# Project Description:

CalcBox is a multi-functional mobile application designed to consolidate a wide range of calculators and converters into a single, easy-to-use platform. It includes number base converters, scientific calculators, unit converters, interest calculators, and more organized in a customizable tile grid interface. Users can personalize the app experience by selecting visible tools, adjusting tile sizes, and enabling themes like dark or light mode. The goal of the project is to improve productivity by minimizing the need to switch between multiple websites and calculator apps, thereby enhancing user convenience and accessibility.

# Requirements Summary:

|  |  |  |
| --- | --- | --- |
| **MINIMUM REQUIREMENTS** | Processor Cores | Dual Core |
| OS | Android 7.0 (Nougat) |
| RAM | 1 GB |
| Storage | 50-100~ MB free space |
| **RECOMMENDED REQUIREMENTS** | Processor Cores | Quad Core |
| OS | Android 8.0 (Oreo) |
| RAM | 4 GB |
| Storage | 200~ MB free space |

Table 1. System Requirements

**Note:** iOS support is not yet available for this application as development and testing were exclusively conducted using Android Studio, which is tailored for Android devices. Compatibility with iOS would require additional development and testing using Xcode on macOS.

**Overview**

The evaluation aimed to assess the usability, user satisfaction, and design effectiveness of the CalcBox multi-calculator mobile app. We used a user survey as the primary evaluation technique, targeting actual users after interacting with the app. The survey included:

* Likert-scale questions (1–5) to evaluate usability criteria such as ease of use, navigation, performance, clarity of UI, and satisfaction with features like dark mode and customization.
* Open-ended questions to gather qualitative feedback on likes, issues, suggested features, and improvements.
* One behavioral question asked if users previously searched for online calculators or formulas, helping us understand the necessity of the app.

**Tasks:**

Participants were asked to:

* Navigate the app
* Try different calculators (BMI, interest, conversions, etc.)
* Explore customization features
* Use the app without formal instructions

**Participants:**

10 users were selected, comprising college students and young professionals who regularly use calculators for academic or everyday tasks.

**Rationale for Methods and Tasks:**

* Likert-scale: Chosen to quantify user satisfaction, speed, ease of use, and UI clarity.
* Open-ended: To allow deeper insights into user experience and suggestions.
* Behavioral question: To validate the need for a centralized calculator app and identify current user habits.

### Data Presentation

#### Summary of Quantitative Responses (Likert Scale - 1 to 5):

|  |  |
| --- | --- |
| **Criteria** | **Average Score** |
| Ease of Navigation | 5.0 |
| Finding Calculators | 4.9 |
| Layout/Organization | 4.9 |
| Accuracy of Calculators | 5.0 |
| Understanding without Instructions | 4.9 |
| Responsiveness | 5.0 |
| Visual Appeal | 4.4 |
| Clarity of Icons/Labels | 4.9 |
| Dark Mode & Customization | 5.0 |
| Sense of Control | 5.0 |
| Customization Features | 4.9 |
| Settings Usability | 5.0 |

**Behavioral Question (Internet Search for Calculators):**

* **Yes**: 9 users
* **No**: 1 user

#### Open-Ended Feedback:

* **What users liked most**: "Easy to navigate", "User friendly", "Simple and does its purpose", "Very easy to use"
* **Confusing parts**: Mostly "None", a few noted unfamiliar calculators
* **Bugs/issues**: None reported, one noted regarding design appeal
* **Feature suggestions**: History tracking, descriptions of calculators, shortcut keys

### Data Analysis

**Usability & Satisfaction:**  
 The high scores (mostly 5s) across all usability metrics indicate a strong performance in ease of use, navigation, accuracy, and responsiveness. This suggests that the system meets the basic usability criteria successfully.

**Visual Design:**  
 Slightly lower average score (4.4) on visual appeal implies room for UI enhancement (color themes, layout aesthetics).

**Need for the App:**  
 9 out of 10 users confirmed they regularly searched the internet for calculators or formulas before using CalcBox. This validates the app’s relevance and purpose, providing a unified, offline, accessible alternative.

**Learnability:**  
 Nearly all users reported they understood calculators without instructions, meaning the design supports intuitive usage.

**Customization & Features:**  
 High satisfaction with features like dark mode and hiding calculators shows users value personalization. Suggestions for shortcut keys, usage history, and descriptions indicate **feature gaps** for future iterations.

### Design Implications

The prototype was **successful** in fulfilling its core objectives: being user-friendly, intuitive, and accurate. However, based on feedback, a few enhancements could improve it further:

* **Improve visual design**: More appealing interface, modern design elements
* **Add calculator descriptions**: Helpful for unfamiliar users
* **Implement usage history**: Useful for recall and learning
* **Shortcut keys or quick access**: Enhances efficiency for power users

No major flaws were discovered that warrant a complete redesign. The suggestions are incremental improvements rather than fundamental changes.

### Critique and Summary

**Advantages of the Evaluation:**

* Easy to deploy and understand survey method
* Combination of quantitative and qualitative feedback
* Clear insights on usability and purpose fulfillment
* User-driven suggestions for future improvement

**Disadvantages:**

* Small sample size (10 users) may limit generalizability
* All users were tech-savvy; may not reflect older or less experienced users
* Evaluation relied solely on self-reported data (no direct observation or logging of interactions)

**What We Would Do Differently:**

* Include observational usability testing to capture real-time struggles
* Broaden participant demographics
* Use A/B testing to test alternative visual designs or layouts

**With More Resources:**

* Develop an analytics feature to track usage behavior
* Conduct longitudinal studies to see how habits change over time
* Perform comparative testing with similar apps (like RealCalc or All-in-One Calculator)

**Why did you choose the benchmark tasks that you did?**

We selected benchmark tasks that closely mirror typical user interactions with calculator apps, such as navigating to specific calculators, performing calculations (like BMI, interest, or conversions), and utilizing customization features like dark mode or hiding calculators. These tasks were chosen because they reflect the app’s core purpose—providing a centralized, easy-to-use multi-calculator platform—and helped us evaluate whether users could complete them without confusion or the need for external help. Each task tested a different facet of usability: discoverability, accuracy, speed, and user control, making them ideal for a holistic assessment of the app’s effectiveness.

**Why did you ask users what you asked?**

Our survey questions were designed to assess the app against key usability principles: effectiveness, efficiency, satisfaction, and learnability. We asked about ease of navigation, clarity of icons, responsiveness, and whether the calculators produced accurate results—all essential for determining if users could accomplish their goals seamlessly. We also included open-ended questions to capture qualitative insights that numeric ratings might miss, such as confusion points or feature requests. Asking whether users typically search the internet for calculators helped validate the app’s relevance and necessity, grounding our evaluation in real user behavior.

**What conclusions can you draw from the studies?**

From our user feedback, we concluded that the app performs very well in terms of usability and user satisfaction. Most users rated all key aspects highly, especially ease of use, accuracy, and customization options. The results confirmed that CalcBox successfully reduces the need to search for multiple calculators online, fulfilling its goal of centralizing a wide variety of calculators into a single, intuitive platform. Although some users mentioned minor improvements like enhancing visual design or adding descriptions for lesser-known calculators, the overall feedback was positive, and no critical usability issues or functional errors were reported.

**What aspects of your design worked and what failed to meet your specifications?**

The app’s navigation system, calculator accuracy, customization features, and overall responsiveness worked very well, consistently receiving high scores. Users appreciated the simple, user-friendly design and the convenience of having multiple calculators in one place. However, aspects that did not fully meet our expectations included the visual design, which a few users found less appealing, and the clarity of some calculators that lacked descriptive labels. These shortcomings didn’t prevent users from completing tasks but did highlight areas for improvement, particularly in design polish and user guidance.

**If you had more time to work on a design, what would you now change and improve?**

Given more time and development resources, we would prioritize refining the visual interface to make it more aesthetically engaging and modern. We would also introduce descriptive labels or tooltips for each calculator to improve clarity and onboarding for new users. Features like usage history, quick-access shortcuts, and the ability to mark favorite calculators would be added to enhance personalization and efficiency. Additionally, we’d consider expanding testing to include users from diverse age groups or tech backgrounds to uncover broader usability patterns and further validate the design’s accessibility and inclusiveness.