Uni-Thon

Submitted in partial fulfilment of the requirements of the degree of

Bachelor of Engineering

by

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2024-2025

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CERTIFICATE

This is to certify that the mini-project 2B entitled **Uni-Thon**, Group No.04 of

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Mini Project-2B Approval for T.E.

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Declaration

We declare that this written submission represents our ideas in our own words and where others' ideas or words have been included, we have adequately cited and referenced the original sources. We also declare that we have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea / data / fact / source in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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Acknowledgement

We would like to express our gratitude to our guide Ms. Radhika Patil for invaluable guidance and mentorship during the course of this project. Your expertise and unwavering support have played a pivotal role in its successful completion. We are deeply grateful to our principal Dr Prashant D Deshmukh, head of our department Dr Sanjay Sharma and other faculty members for their suggestions and encouragement. It helped us increase our knowledge and skills. Thank You everyone.

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Abstract

In today's fast-paced world, individuals—especially students and young professionals—often turn to social media and video games as a form of leisure and escape from the stresses of academic and personal responsibilities. However, mainstream video games tend to be large in size, resource-intensive, and demand significant time and concentration. Furthermore, many games foster a highly competitive environment that can lead to anxiety and psychological fatigue, defeating their original purpose of relaxation.

This highlights a growing need for games that provide a casual and comforting experience without overwhelming the player. Our project aims to fill this gap by developing an arcade-style video game themed around the player's own life and daily routine. By shifting the focus away from fictional or high-stakes scenarios and toward familiar, real-life tasks and surroundings, the game creates a deeply relatable and soothing atmosphere. The use of everyday objects and mundane activities—often overlooked in traditional game design—invokes curiosity and excitement in players when reimagined within a playful, gamified context.

The game is designed to be simple and easy to pick up, requiring minimal cognitive effort while still delivering engaging and replayable gameplay. Its structure encourages players to explore various strategies in completing daily routines, offering small, satisfying discoveries and variations in each session. The arcade-style format keeps the game light and fast-paced, avoiding the time-consuming nature of many modern games while still ensuring sustained player interest through dynamic elements and interactive design.

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CHAPTER 1
INTRODUCTION

With the increasing mental load and constant engagement required in both academic and professional life, people often turn to digital platforms like social media or video games to unwind. While these mediums provide an escape, they come with their own set of drawbacks. Social media can become addictive and mentally draining, while modern video games tend to be resource-heavy, highly competitive, and demand intense focus and extended playtime. This has created a gap in the gaming ecosystem for a more balanced form of entertainment—one that offers enjoyment without pressure or overstimulation.

The main objective of this project is to develop a casual, arcade-style video game that provides a relaxing and relatable experience by focusing on the player's everyday life and routine activities. The game aims to move away from the intense, competitive nature of conventional video games and instead create a low-pressure environment where players can unwind and enjoy the simplicity of familiar tasks. By incorporating common daily elements and objects as core gameplay components, the game fosters a sense of comfort and connection. It is designed to be lightweight, easy to understand, and accessible, requiring minimal concentration or time commitment, making it ideal for short leisure sessions.

Additionally, the game seeks to maintain replayability through subtle variations and strategy-based interactions, allowing players to discover new elements or outcomes with each playthrough. The visual style and overall tone of the game are intended to be soothing and minimalistic, supporting the idea of mental refreshment and emotional ease. Through these objectives, the project aims to redefine casual gaming by offering a fun yet meaningful experience rooted in the simplicity of daily life.

CHAPTER 2
LITERATURE REVIEW

2.1 Survey existing system:

The current gaming landscape offers a wide range of genres, from fast-paced action and adventure to simulation and casual mobile games. Games like The Sims, Animal Crossing, and Stardew Valley have successfully introduced life-simulation elements, focusing on everyday tasks such as farming, socializing, and home decoration. These games provide a more relaxed gaming experience compared to competitive titles, and their success demonstrates a strong player interest in life-inspired content.

However, many of these titles, while casual in appearance, still demand a significant investment of time and attention. Their gameplay loops can become complex over time, often involving long-term goals, resource management, and strategic planning that may add cognitive load rather than reduce it.

Our proposed game aims to address this by offering a lightweight arcade-style format that doesn't require extended focus, while still being dynamic and replayable. By theming the gameplay around common daily tasks and environments, the game can resonate more deeply with players who seek enjoyment from the familiar rather than the fantastical. This combination of simplicity, relatability, and low mental effort positions the game uniquely within the current gaming ecosystem.

2.2 Limitations of Existing System:

1. High Complexity in Simulation Games: Games like *The Sims*, *Stardew Valley*, and *Animal Crossing* involve detailed mechanics and long-term planning. They demand significant time, attention, and cognitive effort, making them less ideal for short, relaxing play sessions.
2. Lack of Depth in Hyper-Casual Games: Many mobile games offer quick and simple gameplay but lack emotional connection and meaningful content. They often become repetitive and boring due to minimal narrative or player engagement beyond mechanics.
3. Narrow Themes in Task-Based Games: Games like *Cooking Mama* or *Good* Pizza, *Great* Pizza focus on specific activities, limiting relatability to broader daily life. The narrow focus can reduce long-term interest and prevent wider player connection.
4. Overuse of Ads and Microtransactions: Casual and mobile games often interrupt gameplay with frequent ads or push in-app purchases. This disrupts immersion and negatively impacts the relaxing nature of the game.

5. Limited Personal Relevance: Most existing games do not incorporate real-life experiences or environments that reflect the player's own daily routine. This lack of familiarity can reduce emotional comfort and engagement.
6. Accessibility Issues: Some simulation or detailed casual games require high-end devices or large storage space. This limits access for users with low-spec devices or limited resources.
7. Lack of Replayability in Casual Games: Many casual games don't offer enough variation or strategy to encourage multiple playthroughs. This leads to quick drop-off in user interest over time.

2.3 Problem statement and Objectives:

Spending leisure time apart from academics is usually spent looking through social medias. Video games act as a great way to escape the tiresome reality and enjoy some time invested in them. But they tend to be rather big in size or just grabs all your attention making you rather anxious and psychologically embedding the thought of competitiveness.

Objectives:

- Provide a low-intensity, stress-free gaming environment that encourages relaxation and mental refreshment.
- Incorporate daily routine activities and commonplace objects as central gameplay elements to enhance relatability.
- Maintain a simple yet engaging game design that is easy to pick up, requiring minimal time and cognitive effort.
- Offer high replay value through variation in gameplay strategies and small dynamic elements that make each session slightly different.
- Create an aesthetically pleasing and comforting visual environment that supports the game's casual tone.
- Avoid resource-intensive mechanics or complex narratives, ensuring accessibility even on devices with limited specifications.

2.4 Scope:

The scope of this project encompasses the design, development, and deployment of a lightweight, arcade-style casual video game centered around the player's daily routine and real-life experiences. The game will focus on delivering a comforting and relatable gameplay experience through simple mechanics, minimalistic visuals, and short interactive sessions that do not require extended focus or commitment.

The core gameplay will include routine tasks and common objects that players encounter in their everyday life, reimagined in a playful and engaging format. The game will be structured to encourage multiple playthroughs, with subtle variations and strategy options that enhance replayability without increasing complexity.

This project will cover:

1. Game Conceptualization: Designing the game theme, objectives, art style, and flow based on real-life routines and tasks.
2. Game Development: Building the game using appropriate tools and technologies to ensure compatibility across common platforms (such as Android, iOS, or web-based).
3. User Interface (UI) Design: Creating an intuitive and aesthetically pleasing interface that supports casual interaction.
4. Replayability Mechanisms: Implementing elements that allow players to explore different outcomes or paths through light strategic decisions.
5. Optimization and Accessibility: Ensuring the game is lightweight and runs smoothly on devices with limited resources.
6. Testing and Feedback Integration: Conducting user testing to refine gameplay and interface for maximum comfort and engagement.

The scope does not extend to complex multiplayer modes, large-scale 3D environments, or competitive leaderboards, as the focus is on simplicity, emotional comfort, and stress-free interaction. The final product will serve as a foundation for future enhancements, such as new routines, seasonal updates, or additional customization features based on user feedback.

CHAPTER 3

IMPLEMENTATION

3.1 Block diagram and description of each block of the system

3.2 Description and justification of the method chosen for the study

To ensure a structured and effective approach to developing a casual, relatable video game based on daily routines, a user-centered design methodology has been chosen for this study. This method focuses on understanding the target audience's needs, behaviors, and preferences to create a product that aligns closely with their expectations and comfort levels. The methodology is broken down into several key phases:

1. Problem Analysis and Research: Conduct a detailed analysis of existing casual and simulation games to identify strengths, weaknesses, and common patterns. Gather user feedback through informal surveys or interviews to understand what players look for in stress-free and comforting games. Study psychological and emotional impacts of game mechanics, color schemes, an interaction styles that promote relaxation.
2. Requirement Gathering: Define the core features based on user feedback and gaps found in existing systems. Determine non-functional requirements such as performance, compatibility, and accessibility across devices.
3. Game Design and Conceptualization: Develop a concept based on real-life routines and common objects to foster familiarity and relatability. Design game mechanics that are simple yet engaging, focusing on short session gameplay with replay value. Create wireframes, flowcharts, and mock-ups to visualize the user interface and interaction flow.

3.3 Description of the Research Design

1. Descriptive Statistics:
Analyze individual player statistics such as distance traveled, number of obstacles avoided, number of collisions, average time per run, and total score.Summarize total sessions played, average session duration, retry counts, and most common point of failure.Track frequency of different obstacle types, success/failure rates per obstacle, and patterns in obstacle navigation.

2. Comparative Analysis:
Compare performance metrics between players (e.g., high-score comparisons, survival time) to evaluate skill differences. Assess player performance across different difficulty levels to determine where players succeed or struggle most.

3. Correlation Analysis:
Analyze relationships such as time survived vs. number of obstacles crossed, or speed vs. collision rate. Identify how level design elements (spacing, timing, randomness) correlate with player success or failure rates.

4. Hypothesis Testing:
Compare means of two groups (e.g., new players vs. experienced players) to see if experience significantly affects performance.Assess player performance across different versions or modes of the game to determine if specific changes impact results.

5. Regression Analysis:
Model the relationship between score and independent variables like movement frequency, distance traveled, or obstacles passed.Predict binary outcomes such as level completion (success/fail) based on player metrics (e.g., timing, reaction speed, retry counts).

3.4 Description of Statistical and Test Performed

Various tests were conducted to ensure the optimal performance and user experience of **Uni-thon**:

1. Performance Testing:
Unithon was tested on various devices and screen sizes (desktop, tablet, and mobile) to ensure smooth gameplay, consistent frame rates, and fast loading times. The game engine's performance was monitored under different obstacle densities and asset loads to validate its ability to handle complex scenes without lag or stutter.

2. User Behavior Analysis:
Player interactions and gameplay patterns were tracked to identify popular features and common drop-off points. Data such as retry frequency, collision locations, and average session length were analyzed to refine difficulty scaling and improve level design. Feedback collected from users was used to enhance visual clarity, control responsiveness, and overall playability.

3. Control and Input Testing:
Tests were conducted on different input methods (keyboard, touchscreen, and gamepad) to ensure seamless player movement and interaction. Particular focus was given to responsiveness, timing accuracy, and comfort during extended sessions. Any input lag or inconsistencies were identified and resolved.

4. Obstacle System Testing:
The dynamic obstacle generation system was tested to ensure fair and balanced gameplay. Tests ensured that no unbeatable configurations occurred and that obstacles spawned in alignment.

CHAPTER 4

RESULT

4.1 EXECUTION:

Fig.4.1: Game Initialization

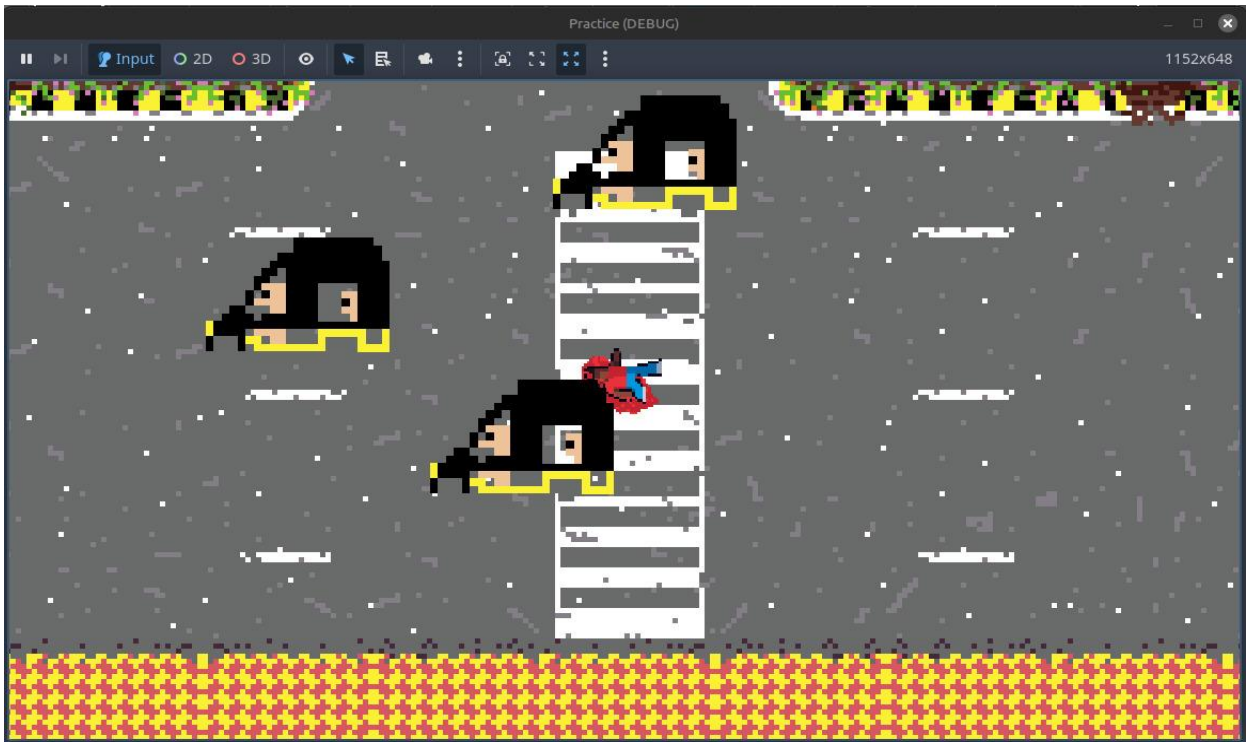

Fig.4.2: Player's Death

CHAPTER 5

CONCLUSION

The development and analysis of Unithon aimed to create an engaging and challenging obstacle-crossing game that delivers a smooth and enjoyable user experience. By integrating gameplay inspired by Crossy Road with original design elements, the game successfully offers players a dynamic and interactive environment that tests reflexes, timing, and decision-making. A comprehensive research design was employed, incorporating statistical analysis, behavioral tracking, and systematic testing. Descriptive statistics and performance metrics provided insight into user engagement, while hypothesis testing and regression models revealed significant patterns in player behavior.

APPLICATIONS:

The insights and outcomes derived from the development and research of *Unithon* have practical applications across various areas of game development, user experience design, and analytics-driven optimization. These applications are outlined below:

- Game Design Optimization: The statistical analysis and user testing conducted during development provide a framework for fine-tuning game difficulty, pacing, and mechanics.
- Player Engagement and Retention: By tracking player behavior and identifying patterns in gameplay sessions, engagement strategies such as adaptive difficulty, reward systems, and achievement milestones can be implemented to keep players motivated and returning to the game.
- Educational Use: Unithon can be adapted as a learning tool to teach logic, timing, and decision-making skills.
- Data-Driven Development: The statistical models and testing procedures serve as a guide for other game or app developers looking to build data-driven design cycles.

FUTURE SCOPE:

- Multiplayer Mode: Introducing real-time or turn-based multiplayer functionality would significantly boost player interaction and competitiveness. Leaderboards, challenges, and cooperative gameplay can increase engagement and retention.
- Procedural Level Generation: Integrating advanced procedural generation techniques would allow for dynamic and unpredictable level design, ensuring each run feels fresh and unique. This would enhance replayability and provide continuous challenge.
- Adaptive Difficulty System: Implementing a real-time adaptive difficulty system based on player skill level and performance can offer a more personalized and balanced experience. This system would adjust obstacle patterns, speed, and spawn frequency dynamically.
- Cross-Platform Deployment: Expanding *Unithon* to additional platforms such as iOS, Android, and web browsers can help reach a broader audience. Platform-specific optimizations would ensure smooth gameplay and consistent user experience.

REFERENCES

- Unity Technologies. (2023). Unity User Manual*:* Game Development Essentials. Retrieved from https://docs.unity3d.com/Manual/index.html.
- Schell, J. (2020). The Art of Game Design*:* A Book of Lenses (3rd ed.). CRC Press. A foundational book on game design covering mechanics, user experience, and player engagement.
- Firebase. (2024). Firebase Documentation – Analytics & Performance Monitoring. Retrieved from https://firebase.google.com/docs.
- Fullerton, T. (2018). Game Design Workshop: A Playcentric Approach to Creating Innovative Games. Discusses iterative design, prototyping, and user testing in game development.
- Andrade, G., Ramalho, G., Gomes, A. S., & Corruble, V. (2005). Challenge-Sensitive Action Selection: An Application to Game Balancing. In Proceedings of the 2005 IEEE/WIC/ACM International Conference on Intelligent Agent Technology, pp. 194–200. Research on dynamic difficulty adjustment and personalized game balancing.