>srjeev234 committed on Nov 4</div></div> <div>7f5cd29</div> <div><div></div><></div>						
Commits on Nov 3, 2024	<div><div>Initial commit</div><div></div></div> <div></div> <div><div></div><></div>						

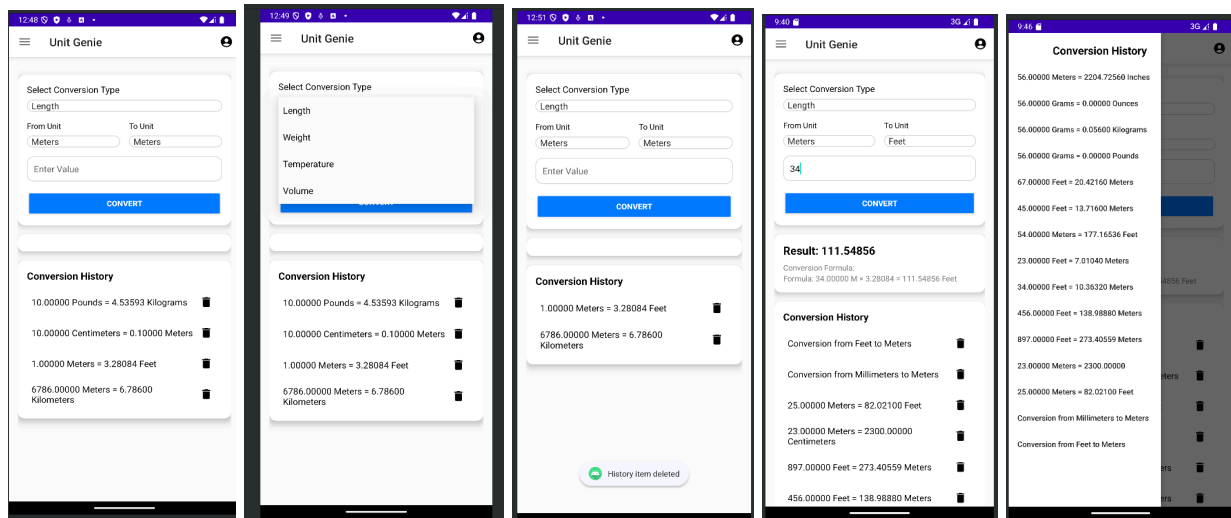
Checkpoint 1:

Login with user account setup and homescreen



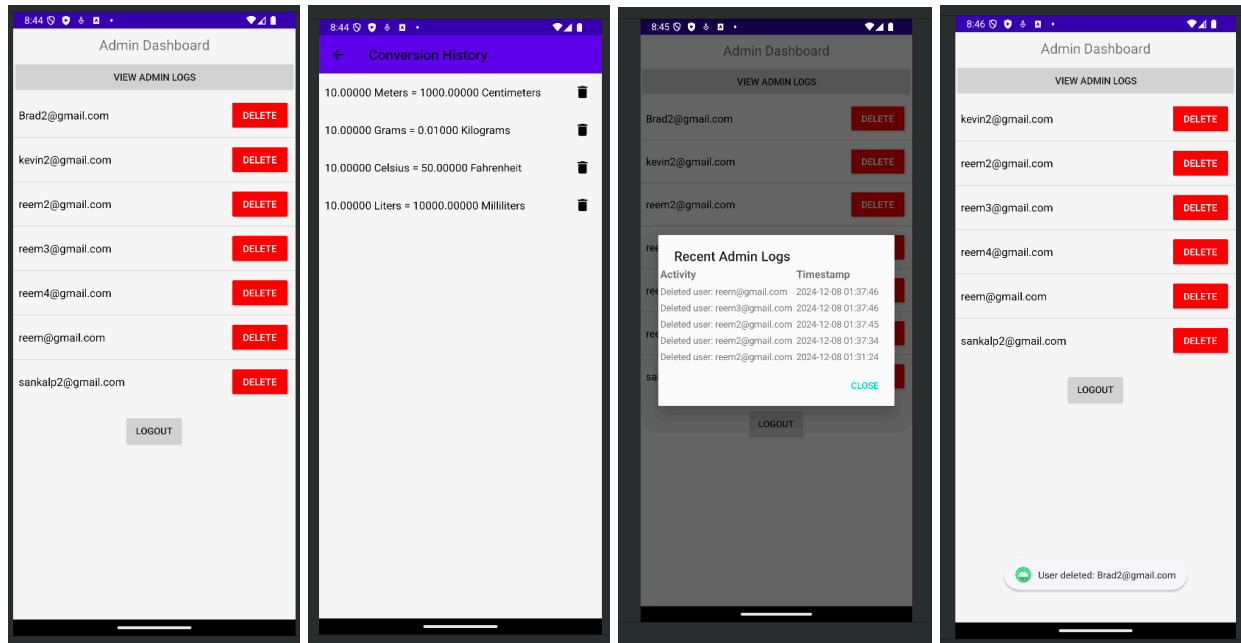
Checkpoint 2:

Updated UI with conversion history, labels that include the dropdown. The deleting history (trash icon) of conversions and delete notification solving conversion. Lastly showing the mathematical formula and left side drawer menu showing all conversion history.



Checkpoint 3:

Admin Dashboard where the admin can view the conversion history of each user, the admin logs and delete users at will.



Each user gets notified if the admin deletes their account. A search bar feature in "All Conversion History" drawer menu is added for more functionality. There's also an error validation by entering incorrect characters in the search bar. Last a validation popup for no results found for that search and a filter conversion searches by numerical amount entered.

