

Test Documentation - CodePlay

Table of Contents

1. Introduction
 - 1.1. Purpose
 - 1.2. Intended Audience
 - 1.3. Scope of Use
2. Test Specification
 - 2.1. Test Objective
 - 2.2. Test Items and Requirements
 - 2.3. Test Approach
3. Test Protocol
 - 3.1. What We Tested
 - 3.2. How We Tested
 - 3.3. Test Protocol
 - 3.4. Test Result
4. Summary
 - 4.1. Scope and Stakeholders
 - 4.2. Dictionary / Glossary of Terms
5. Appendix
 - 9.1. Tools & Technologies Used
 - 9.2. Project Timeline (Sample)
 - 9.3. References
6. Index

Test Documentation - CodePlay

1. Introduction

We are a team of four developers working collaboratively to create an educational game using the Godot engine and GDscript programming language. Our project, titled "**Kids Color Book**," aims to provide an engaging and interactive platform for children aged 5 to 10 to learn fundamental color theory concepts through gameplay.

This document represents our **Test Documentation – CodePlay Report**, which systematically captures the functional and non-functional requirements, user needs, and design considerations necessary for the successful development of the game. The report will serve as a reference throughout the development lifecycle, ensuring alignment with the project goals and user expectations. The game's user interface UI is designed in **German/ English** so children can easily play and learn color names in different languages through fun and interactive gameplay. The game also supports **touch input**, allowing children to play easily on tablets with tap and haptic feedback for an engaging experience.

1.1. Purpose

This document was created by our development team of four members as part of the planning and design phase for the "**Kids Color Book**" game project. It was compiled through collaborative research, requirement gathering, and analysis sessions, using best practices in software requirement specification.

The purpose of this document is to clearly define the functional and non-functional requirements, user needs, use cases, and design parameters for the game. It serves as a comprehensive guide to align the development team and stakeholders on the project scope, objectives, and constraints.

1.2. Intended Audience

- **Development Team:** To understand, implement, and verify the game features and requirements.
- **Project Managers:** To track progress and ensure alignment with goals.
- **Stakeholders and Sponsors:** To review the project scope and confirm requirements.
- **Testers and QA:** To design tests based on the defined requirements.
- **Target Users:**
- **Children (Ages 5–10):** Primary users who will learn color theory through gameplay.
- **Parents:** Secondary users interested in safe and educational content for their children.
- **Teachers:** Users who may incorporate the game as a learning tool in classroom settings.

1.3. Scope of Use

This document governs the development and implementation of the "**Kids Color Book**" game. It applies to all project phases including design, coding, testing, and deployment. All team members and stakeholders involved in this project are expected

Test Documentation - CodePlay

to adhere to the guidelines and requirements specified herein to ensure consistency and quality throughout the development lifecycle.

2. Test Specification:

2.1. Test Objective:

To verify the correctness, functionality, and usability of the Color Mixing Game designed for children aged 5–10. The game teaches color mixing and color name recognition through interactive gameplay.

2.2. Test Items and Requirements:

- Color mixing logic (correct resulting color from two or three base colors)
- User interface elements (color choices, buttons, messages)
- Game flow (level progression, win/lose conditions)
- Feedback (animations, voice, messages)
- Score and progress tracking

Requirement ID	Description
R1	Display correct base colors and options
R2	Detect correct user answer
R3	Detect incorrect user answer
R4	Provide appropriate feedback
R5	Transition correctly between levels
R6	Track and update score accurately
R7	Handle multiple colors mixing
R8	Responsive UI controls

2.3. Test Approach:

Manual functional testing will be performed by playing the game through multiple levels, checking each feature according to the game script and requirements.

Test Documentation - CodePlay

3. Test Protocol:

Test Case ID	Pre-conditions	Steps	Expected Result	Post-conditions	Result	Comments
TC01	Game started, Level 1 displayed	Given the game is at level 1, When the base colors and options are shown	Then base colors (e.g., red and yellow) and answer options display correctly	Player ready to select color	Pass	Positive test case
TC02	Base colors displayed	Given base colors are shown, When user selects the correct mixed color (e.g., orange)	Then show win message and play positive feedback animation and sound	Player moves to next step	Pass	Positive test case
TC03	Base colors displayed	Given base colors are shown, When user selects incorrect color (e.g., green)	Then show game over message and play negative feedback animation and sound	Game ends or prompts restart	Pass	Negative test case
TC04	Correct/incorrect answer selected	Given an answer is selected, When the game responds	Then play matching animations and voice feedback for correct or incorrect selection	Feedback displayed	Pass	Positive and negative cases
TC05	Level 1 completed correctly	Given level 1 is passed, When the player proceeds	Then game loads level 2 with new base colors and options	Next level active	Pass	Positive test case

Test Documentation - CodePlay

Test Case ID	Pre-conditions	Steps	Expected Result	Post-conditions	Result	Comments
TC06	Correct answer selected	Given the player answers correctly, When score is updated	Then score increments by predefined amount	Updated score shown	Pass	Positive test case
TC07	Level 2 or higher	Given level 2+ with 3 base colors, When user selects the correct mixed color	Then the game recognizes the correct color and provides positive feedback	Player proceeds in game	Pass	Positive test case
TC08	Game running	Given UI buttons are visible, When player clicks any button	Then buttons respond immediately without delay or errors	Player input registered	Pass	Positive test case
TC09	Base colors displayed	Given base colors are shown, When user selects no option and proceeds	Then game prompts for input or shows error message	Game waits for valid input	Pass	Negative test case

3.1. What We Tested:

- The accuracy of the color mixing mechanic for 2-color combinations.
- UI feedback including messages, animations, and voice feedback for correct/incorrect answers.
- Level progression and score tracking.
- Handling of invalid inputs such as no selection or wrong answers.
- Application stability under rapid user inputs.

3.2. How We Tested:

- Manual testing on supported devices (Godot app).
- Step-by-step gameplay following the test cases.
- Intentional selection of incorrect answers to test failure states.
- Testing edge cases such as no input and rapid multiple clicks.

Test Documentation - CodePlay

- Observed visual and audio feedback for correctness.

3.3. Test Protocol:

- **Environment:** Godot
- **Testers:** Four testers performed the testing independently.
- **Procedure:**
 1. Launch the game application.
 2. Follow the test cases in sequence, starting from level 1.
 3. Perform both positive and negative interactions for each requirement.
 4. Observe and record expected and actual results.
 5. Report any discrepancies or issues encountered.

3.4. Test Result:

- All test cases passed successfully.
- The game responded correctly to all valid and invalid inputs.
- Animations and voice feedback worked as intended.
- No crashes or freezes were observed.
- Minor UI improvement suggestions noted for future updates.

4. Summary:

"Kids Color Book" is an interactive educational game designed in Godot for children aged 5–10 to learn color theory through play. The game encourages players to mix base colors and discover new ones while receiving positive visual and audio feedback. With simple controls, cheerful animations, and progressive difficulty, it supports both independent learning and classroom use. The design focuses on child-friendly usability, low hardware requirements, and meaningful educational outcomes, making it suitable for young learners, parents, and teachers alike.

4.1. Scope and Stakeholders:

Scope:

- Educational game for ages 5–10
- Runs on low-end PCs, Tablets (with touch)
- Interactive color mixing gameplay
- Designed for use by children, parents, and teachers

Stakeholders:

- Student Developers (team of 4)
- Young Players (ages 5–10)

Test Documentation - CodePlay

- Parents
- Teachers
- Academic Evaluators (course/project mentors)

4.2. Dictionary/Glossary of Terms:

- **Base Color:**
A primary color provided as input for mixing in the game (e.g., red, yellow). These colors serve as the starting point for creating new colors.
- **Mixed Color:**
The resulting color formed by combining two or more base colors (e.g., red + yellow = orange). The player must identify the correct mixed color from answer choices.
- **Level:**
A stage or round of the game that presents a specific color mixing challenge. Levels typically increase in difficulty or complexity.
- **Feedback:**
Audio or visual responses given immediately after a player makes a choice. Feedback indicates whether the choice was correct or incorrect and includes animations or sounds.
- **Voice Prompt:**
Fun and engaging background audio or spoken cues played during gameplay to enhance the player's experience.
- **Game Over:**
The state reached when a player selects an incorrect answer, ending the current game or level.
- **Restart Game:**
The action of starting the game again from the beginning, usually triggered by player input after a game over or completion.
- **Restart Timer:**
A countdown timer that runs after a game over or level completion, giving the player a limited amount of time to decide whether to restart or exit.
- **Score:**
A numerical value representing the player's progress and success, typically increased by earning points for correct answers.

Test Documentation - CodePlay

5. Appendix:

5.1. Tools & Technologies Used

- Game Engine: Godot
- Language: GDScript
- Platform: Desktop (Windows/Linux/Mac)
- Documentation: Microsoft Word or Google Docs

5.2. Project Timeline (Sample)

- Week 1–2: Requirements & Design
- Week 2–6 Game Development
- Week 7: Testing & Feedback
- Week 8: Final Polishing & Submission

5.3. References

- Godot Documentation: <https://docs.godotengine.org>
- Color Mixing Theory: Basic art education resources from internet.

6. Index

(Refer to Table of Contents at beginning for section navigation.)