User Documentation

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1.0 Introduction

This document serves as the User Documentation for "Safari Paths," an educational game developed by the Blue Whales team. It provides a comprehensive guide for players, parents, and educators on how to install, play, and understand the educational value of Safari Paths.

1.1 Purpose

The primary purpose of this User Documentation is to serve as a comprehensive manual for users of the Safari Paths game. It provides clear instructions on installation, gameplay mechanics, system features, and troubleshooting, ensuring a smooth and enjoyable experience for its target audience and their guardians.

- **Who created the document and how?** This document was created by the Blue Whales. It compiles information from the game's design, implementation, and testing phases, translated into user-friendly language.
- **Who should read this document?** This document is primarily intended for parents and educators who will introduce the game to children. It also serves as a reference for any user seeking detailed information about game features, technical specifications, or troubleshooting. While children are the primary players, this document is designed for the adults supporting their play.
- **Who is bound by this document (scope of use)?** This document represents the current user-facing understanding of the Safari Paths game as of Version 1.0. It defines the expected user experience and operational guidelines for the software.

1.2 Summary

Safari Paths is an engaging educational adventure game designed to make learning basic mathematics fun and interactive for children aged 1–5. Players join friendly safari animals as they guide them through exciting challenges that strengthen arithmetic skills (addition and subtraction of numbers 1-5), pattern recognition, and letter-color association while exploring the beautiful African savanna. The game emphasizes a safe, violence-free learning environment with positive visual and audio feedback, making it a trusted tool for cognitive development.

1.3 Definitions and Abbreviations (Glossary)

(Refer to Section 1.3 of the Requirements Documentation and Section 1.3 of the Architectural Documentation for a comprehensive glossary of technical and game-specific terms.)

- **Animal Level:** A major stage of the game, themed around a specific African animal (e.g., Monkey Level, Elephant Level), each containing two distinct educational tasks.
- **Audio Cues:** Distinct sound effects and voice prompts (e.g., "Excellent!", "Let's try again") used to guide players and provide immediate feedback.

- **GameManager:** A core, behind-the-scenes system that manages global game data like player points, current level, and centralized audio. Users interact with its effects, not directly with it.
- **HUD (Heads-Up Display):** The on-screen display that shows vital game information, such as the player's current score (coins).
- **Task:** An individual mini-game or interactive activity within an Animal Level, designed to teach a specific cognitive skill (e.g., Addition Task, Fruit Sort Task).
- **Touch UI:** The user interface is designed for intuitive touch input (or mouse clicks), featuring large buttons and clear interaction areas.
- **Positive Reinforcement:** The game's approach to learning, where correct actions are celebrated with rewards and encouraging feedback, while incorrect actions lead to new opportunities to try.

1.4 References and Standards

- **Requirements Documentation (Safari Paths, Summer 2025):** Detailed functional and non-functional requirements.
- **Architectural Documentation (Safari Paths, Summer 2025):** Describes the system's design and architecture.
- **Test Documentation (Safari Paths, Summer 2025):** Outlines testing strategy and quality assurance.
- **Internal UI Style Guide:** Guiding principles for the consistent visual design and layout of the user interface, ensuring a cohesive and child-friendly experience.

1.5 Overview

This document is organized into eleven main sections to provide a structured guide to Safari Paths. It begins with an introduction to the game, its educational objectives, and unique features. Subsequent sections cover installation, a general game overview, detailed gameplay instructions for each task, and a description of controls and the interface. Dedicated sections explain levels, scoring, audio/visual features, and provide troubleshooting tips. The document concludes with information on technical support and frequently asked questions, followed by appendices for additional details.

2.0 Welcome to Safari Paths

2.1 About Safari Paths

Safari Paths is an engaging educational adventure game designed to make learning basic mathematics and cognitive skills fun and interactive for young children. Join friendly safari animals, a cheerful Monkey, and a wise Elephant as they guide you through exciting challenges. Explore the beautiful African savanna while strengthening

essential arithmetic skills, improving pattern recognition, and developing logical thinking through a series of progressively engaging puzzles.

2.2 Educational Objectives

Safari Paths is built with a clear focus on early childhood educational development:

- **Primary Learning Goals:**
    - **Addition Skills:** Master basic addition with numbers 1-5 through interactive problems.
    - **Subtraction Skills:** Develop foundational subtraction abilities with positive results (numbers 1-5).
    - **Pattern Recognition:** Enhance observation skills by identifying healthy vs. unhealthy fruits.
    - **Letter-Color Association:** Improve visual memory and cognitive matching by associating letters with their corresponding colors.
    - **Problem Solving:** Build logical thinking and decision-making skills through progressive challenges.
- **Target Age Group:** 1-5 years (designed with an intuitive interface and forgiving mechanics for very young learners, but beneficial for early elementary students as well).
- **Curriculum Alignment:** The game reinforces basic arithmetic and cognitive development skills commonly found in early childhood education curricula.

2.3 What Makes Safari Paths Special

- **Animal Companions:** Learn alongside friendly monkey and elephant characters who react to your progress and choices.
- **Progressive Difficulty:** Challenges are introduced and increase in complexity, adapting as skills improve to keep players engaged but not frustrated.
- **Immediate Feedback:** Instant visual (e.g., character expressions, button highlights) and audio (e.g., positive sounds, gentle correction sounds) responses to actions, crucial for reinforcement learning.
- **Reward System:** A friendly point-based progression system and celebratory feedback encourage continued play and learning.
- **Safe Learning Environment:** Safari Paths is completely offline, contains no external links, no advertisements, and no inappropriate content, providing a secure and focused learning space.

- **No Pressure:** Incorrect answers simply provide new opportunities to try again, fostering a low-stress learning environment focused on exploration and mastery.

3.0 Getting Started

3.1 System Requirements

To ensure the best experience, please check if your computer meets the following specifications:

- **Minimum Requirements:**
    - **Operating System:** Windows 10, macOS 10.15 (Catalina) or newer, or Ubuntu 18.04+ (or other compatible Linux distribution).
    - **Processor:** 2GHz dual-core processor.
    - **Memory:** 4GB RAM.
    - **Graphics:** DirectX 11 compatible graphics card (integrated graphics are generally sufficient).
    - **Storage:** 80MB available disk space.
    - **Audio:** Integrated sound card or audio device.

3.2 Installation Guide

Safari Paths is designed for simple, direct installation.

1. **Download:** Obtain the "Safari Paths" game package from your provided source.
2. **Extract:** Unzip (extract) the downloaded .zip or .rar file to a convenient location on your computer (e.g., your Desktop or a "Games" folder).
3. **Launch:** Locate the Safari Paths.exe (Windows), Safari Paths.app (macOS), or Safari Paths.x86_64 (Linux executable) file within the extracted folder. Double-click this executable file to launch the game.
4. **First Launch:** The game may take a few seconds (typically 10-15 seconds) for initial asset loading. Please wait patiently.
5. **Ready to Play:** The welcome screen (_WelcomePage.tscn) will appear once loading is complete, indicating the game is ready.

3.3 First Time Setup

Safari Paths is designed for immediate play with minimal setup.

- **No setup required!** Safari Paths is ready to play as soon as it launches.
- **No account creation needed.**
- **No internet connection required** for gameplay (it's fully offline).
- **No personal information collected.**

- **Progress Resets on Exit/Restart:** Please note that your game progress (points, task completion) is for the current session only. The game does **not** currently save mid-level progress between play sessions. If you close the game or choose to restart, your points will reset to zero.

4.0 Game Overview

4.1 Game Concept

Safari Paths invites you on an educational journey through the vibrant African savanna. You'll embark on a series of interactive challenges presented by friendly animal companions, the Monkey and the Elephant. Each level introduces new mathematical and cognitive concepts, building upon previous learning, making the learning process a delightful adventure.

4.2 Game Flow

The game progresses through a clear, sequential path:

- **Entry Screen (**_WelcomePage.tscn**):** Your starting point, featuring the game title and a "Play" button.
- **Monkey Level (**MonkeyLevel.tscn**):** Your first adventure with the Monkey, introducing Addition challenges and Fruit Sorting.
- **Level Transition (**LevelTransition.tscn**):** A celebratory screen after completing the Monkey Level, prompting you to continue your journey.
- **Elephant Level (**ElephantLevel.tscn**):** Your next adventure with the wise Elephant, featuring Letter-Color Matching and Subtraction challenges.
- **Game Completion (**EndScene.tscn**):** A final celebration screen, where you can choose to "Play Again" or "Quit Game."

4.3 Learning Philosophy

Safari Paths employs a child-friendly, positive reinforcement learning approach:

- **Correct answers** are celebrated with happy animations, encouraging sounds (Girl Saying Excellent.mp3), and point accumulation.
- **Incorrect answers** simply provide new opportunities to try again. There are no penalties, ensuring a stress-free learning environment focused on exploration and practice. You'll hear a gentle "try again" audio cue (Boy Saying Awesome.mp3), and the animal character might briefly show a "sad" expression to indicate an incorrect choice, but this is immediately followed by a new chance.
- **Progress** is tracked through a friendly point system visible on the HUD, showing continuous achievement.

- **Success** is celebrated with engaging character reactions, special completion messages (e.g., "Great job!"), and celebratory fanfare (Girl Saying Let's Do It Again.mp3) at the end of each level.

5.0 Gameplay Guide

This section provides detailed instructions on how to play each of the unique challenges in Safari Paths.

5.1 Monkey Level Challenges

Your adventure begins with the friendly Monkey!

5.1.1 Addition Task

- **Objective:** Solve basic addition problems with numbers 1-5.
- **How to Play:**
    - A math question (e.g., "What is 3 + 2?") will be displayed in a large text area.
    - Below the question, you'll see three answer options.
    - Click the button with the **correct answer**.
    - Watch your monkey friend react to your choice! (Happy for correct, sad for incorrect).
    - You need to answer **3 addition problems correctly** to advance.
- **Learning Tips:**
    - Take your time to think about each problem.
    - You can count on your fingers or use mental math to help.
    - The monkey will smile, and you'll hear an encouraging sound when you get it right!
    - If you choose the wrong answer, don't worry! You'll just get a new question to try again – no points are lost.
- **Success Criteria:** Answer 3 addition problems correctly to earn 300 points for this task.

5.1.2 Fruit Sorting Task

- **Objective:** Identify and select healthy fruits from a group.
- **How to Play:**
    - You'll see 6 different fruit images displayed in a grid (3 rows, 2 columns).
    - Click on the fruits that look **healthy and fresh**.
    - Try to avoid clicking on fruits that appear spoiled or unhealthy.
    - When you click a healthy fruit, it will stay selected, and you'll earn points!

    - Find all **3 healthy fruits** to complete the task.
- **Learning Tips:**
    - Look closely at the **visual clues**: Healthy fruits usually have bright, vibrant colors and a smooth appearance. Spoiled fruits may look dark, discolored, or damaged.
    - If you click a "bad" fruit, a new set of fruits will appear, giving you more chances to find the healthy ones. The "good" fruits you have already found will remain selected.
    - Your monkey friend will react to your choices!
- **Visual Clues:**
    - **Healthy fruits:** Bright colors, fresh appearance (e.g., a shiny red apple).
    - **Unhealthy fruits:** Darker colors, bruised or damaged appearance (e.g., a brown banana).
- **Success Criteria:** Successfully identify and select 3 healthy fruits to earn 300 points for this task.

5.2 Elephant Level Challenges

Once you complete the Monkey Level, you'll meet the wise Elephant for new challenges!

5.2.1 Letter-Color Matching Task

- **Objective:** Match specific letters with their corresponding colors.
- **How to Play:**
    - You'll see a row of **letter buttons** (B, O, P, Y, G) at the top.
    - Below them, there's a row of **colored buttons**.
    - First, **click a letter button**. It will be highlighted with a green border.
    - Next, **click the color button** that you think matches that letter (e.g., if you clicked 'B', click the Blue button).
    - **Correct matches** (like 'B' and Blue) will "lock in place" by turning a solid blue color and getting a special blue border. They will also be disabled.
    - You need to complete **all 5 matches** to advance!
- **Matching Pairs:**
    - **B** matches **Blue**
    - **O** matches **Orange**
    - **P** matches **Purple**
    - **Y** matches **Yellow**
    - **G** matches **Green**
- **Learning Tips:**
    - Think about what each letter stands for (e.g., B for Blue).
    - Take your time to find the right color after selecting a letter.

    - The elephant celebrates each correct match with a happy reaction!
    - If you make an incorrect match, both the letter and color buttons will briefly show a red border, then reset so you can try again.
- **Success Criteria:** Complete all 5 letter-color pairs to earn 500 points for this task.

5.2.2 Subtraction Task

- **Objective:** Solve basic subtraction problems with positive results.
- **How to Play:**
    - A subtraction question (e.g., "What is 5 - 2?") will be displayed.
    - Choose from the three answer options presented as buttons.
    - Click your answer choice.
    - Your elephant friend will react to your choice, and you'll get points for correct answers!
    - Answer **3 problems correctly** to complete this task and finish the game!
- **Learning Tips:**
    - Start with the larger number and count backward to find the answer.
    - All answers will be 0 or positive numbers (you won't have to deal with negative numbers).
    - Use visual counting methods (like imagining fingers or objects) if helpful.
    - Each correct answer brings you closer to completing your safari adventure!
- **Success Criteria:** Answer 3 subtraction problems correctly to earn 300 points for this task and complete the entire game.

6.0 Controls and Interface

Safari Paths is designed for simple and intuitive interaction, primarily using a mouse or touch input.

6.1 Basic Controls

- **Mouse Controls:**
    - **Left Click:** Use the left mouse button to select answers, navigate menus, and interact with all game elements (buttons, fruits, letters).
    - **Hover:** Moving your mouse over certain buttons might show a subtle visual change, indicating they are interactive.
- **Keyboard Controls:**
    - Safari Paths is primarily designed for mouse/touch interaction for simplicity and accessibility for young children. As such, extensive keyboard controls are not implemented.

6.2 User Interface Elements

The game's interface is designed to be clear, consistent, and easy for young children to understand.

6.2.1 Main Screen Components

- **Welcome Screen (**_WelcomePage.tscn**):**
    - **Safari Paths Title:** The game's logo and a welcoming message introduce your adventure.
    - **Let's Play Button:** A large, friendly yellow button (yellowContinuebutton.png) inviting you to start.
    - **Background Music:** A cheerful, African-inspired soundtrack (Ghana_to_Mississippi.mp3) plays to set the mood.
- **Game Screen Layout (e.g.,** MonkeyLevel.tscn**,** ElephantLevel.tscn**):**
    - **Character Display:** Your animal friend (Monkey or Elephant) appears on the left side of the screen, reacting to your progress.
    - **Task Area:** The central part of the screen where all the interactive challenges (puzzles) appear.
    - **Points Display:** Your current score, represented by a coin icon (coins.png) and a number, is always visible in the top-right corner.

6.2.2 Interactive Elements

- **Buttons:**
    - **Answer Buttons:** Large, clearly labeled buttons for choosing numerical answers in arithmetic tasks.
    - **Fruit Buttons:** Visual fruit images that you click to select in the Fruit Sorting task.
    - **Color Buttons:** Solid color squares for matching games.
    - **Letter Buttons:** Clear letter displays for matching activities.
    - **Navigation Buttons:** Buttons like "Continue" (yellowContinuebutton.png), "Play Again" (RestartButton.png), and "Quit Game" (Quitbtn.png) for moving between screens or ending your session.
- **Visual Feedback:**
    - **Selected Items:** Highlighted with colored borders (e.g., green for chosen letters/colors, blue for matched pairs in MatchLettersTask.gd).
    - **Disabled Items:** Buttons or elements that are not currently interactable will appear slightly dimmed.

- **Completed Items:** Special celebration animations or visual changes indicate successful completion.
- **Progress Visualization:** The coins.png icon and numerical points display update immediately with each correct answer.

6.3 Audio Interface

Safari Paths uses a rich audio experience to enhance engagement and provide crucial feedback. Audio is centrally managed by the GameManager.gd to ensure smooth transitions and correct playback.

- **Sound Effects:**
  - **Correct Answer:** An encouraging celebratory sound (Girl Saying Excellent.mp3) plays.
  - **Incorrect Answer:** A gentle "try again" audio cue (Boy Saying Awesome.mp3) is heard.
  - **Button Clicks:** Subtle click sounds (button-click.mp3) confirm every interaction.
  - **Level Completion:** A special success fanfare (Girl Saying Let's Do It Again.mp3) signifies reaching a new level or completing the game.
- **Background Music:**
  - **Welcome Screen / Elephant Level:** "Ghana to Mississippi" (Ghana_to_Mississippi.mp3) - A cultural fusion melody creates a welcoming and familiar atmosphere.
  - **Monkey Level:** "Kalahari Dreaming" (Kalahari_Dreaming.mp3) - An upbeat, African-inspired rhythm maintains energy during math challenges.
  - **Music Transitions:** Background music stops and starts appropriately when moving between _WelcomePage.tscn, MonkeyLevel.tscn, LevelTransition.tscn, ElephantLevel.tscn, and EndScene.tscn to avoid overlapping or abrupt cuts (handled by GameManager.gd).
- **Audio Controls:**
  - Game audio plays automatically.
  - You can control the overall game volume using your computer's system volume controls.

7.0 Levels and Challenges

Safari Paths is structured into distinct levels, each offering unique challenges that build upon previously learned skills.

7.1 Detailed Level Progression

7.1.1 Level 1: Monkey's Math Adventure

- **Location:** The vibrant African Savanna, featuring iconic acacia trees.
- **Character Guide:** Your friendly Monkey Companion will cheer you on!
- **Background Music:** "Kalahari Dreaming" (Kalahari_Dreaming.mp3) – an upbeat African rhythm.
- **Challenge 1: Addition Practice**
    - **Objective:** Solve addition problems with numbers 1-5.
    - **Format:** Questions like "What is X + Y?" with three multiple-choice answers.
    - **Examples:** "What is 2 + 3?" → Options: 4, 5, 6; "What is 1 + 4?" → Options: 5, 6, 7.
    - **Completion:** 3 correct answers required to complete this task.
    - **Reward:** 300 points for the task, then you advance to the next challenge.
- **Challenge 2: Healthy Food Recognition**
    - **Setup:** A grid displaying 6 fruit images (from assets/fruits/).
    - **Goal:** Find and click 3 healthy fruits.
    - **Fruit Types:** Includes various fruits with "healthy" and "unhealthy" visual appearances.
    - **Visual Cues:** Fresh fruits have bright, vibrant colors; unhealthy ones may look darker or damaged.
    - **Mechanic:** If you pick the wrong fruit, new fruits will appear to replace the "bad" ones, but your good choices stay selected.
    - **Completion:** Successfully select 3 healthy fruits to complete this task.
    - **Reward:** 300 points for the task, then you advance to the Level Transition screen.

7.1.2 Level Transition: Celebration Screen

- **Purpose:** A special screen (LevelTransition.tscn) to celebrate your completion of the Monkey Level.
- **Visuals:** Features a festive animation with happy monkeys, signifying your achievement.
- **Music:** A celebratory fanfare (Girl Saying Let's Do It Again.mp3) plays.
- **Interaction:** A prominent "Continue" button (yellowContinuebutton.png) allows you to proceed to the Elephant Level when you are ready.
- **Duration:** Player-controlled; you can stay on this screen as long as you like.

7.1.3 Level 2: Elephant's Learning Safari

- **Location:** A new perspective of the African Savanna, with different scenery.
- **Character Guide:** Your wise Elephant Companion will join you here!
- **Background Music:** "Ghana to Mississippi" (Ghana_to_Mississippi.mp3) – a soothing, cultural fusion melody.
- **Challenge 1: Letter-Color Association**
    - **Setup:** 5 letter buttons (B, O, P, Y, G) and 5 color buttons (corresponding to Blue, Orange, Purple, Yellow, Green).
    - **Matching Pairs:** Fixed pairs that you need to discover (e.g., B ↔ Blue).
    - **Interaction:** Click a letter button, then click its matching color button.
    - **Feedback:** Correct matches lock in place with blue borders and earn points.
    - **Completion:** All 5 pairs must be matched correctly to complete this task.
    - **Reward:** 500 points for the task, then you advance to the final challenge.
- **Challenge 2: Subtraction Mastery**
    - **Questions:** Subtraction problems are designed to always yield positive results (numbers 1-5).
    - **Format:** Questions like "What is X-Y?" with three multiple-choice answers.
    - **Number Range:** Uses numbers 1-5, ensuring the result is never negative.
    - **Examples:** "What is 4 - 1?" → Options: 2, 3, 4; "What is 5 - 3?" → Options: 1, 2, 3.
    - **Completion:** 3 correct answers required to complete this task and finish the entire game!
    - **Reward:** 300 points for the task, leading to the final game completion screen.

7.2 Difficulty Progression

Safari Paths is designed with an adaptive challenge structure that makes learning engaging and achievable for young learners.

- **Adaptive Challenge Design:**
    - **Early Tasks:** Begin with simple, confidence-building exercises (like basic Addition).
    - **Mid-Game:** Introduce increased complexity with familiar concepts (like Fruit Sorting).
    - **Final Challenges:** Integrate multiple skills (like Letter-Color Matching, which requires two-step logic, and Subtraction, a more abstract math concept).

    - **Scaffolding:** Each level and task builds upon previous learning, ensuring a smooth and natural progression.
- **Cognitive Load Management:**
    - **One Concept at a Time:** New concepts are introduced individually to prevent overwhelming the child.
    - **Familiar Interfaces:** Consistent UI design reduces confusion and allows children to focus on the learning content.
    - **Clear Visual and Audio Feedback:** Guides learning without the need for extensive reading.
    - **No Time Pressure:** Children can take their time to consider each answer, promoting thoughtful learning rather than rushed responses.

8.0 Scoring System

The scoring system in Safari Paths is designed to motivate children and visually track their learning progress through positive reinforcement.

8.1 Point Structure

Points are awarded for each correct action within a task.

- **Points Per Correct Action:**
    - Addition Problems: 100 points each
    - Healthy Fruit Selection: 100 points each
    - Letter-Color Matches: 100 points each
    - Subtraction Problems: 100 points each
- **Task Completion Requirements (Total Points for Completing Each Task):**
    - Monkey Addition: 300 points (requires 3 correct answers)
    - Monkey Fruit Sorting: 300 points (requires 3 healthy fruits)
    - Elephant Letter Matching: 500 points (requires 5 correct pairs)
    - Elephant Subtraction: 300 points (requires 3 correct answers)

8.2 Progress Tracking

Progress is made visible and tangible to the child through various indicators.

- **Visual Progress Indicators:**
    - **Points Display:** Your total accumulated points are always visible in the top-right corner of the screen, next to the coin icon (coins.png).

    - **Character Reactions:** Your animal companions (Monkey, Elephant) show their happiness for your progress, creating an emotional connection to your achievements.
    - **Task Completion Messages:** Clear "task complete" messages appear to signify the successful completion of an activity.
    - **Level Advancement:** Automatic progression to the next level/scene when all goals are met provides a sense of accomplishment.
- **Achievement Recognition:**
    - **Individual Success:** Each correct answer is immediately celebrated with points and feedback.
    - **Task Completion:** Special completion messages and animations acknowledge the mastery of an entire task.
    - **Level Completion:** Transition screens with celebratory fanfare (Girl Saying Let's Do It Again.mp3) mark the completion of major game sections.
    - **Game Completion:** A final celebration screen (EndScene.tscn) provides a rewarding conclusion to the entire safari adventure.

8.3 Learning Reinforcement

The game's point system and feedback mechanisms create a powerful positive feedback loop designed to encourage and sustain learning.

- **Positive Feedback Loop:**
    - Points provide immediate gratification for correct choices.
    - Visual progress indicators (like the increasing point total) show advancement.
    - Character animations (happy faces) create an emotional connection and reinforce positive behavior.
    - Completion celebrations build confidence and motivation.
- **No Penalty System:**
    - Wrong answers do not reduce points or penalize the player. Instead, they lead to new opportunities to try again with a new question or reshuffled items.
    - This focus on learning, not punishment, encourages experimentation and reduces anxiety, making the learning process more enjoyable.

9.0 Audio and Visual Features

Safari Paths uses a vibrant visual design and an engaging audio landscape to create an immersive and effective learning environment.

9.1 Visual Design

9.1.1 Art Style

- **Theme:** The game features a friendly, colorful African savanna theme, making the learning environment inviting and fun.
- **Color Palette:** Employs warm earth tones for backgrounds with vibrant accent colors for interactive elements, ensuring clarity and visual appeal for young children.
- **Character Design:** Cute, approachable animal friends (Monkey, Elephant) are designed to be relatable and encouraging companions.
- **UI Style:** A clean, child-friendly interface with large buttons and clear typography, adhering to the internal UI style guide for consistency and ease of use.

9.1.2 Visual Feedback System

- **Character Expressions:**
    - **Happy/Neutral:** Displayed by the Monkey and Elephant characters for correct answers and as their default state, conveying encouragement and positive reinforcement.
    - **Sad:** Briefly shown for incorrect answers (e.g., monkey_sad.png, elephant_sad.png), providing gentle corrective feedback without being discouraging.
- **Celebrations:** Special animations and visual effects signify task and level completions (e.g., fireworks on LevelTransition.tscn).
- **Button and Interface Feedback:**
    - **Selection Highlighting:** Selected items (e.g., letter buttons, color buttons) are highlighted with clear colored borders (e.g., green for selection, blue for matched pairs in MatchLettersTask.gd).
    - **Completion States:** Completed items (e.g., matched letter-color pairs) display a special visual treatment and are permanently disabled.
    - **Progress Visualization:** The points display (coins.png and numerical value) updates immediately with each correct answer, showing tangible progress.

9.2 Audio Design

The audio in Safari Paths is carefully designed to provide engaging background music and clear, reinforcing sound effects. Audio is centrally managed by the GameManager.gd.

9.2.1 Music Soundtrack

- **Welcome Screen / Elephant Level:** "Ghana to Mississippi" (Ghana_to_Mississippi.mp3) - A cultural fusion melody that creates a welcoming and familiar atmosphere for the game's start and later levels. This track loops seamlessly.
- **Monkey Level:** "Kalahari Dreaming" (Kalahari_Dreaming.mp3) - An upbeat, African-inspired rhythm that maintains energy and excitement during the math challenges in the Monkey Level. This track also loops seamlessly.
- **Music Transitions:** The GameManager.gd ensures smooth stopping and starting of background music when transitioning between _WelcomePage.tscn, MonkeyLevel.tscn, LevelTransition.tscn, ElephantLevel.tscn, and EndScene.tscn, preventing audio clashes (related to Bug ID: PD-008 - fixed to ensure correct audio stopping/starting).

9.2.2 Sound Effects

- **Positive Feedback Audio:**
    - **Correct Answers:** "Girl Saying Excellent" (Girl Saying Excellent.mp3) - An encouraging female voice to celebrate correct choices.
    - **Level Completion:** "Boy Saying Awesome" (Boy Saying Awesome.mp3) - A celebratory male voice to mark significant progress.
    - **Button Clicks:** Subtle click sounds (button-click.mp3) provide satisfying feedback for every interaction.
- **Gentle Correction Audio:**
    - **Incorrect Answers:** "Girl Saying Let's Do It Again" (Girl Saying Let's Do It Again.mp3) - An encouraging and supportive message to prompt a retry, rather than a harsh negative sound.
- **No Harsh Sounds:** All audio is designed to maintain a positive, supportive, and non-alarming tone, suitable for young children.

9.3 Accessibility Features

Safari Paths integrates accessibility features to ensure a broad range of learners can enjoy and benefit from the game.

- **Visual Accessibility:**
    - **Large Buttons:** All interactive elements are oversized, making them easy to see and click accurately for young users and those with developing fine motor skills.
    - **Clear Fonts:** High contrast, readable text is used throughout the interface (Label nodes) for clarity.

    - **Color Coding:** Meaningful use of colors (e.g., green for correct, red for incorrect, blue for matched) is often combined with additional visual cues or text labels for redundancy.
    - **Consistent Layout:** Familiar interface patterns across all screens reduce cognitive load and enhance predictability for the user.
- **Audio Accessibility:**
    - **Clear Voice Audio:** Distinct, understandable spoken feedback and prompts are provided (e.g., "Girl Saying Excellent").
    - **Background Music Balance:** Music is mixed to ensure it doesn't interfere with the clarity of voice cues or sound effects.
    - **System Volume Integration:** The game respects the user's system volume preferences, allowing for easy adjustment.

10.0 Troubleshooting

This section provides solutions to common issues you might encounter while playing Safari Paths.

10.1 Common Issues and Solutions

10.1.1 Game Won't Start

- **Symptoms:** Double-clicking the game executable doesn't launch the game, or it crashes immediately.
- **Solutions:**
    - **Check System Requirements:** Ensure your computer meets the minimum specifications listed in Section 3.1.
    - **Update Graphics Drivers:** Ensure you have the latest drivers for your graphics card.
    - **Run as Administrator:** On Windows, right-click the game executable and select "Run as Administrator."
    - **Antivirus Interference:** Temporarily disable your antivirus software and try launching the game. If it works, add an exception for Safari Paths.
    - **Reinstall:** Delete the extracted game files completely and re-extract them from the original download to a new, accessible location. This can resolve corrupted files.

10.1.2 Audio Problems

- **Symptoms:** No sound, distorted audio, or missing specific sound effects/music.
- **Solutions:**
    - **Check System Volume:** Ensure your computer's master volume is turned up and the game itself isn't muted.
    - **Audio Device:** Confirm that your speakers or headphones are properly connected and functioning.
    - **Windows/macOS/Linux Audio Settings:** Check your operating system's audio settings to ensure the correct output device is selected and not muted.
    - **Close Other Programs:** Close any other applications that might be using your audio device.
    - **Restart Game:** Exit Safari Paths completely and restart it. This can often reset audio streams.
    - **Verify Audio Files:** While rare, ensure audio files (`.mp3` in `assets/audio/`) were extracted correctly. Reinstallation might be necessary.

10.1.3 Performance Issues

- **Symptoms:** Slow loading times, choppy animations, input lag, or the game freezing.
- **Solutions:**
    - **Close Background Programs:** Close any unnecessary applications running in the background to free up system resources.
    - **Check Available Memory:** Ensure your computer has at least 4GB of RAM available (check Task Manager on Windows, Activity Monitor on macOS).
    - **Storage Space:** Verify that you have sufficient free disk space (at least 100MB recommended for smooth operation).
    - **Graphics Settings/Drivers:** Update your graphics drivers to the latest version.
    - **Restart Computer:** A fresh system start can often resolve temporary resource conflicts and improve performance.

10.1.4 Interface Problems

- **Symptoms:** Buttons not responding to clicks, UI elements displaying incorrectly, or unexpected layout shifts.
- **Solutions:**

- **Mouse/Touchpad Check:** Ensure your mouse/touchpad is functioning correctly.
- **Screen Resolution:** While the game is responsive, ensure your display resolution is at least 1024x768 for optimal layout.
- **Full Screen Mode:** Try switching between windowed and full-screen mode (usually by pressing F11 on PC, or by using the maximize button).
- **Restart Level:** If a specific level's UI seems stuck, try exiting to the main menu and restarting that particular level.
- **Reinstall Game:** A fresh installation can resolve issues related to corrupted game files that affect the interface.

10.2 Technical Specifications

- **10.2.1 File Structure:**
  - **Game Location:** All game files are contained within the folder where you extracted Safari Paths.
  - **Save Data:** Progress is **not** saved persistently. All game data (points, task progress) resets when the application is closed or restarted via the "Play Again" button.
  - **Configuration:** No user-editable configuration files are needed or provided.
  - **Assets:** All game resources (images, sounds, etc.) are included in the installation folder.
- **10.2.2 Network Requirements:**
  - **Internet Connection:** Safari Paths does **not** require an internet connection for gameplay. It is a completely offline experience.
  - **Offline Play:** You can enjoy all game functionality without any internet access.
  - **Privacy:** No personal data is collected or transmitted outside your computer.
  - **Updates:** Any game updates would require manual download and re-installation.

10.3 Error Messages

Safari Paths is designed to handle errors gracefully, minimizing disruption to the user experience.

- **10.3.1 Common Internal Error Messages (visible in Godot console during development/debugging, but NOT to the user):**

- E 0:00:12.345 _onready_var_node_not_found: Node not found: "HUD" (relative to "MonkeyLevel").
    - **Cause:** This indicates an internal issue where a script (Monkey_Level.gd) tried to find a UI element (HUD) at a specific path, but it wasn't there during development/debugging.
    - **Solution (for developers):** This was a bug (e.g., Bug ID: PD-002, PD-005, PD-010) and has been addressed in the current codebase by ensuring correct node paths and robust @onready variable handling. **As a user, you should not encounter this message as a crash.**
- E 0:00:15.678 play: AudioStreamPlayer not ready.
    - **Cause:** An audio player was attempted to be played before it was fully loaded or ready (e.g., Bug ID: PD-008).
    - **Solution (for developers):** This was addressed by centralizing audio management in GameManager.gd and ensuring audio players are properly initialized before use. **As a user, you should not see this.**
- E 0:00:20.123 Call to "connect" on a null instance.
    - **Cause:** A script tried to connect a signal to a node that didn't exist or was null.
    - **Solution (for developers):** Addressed by verifying node existence before connecting signals and careful scene instantiation. **This error should not reach the user.**

- **10.3.2 User Experience During Errors:**
    - If an internal error occurs (e.g., a missing asset, though unlikely in a final build), the game is designed not to **crash**.
    - Instead, it will attempt **graceful degradation** (e.g., a missing sound might not play, but the game continues).
    - No distracting or technical error messages will appear on your screen. Any error information is logged internally for developers.

11.0 Technical Support

11.1 Getting Help

If you encounter any issues not covered in this manual or if you have further questions, here's how to get assistance.

11.1.1 Self-Help Resources

- **This User Manual:** A comprehensive guide to all game features, gameplay, and setup.
- **Troubleshooting Section (Section 10.0):** Solutions to common problems you might experience.
- **System Requirements (Section 3.1):** Double-check to ensure your computer meets compatibility specifications.

11.1.2 Contact Information

For game-specific technical issues related to the academic project:

- **Academic Support:** Please contact the course instructor (Prof. Dr. J. v. Kistowski) or the teaching assistant (Steven Dudek).
- **General Technical Problems:** For computer-related issues outside the game, check with your local IT support team or consult your computer's documentation.

11.1.3 Reporting Issues

When contacting support for a technical issue, please include the following information to help us assist you efficiently:

- Your operating system (e.g., Windows 10, macOS Ventura, Ubuntu 22.04).
- Your computer specifications (RAM, processor, graphics card, if known).
- Exact error messages (if any appeared in the Godot console during a development build, please copy the text).
- Detailed steps that led to the problem (what you were doing just before it happened).
- Screenshots or short video clips if helpful.

11.2 Frequently Asked Questions

11.2.1 Gameplay Questions

- **Q: How long does it take to complete Safari Paths?**
  - **A:** Most players complete the full game (both Monkey and Elephant levels) in 3-5 minutes, depending on their math skills and pace. Each Animal Level typically takes 1-2 minutes.
- **Q: Can I replay levels?**
  - **A:** Currently, the game progresses linearly. To replay a level or task, you will need to restart the entire game from the welcome screen (_WelcomePage.tscn) via the "Play Again" button on the EndScene.tscn.
- **Q: Is there a way to skip difficult questions?**
  - **A:** No, there's no skip button. However, incorrect answers simply provide new questions to try. The game encourages learning through practice, not punishment.
- **Q: What if I close the game in the middle of playing?**
  - **A:** You'll need to restart from the beginning. The game doesn't currently save mid-level progress between sessions, meaning your points and task progress will reset.

11.2.2 Technical Questions

- **Q: Does Safari Paths work on tablets or phones?**
  - **A:** Safari Paths is primarily designed for desktop computers with mouse input. While the UI supports touch, full optimization for diverse tablet/phone form factors is part of future development.
- **Q: Can multiple children play on the same computer?**
  - **A:** Yes, multiple children can play on the same computer, but they will need to take turns. Each playthrough starts fresh from the beginning, as there are no user profiles.
- **Q: How much disk space does the game use?**
  - **A:** Safari Paths requires approximately 80MB of storage space for the complete extracted game folder.
- **Q: Does the game connect to the internet?**
  - **A:** No, Safari Paths is completely offline and does not require or use internet connectivity for any part of its gameplay or functionality.

11.3 Educational Support

11.3.1 For Educators

- **Curriculum Integration:**
    - Safari Paths aligns with early elementary math standards, covering basic addition and subtraction within the range of 1-5.
    - It develops essential cognitive skills such as pattern recognition, visual discrimination, and logical thinking.
    - The game provides consistent positive reinforcement, making it a valuable supplementary tool for learning.
- **Classroom Use:**
    - Ideal for individual student activity sessions (15-30 minutes).
    - No special setup, account creation, or internet connection required, making it easy to deploy in diverse classroom environments.
    - Provides a safe, contained learning environment free from distractions.
    - Immediate feedback supports independent learning, allowing teachers to manage other activities.

11.3.2 For Parents

- **Home Learning:**
    - Supports early math skills and complements school homework.
    - Encourages a positive attitude toward mathematics through fun and engagement.
    - Provides a safe, educational screen time activity with no in-app purchases or external links.
- **Progress Monitoring:**
    - Observe your child's point accumulation to gauge their engagement and progress.
    - Notice the completion of each level and celebrate their achievements.
    - Encourage your child to "try again" when they encounter difficulties, reinforcing the game's learning philosophy.
    - Use the game's content as a starting point for additional, real-world math practice (e.g., counting objects, simple sums).

12.0 Conclusion & Recommendations

This User Documentation provides a comprehensive guide for navigating and utilizing the Safari Paths educational game. It outlines the game's objectives, mechanics, and features, ensuring that users can maximize its educational potential.

Regarding the format appropriate for the target group (video, tutorial, etc.):

For the primary target audience (children aged 1-5), a traditional written user manual, while essential for parents and educators, is not the most effective direct learning tool.

- **For the Child (Primary User):** An **interactive in-game tutorial or a short, animated video tutorial** would be significantly more appropriate and effective. This could introduce basic controls and the first puzzle type visually and audibly. Given the game's focus on "intuitive touch UI for effortless navigation" and "character-guided puzzles," building these instructions directly into the gameplay would be ideal.
- **For the Parent/Educator (Secondary User):** This **written User Documentation** is highly suitable. It provides the necessary details for installation, troubleshooting, understanding educational objectives, and guiding a child's play. It also serves as a reference for technical support.

Therefore, while this document serves its purpose as a detailed manual for adults, the **recommendation for future development is to create a short (e.g., 2-3 minute) animated video or an interactive first-time user experience (FTUE) tutorial within the game itself, specifically designed for the child to watch or play through.** This would directly fulfill the "user manual or a format appropriate to the target group" requirement from the professor's notes more completely for the primary user.

13.0 Appendices

13.1 Appendix A: Keyboard Shortcuts

Currently, Safari Paths is designed primarily for simplicity and accessibility through **mouse-only (or touch) interaction**. As such, there are no specific keyboard shortcuts implemented beyond standard operating system functions (e.g., Alt+F4 to close a window on Windows).

13.2 Appendix B: Credits and Acknowledgments

- **Development Team:** Blue Whales (s240347, s240904, s240826, s240767, s241008)
- **Game Engine:** Godot 4.x Game Engine
- **Audio:** Original compositions and voice recordings (e.g., Girl Saying Excellent.mp3, Boy Saying Awesome.mp3, Ghana_to_Mississippi.mp3, Kalahari_Dreaming.mp3, Girl Saying Let's Do It Again.mp3, button-click.mp3).
- **Art Assets:** Custom illustrations and graphics (e.g., monkey_neutral.png, elephant_sad.png, various fruit.png, and button.png assets).

13.3 Appendix C: Version History

- **Version 1.0 (June 2025)**
    - Initial release of Safari Paths.
    - Complete Monkey and Elephant levels with all core tasks implemented.
    - Full audio and visual feedback system integrated.
    - Comprehensive educational content covering basic addition, subtraction, fruit sorting, and letter-color matching.
    - Robust state management and error handling (as documented in Test and Architectural Documentation).

13.4 Appendix D: Educational Standards Alignment

Safari Paths supports key educational standards and cognitive development areas for early learners:

- **Mathematics Standards:**
    - **Numbers and Operations:** Develops understanding of addition and subtraction within 10 (specifically numbers 1-5).
    - **Problem Solving:** Encourages logical thinking through multiple-choice question formats and puzzle interactions.
    - **Mathematical Reasoning:** Fosters early reasoning skills through pattern recognition and decision-making in tasks.
- **Cognitive Development:**
    - **Visual Processing:** Enhances skills in color and pattern recognition (e.g., Fruit Sort, Match Letters).
    - **Auditory Processing:** Improves the ability to follow spoken instructions and differentiate audio cues.
    - **Motor Skills:** Develops fine motor skills and hand-eye coordination through mouse/touch interaction and clicking accuracy.
    - **Memory:** Supports retention of basic number facts and letter-color associations.