

High-Rise Harvest: A Farming Simulation Game Raising Awareness of Vertical Farming Practices

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Submitted in Partial Fulfillment of the Requirements for the Degree of Bachelor of
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APPROVAL AND ACCEPTANCE SHEET

The capstone project entitled “**High-Rise Harvest: A Farming Simulation Game Raising Awareness of Vertical Farming Practices**” prepared and submitted by:

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LIST OF ABBREVIATIONS

3D – Three-Dimensional

ESC – Escape (keyboard key)

E – Interact key

Q – Drop item key

LMB – Left Mouse Button

RMB – Right Mouse Button

NPC – Non-Playable Character

UI – User Interface

IPO – Input–Process–Output (model)

UML – Unified Modeling Language

DFD – Data Flow Diagram

CPU – Central Processing Unit

RAM – Random-Access Memory

IDE – Integrated Development Environment

ESRB – Entertainment Software Rating Board

PC – Personal Computer

FEU TECH – Far Eastern University Institute of Technology

OS – Operating System

GB – Gigabyte

ABSTRACT

High-Rise Harvest is a first-person 3D farming simulation game designed to raise awareness of sustainable vertical farming practices among young learners and casual players. Recognizing the limited understanding of sustainable agriculture and the increasing pressure brought by urbanization and shrinking agricultural spaces, the project aims to transform complex farming concepts into an engaging and interactive digital experience. The game follows the story of Bobbito, who inherits his grandfather's neglected backyard farm and gradually converts it into an efficient vertical farming system to support medical expenses through seasonal crop production. The game integrates core mechanics such as crop planting, watering, fertilizing, harvesting, and infection control, alongside dynamic market pricing, NPC interaction, resource management, and seasonal progression. Four seasonal levels Spring, Autumn, Summer, and Winter introduce varying degrees of difficulty, environmental challenges, and unique crops, encouraging strategic planning and adaptive decision-making. Pests, animal threats, and limited energy and water resources further challenge players to balance efficiency and sustainability within a constrained environment. Developed using Unity, Blender, and Maya through the Scrum framework, the project incorporates player-centered testing, including alpha, beta, and black-box testing, to ensure clarity, usability, and learning effectiveness. The game will be evaluated during FEU Tech's Open House event through convenience sampling, utilizing both quantitative Likert-scale responses and qualitative feedback. High-Rise Harvest demonstrates the potential of simulation games as informal educational tools that promote environmental awareness and support learning through experiential play. By presenting vertical farming in an accessible and narrative-driven format, the game contributes to the growing body of interactive media aimed at fostering sustainable mindsets and enhancing understanding of modern agricultural practices.

Keywords: *Vertical Farming, Simulation Game, Sustainability, Resource Management, Environmental Awareness*

Chapter 1

INTRODUCTION

Video games have increasingly been used as tools for learning and reflection, especially in areas related to sustainability and resource management. Research shows that farming and simulation games offer valuable learning experiences in farming practices, sustainable agriculture, and ecological awareness, leading to improved knowledge and understanding among players (García de Alba-Chávez et al., 2024). Additionally, these games are effective in simplifying complex sustainability challenges, allowing players to make more informed and environmentally responsible decisions through interactive systems (Sreenonchai & Arunrat, 2023). Despite the growing importance of sustainable agriculture, awareness and understanding of vertical farming practices among the youth remain limited. Many sustainability concepts are commonly taught through traditional instructional methods that rely heavily on theoretical discussions, which may reduce engagement and practical comprehension among learners. At the same time, urbanization and limited agricultural space highlight the need for alternative farming approaches such as vertical farming, yet accessible and interactive learning platforms that introduce these concepts to younger audiences are still lacking. Although video games show strong potential as educational tools, few locally developed simulation games combine sustainability education with engaging gameplay. *High-Rise Harvest* addresses this gap through a 3D vertical farming simulation where players help Bobbito transform his grandfather's neglected backyard into a productive farm. Using mechanics like crop planning, market decisions, and system-based progression, the game promotes engagement while teaching sustainable practices and practical farming concepts.

1.1. Purpose and Description

The purpose of High-Rise Harvest is to develop a first-person 3D vertical farming simulation that emphasizes resource management and sustainability through interactive gameplay. The researchers will collaborate with Mr. Patrick Ian Peralta from UltimediaProductions, whose professional experience in game development will guide and inform the development process of the game.

1.2. Project Context

“High-Rise Harvest” is a first person, vertical-farming management game where players guide Bobbito as he maintains his sick grandfather’s backyard farm; growing crops, managing limited resources, and defending plants from pests and animals to meet seasonal quotas and earn money for medical bills. Through container-based planting, fertilizer management, and efficient space usage, the game encourages players to practice real vertical-farming techniques while interacting with NPCs for supplies, advice, and trading. As each season brings tougher challenges and new crop demands, players learn the value of sustainable farming, strategic planning, and maximizing small spaces to keep the farm thriving.

1.3. Objectives

1.3.1 General Objective

To develop a first-person 3D vertical farming simulation game titled “High-Rise Harvest” that promotes environmental awareness by integrating vertical farming, market trading, and inventory management into its core gameplay. The game highlights vertical farming and managing resources through storytelling, seasonal level progression, and realistic mechanics such as crop growth, water and energy limitations, dynamic market pricing, and plant protection. Through interactive environments including a farm lot, market, storage shed, and living space, players must learn to practice sustainable farming as their choices directly influence productivity, and difficulty, across changing seasons.

1.3.2 Specific Objectives

- a. To develop a first-person 3D story-driven farming simulation game that promotes environmental awareness and sustainability as well as responsible consumption and production.
- b. To design one playable character with farming, trading, and resource management abilities.
- c. To implement core gameplay systems including farming, crop growth, harvesting, inventory management, storage, and market trading.
- d. To develop a dynamic market system influenced by seasonal changes and NPC quests.
- e. To create interactive NPCs, narrative cutscenes, and progression systems that guide gameplay and storytelling.

- f. To design four seasonal playable stages (Spring, Summer, Autumn, Winter) with increasing difficulty and environmental challenges.
- g. To establish crop protection and defense mechanics against pests and infections while enhancing immersion through royalty-free audio elements.
- h. To produce complete development outputs including game environments, and official promotional websites for Ink & Embers and High-Rise Harvest.

1.4. Scope and Limitation

1.4.1 Scope

The game is a first-person 3D vertical farming simulation designed for single-player PC gameplay, where players manage and grow crops through core farming activities such as planting, watering, fertilizing, and harvesting. It features a dynamic market system in which crop prices change weekly, alongside NPC quests such as those given by Jose that influence progression and decision-making. Players must also handle inventory and storage management for harvested crops while carefully managing resources, including collecting water from a *poso* and working within energy limits when tending plants. Crop safety is an important mechanic, requiring the use of fences, pest spray, and sanitizing agents to protect harvests. The game is structured around four seasonal levels Spring, Summer, Autumn, and Winter, each introducing increasing difficulty and unique crop types that challenge the player's farming strategies.

1.4.2 Limitation

The game is limited to a single-player experience with no multiplayer or online interactions included. Gameplay features are restricted to the specified crops, fruits, and farming systems, and external environmental factors beyond these systems are not simulated. The market system is intentionally simplified, featuring weekly dynamic pricing and predetermined NPC quests only. Character interactions are confined to designed non-player characters (NPCs) and tasks within the backyard or farm environment. Player controls are limited to keyboard and mouse inputs, specifically using WASD, E, Q, hotbar keys, left and right mouse buttons, and the ESC key. Advanced mechanics such as detailed soil chemistry, full climate simulation, and multi-farm management are excluded. Additionally, the game is designed strictly from a first-person perspective, with no third-person view or camera-switching options available.

1.5 Conceptual Framework

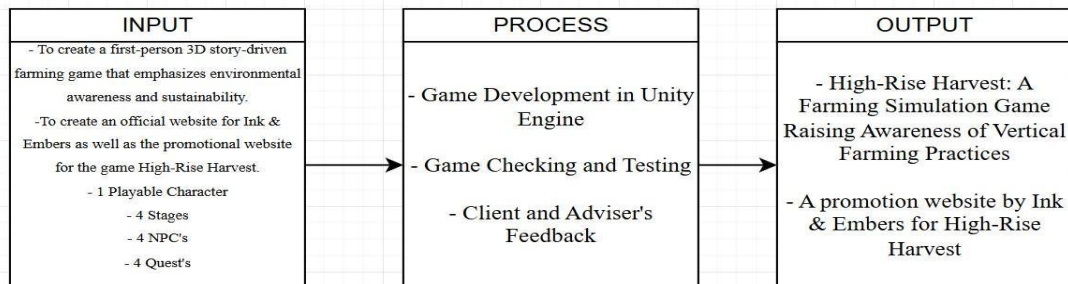


Figure 1. Conceptual Framework

Figure 1 shows the conceptual framework of the study using the Input–Process–Output (IPO) model, which illustrates how the development components of High-Rise Harvest are

transformed into a complete game. The input includes the objectives of creating a first-person, story-driven farming game that emphasizes environmental awareness and sustainability, the development of official and promotional websites, and the core game elements such as one playable character, four seasonal stages, four NPCs, and four quests. The process involves the development of the game using the Unity Engine, along with continuous game checking and testing, and the incorporation of feedback from the client and adviser to improve functionality, design, and educational value. The outcome of this framework is HighRise Harvest, a first-person 3D vertical farming simulation game that integrates sustainable farming practices, resource management, and interactive gameplay to promote environmental awareness.

1.6 Significance of the Study

This study is highly significant to Ultimedia Productions, represented by Mr. Patrick Ian Peralta, Founder & CEO, as it delivers a complete and well-documented game project that aligns with the studio's technical, creative, and educational aspirations. The project serves as a practical collaboration that highlights structured game development, sustainability-focused design, and the application of industry relevant practices within an academic setting.

Ultimedia Productions is an indie studio built by a solo developer who is passionate about creating fast, action-packed games across different genres. Each project is driven by bold creativity, strong personal dedication, and the ambition to craft memorable gaming experiences. The studio's flagship title, *Jet Scalawag: The King of Shooters*, draws

inspiration from iconic games such as *Star Fox* and *Freespace*, aiming to deliver a space-shooting experience that is more intense, faster-paced, and highly immersive.

In line with the studio's vision of developing engaging and meaningful games, High-Rise Harvest demonstrates how game design can go beyond entertainment by incorporating sustainability concepts and real-world themes into interactive systems. The project showcases how thoughtful mechanics, resource management systems, and narrative elements can be combined to create an experience that is both enjoyable and educational. As a result, the study provides Ultimedia Productions with a model of how socially relevant themes can be translated into compelling gameplay, while also reflecting organized development processes and clear project documentation that are valuable in professional game production.

1.7 Definition of Terms

Technical Terms

- **3D Vertical Farming Simulation** – A game environment that replicates farming in three dimensions, emphasizing crop growth, resource management, and spatial planning.
- **Cutscenes** – Short scripted sequences used to advance the story, show consequences of player choices, or provide context.
- **Dynamic Market System** – A system in which crop prices change over time, influenced by seasons and NPC quests.
- **ESC** – Escape button to pause and show the menu settings of the game.

- **First-Person Perspective** – A gameplay viewpoint where the player experiences the game world through the eyes of the main character, emphasizing immersion and direct interaction with the environment.
- **Game Mechanics** – The rules and systems that define how players interact with the game environment, including farming, trading, and inventory systems.
- **Inventory Management System** – A feature that tracks the player's collected items, manages storage space, and limits resources.
- **LMB (Left Mouse Button)** – Used for interacting with specific items in the game.
- **NPC (Non-Playable Character)** – Characters controlled by the game to provide guidance, quests, or interaction within the game world.
- **Resource Management** – Mechanics that require players to monitor and efficiently use limited resources, such as water, energy, and fertilizers.
- **RMB (Right Mouse Button)** – Used for interacting with specific items in the game.
- **Seasonal Level Progression** – The design of gameplay levels that change in difficulty, available crops, and challenges according to in-game seasons.
- **Simulation Games** – Games that mimic real-world activities, systems, or processes, often for learning or strategic decision-making.
- **Video Games** – Interactive digital media played on a computer or console where players control characters or systems.
- **WASD** – Movement keys for the character.

Operational Terms

- **Controls** – Player inputs including WASD (movement), E (interact), Q (drop item), LMB (plant & harvest), ESC (pause/menu).
- **Farm Lot / Backyard** – The main playable area where the player plants crops and manages resources.
- **Fertilizer** – Item used to enhance crop growth; comes in different qualities affecting efficiency.
- **Hotbar** – Inventory shortcut system that allows quick access to tools or items (1–5 keys).
- **Market Area** – In-game location where players sell crops and trade with NPCs.
- **Pest Spray / Sanitizing Agent** – Items used to protect plants from pests or infections.
- **Water Pump** – Water source in the game; used by Bobbito to collect water for irrigation.
- **Storage Shed** – Area used to store harvested crops and farming materials.

Chapter 2

Review and Related Literature and Studies

2.1 Related Literature

2.1.1 Local Literature

Recent research in the Philippines explores how digital simulation games can encourage realistic farming methods. Paculanan et al. (2025) created *Harvest Horizon*, a 2D farming simulator that uses a cellular automata algorithm to mirror real agricultural activities, showing how technology can represent intricate farming systems. Their results indicate that these simulations can improve comprehension of agricultural processes, aid in planning and choices, and serve as an educational tool for training in farming. The study underscores that combining technological tools with conventional agricultural wisdom may help tackle systemic and practical issues in the industry, supporting more knowledgeable and sustainable farming progress.

Current research in the Philippines points to agricultural technology as a key driver for education in sustainability. An investigation by Ramos (2024) into the eFARM Academy initiative reveals how universities are successfully weaving contemporary farming technologies into their academic offerings. The study concludes that this approach enriches the educational experience, builds tangible skills, and promotes a greater understanding of sustainable practices. Incorporating

technology into agricultural curricula, therefore, serves a dual purpose, it arms students with relevant competencies and promotes lasting, sustainable progress within the industry. This underscores the pivotal role of higher education in aligning technological innovation with agricultural productivity, thereby supporting the country's objectives for sustainable and inclusive economic growth.

Recently published research emphasizes how technology is revolutionizing Philippine agriculture, especially considering changing social circumstances. Agustin, Alcaraz, and Bristol (2022) looked at how disruptive smart farming technologies emerged during the "new normal," demonstrating how innovations like automated systems, IoT devices, and precision farming are changing agricultural operations. Their research highlights how implementing these technologies can boost the industry's resilience, production, and efficiency while assisting farmers in adjusting to shifting economic and environmental circumstances. This implies that incorporating smart agricultural technologies is essential to upgrading Philippine agriculture and promoting long term sustainable growth.

Recent studies highlight the positive impact of gardening on health and well-being. Daiz, Rosales, Diago, and De Los Santos (2022) conducted a comparative study among gardeners and non-gardeners in the Philippines, finding that engaging in gardening activities significantly contributes to maintaining perceived health and psychological well-being, especially during times of distress and social isolation. The study emphasizes that gardening not only provides physical activity but also

supports mental resilience and social connection, suggesting its potential as a practical intervention for promoting holistic health.

Recent research underscores the role of creative urban agriculture methods in strengthening food security and creating economic opportunities. Mandigma (2022) investigated the creation of sustainable vertical gardens in Philippine urban areas, showcasing systems that use structures like trellises to grow a variety of plants upward on both indoor and outdoor walls. The study concludes that this approach efficiently utilizes scarce city space while boosting household access to fresh food and generating potential income sources. These findings indicate that making vertical gardening a part of urban development strategies could improve food availability and strengthen community adaptability in densely populated regions.

2.1.2 Foreign Literature

The psychological appeal of virtual farming has been a focus of recent exploration. Walker (2024) examined why farming mechanics in video games such as *Stardew Valley* feel satisfying and rewarding, noting that clear goals, predictable rewards, and personal choice create a sense of accomplishment without the stress associated with real-world farming. Psychologists cited in the article highlight that players enjoy engaging in safe, controllable tasks that mimic productive labor while providing relaxation, autonomy, and emotional engagement. The study also reports that many players experience stress relief and improved well-being, with some using these games as a coping mechanism during challenging times.

The relaxing and mental health benefits of farming simulation games have been explored through a scientific lens. Ricardo (2025) examined *Stardew Valley*, highlighting how its combination of gentle daily tasks, predictable rewards, and low-pressure gameplay contributes to stress reduction and improved mood. The game's design elements such as slow pacing, player autonomy, and soothing visuals and audio align with “cozy gaming” principles that promote a calm cognitive state similar to meditation. The article also references player testimonials and expert commentary, emphasizing that *Stardew Valley* offers emotional comfort and potential real-world wellness benefits.

Simulation games are increasingly being used as educational tools in agriculture. Cupiał (2024) discussed the SEGAE simulation game, which models mixed crop– dairy farm operations through interconnected modules including soil, crops, livestock, machinery, and economics. The game enables learners to understand how different aspects of a farm interact, reinforcing real-world agricultural concepts through interactive scenarios. By simulating decision-making and resource management on a virtual farm, SEGAE helps develop practical insight, promotes systems thinking, and supports agricultural education for students and aspiring farmers.

Educational simulation games are being used to raise awareness of global agricultural challenges. Braydent and Nadril (2025) developed *Sowterra*, a 3D farming simulation game designed to educate players about the food crisis and

sustainable agriculture. Using a game life cycle model and educational frameworks, the game teaches traditional farming methods, resource management, and the role of agriculture in food security. Evaluation results showed that *Sowterra* provided a consistent user experience for both new and experienced players, though measurable learning gains were moderate, indicating room for improvement. The study highlights the potential of interactive simulations to engage players and increase awareness of real-world agricultural issues.

The role of agricultural education in addressing food security and sustainability challenges has gained increasing attention. AgriNext Conference (n.d.) highlighted how simulation games like *Farming Simulator* can serve as engaging, informal tools to introduce players to complex agricultural concepts, including crop cultivation, livestock management, precision farming, and modern farming technologies. The article emphasizes that such educational approaches not only teach sustainable farming and resource management but also foster innovation, awareness of sustainability, and interest in agricultural careers. Additionally, the AgriNext Conference serves as a platform for students, educators, and professionals to share knowledge, network, and explore emerging technologies and trends aimed at improving productivity and sustainability in agriculture.

2.2 Related Studies

2.2.1 Local Studies

Recent studies found the idea that the development of agriculture in the Philippines has been slow, uneven, and constrained by structural and institutional weaknesses. Custodio and Sombilla (2025) found that rural and agricultural transformation

from 1988 to 2023 varied significantly across regions, with only a few achieving high levels of progress, emphasizing that effective institutions, policies, and investments (IPIs) are crucial but must be well-coordinated to drive development. This aligns with Cordero and Park (2023), who highlighted that the increasing digital integration and advanced technologies emphasizing Agriculture 4.0 and precision farming have contributed significantly to the industry's growth and modernization. Together, these studies reinforce the idea that agricultural development in the Philippines depends on integrated policy coordination and the adoption of high-tech solutions to achieve sustained and inclusive growth.

Urban agriculture has been identified as an effective approach to addressing food insecurity and environmental challenges by integrating farming practices into urban spaces. Wahing et al. (2024) explained that urban agriculture improves access to fresh and affordable food while contributing to ecological sustainability. However, their study also emphasized key challenges such as limited land availability, low crop yields, unfavorable weather conditions, and high initial investment costs, which restrict the widespread adoption of urban farming in cities.

To overcome these limitations, vertical farming has been proposed as a sustainable alternative to traditional agriculture, particularly in urban environments. Garcillanosa et al. (2023) demonstrated that smart indoor vertical farming systems using machine learning can successfully operate under Philippine climatic conditions, which are predominantly hot and humid. Their findings showed that AI-controlled environments allow consistent crop growth while reducing

dependency on external weather conditions. These results highlight the potential of vertical farming to improve food production efficiency, food security, and environmental sustainability in urban areas.

2.2.2 Foreign Studies

In addition to technological solutions, recent studies emphasize the role of video games as effective tools for agricultural education. García de Alba-Chávez et al. (2024) found that educational farming games can be as effective as traditional workshops in improving players' knowledge, while having a stronger influence on attitudes and self-confidence toward gardening. The study further showed that engaging gameplay experiences enhance players' self-efficacy, supporting the use of video games as learning tools for promoting sustainable farming practices.

Similarly, Sereenonchai and Arunrat (2025) highlighted that serious games focused on agriculture encourage players to reflect on strategic resource use, cross-sector collaboration, and crisis management through post-game reflection. Foureaux and Daum (2025) also suggested that agricultural simulation games, such as farming- based video games, allow players to imagine and experiment with alternative forms of “good farming” in a virtual environment. These findings support the integration of agricultural concepts into game-based learning.

2.3 Related System or Games



Figure 2. Stardew Valley

Stardew Valley is a cozy farming and life-simulation game where you inherit an abandoned farm and work to restore it. You grow crops, raise animals, explore mines, go fishing, and gather resources to improve your land. Each season brings new crops, weather, and activities, giving the game a relaxing but rewarding loop. Beyond farming, you can build friendships with the townspeople, participate in festivals, and choose whether to help restore the Community Center or support the Joja Corporation. The game has no strict deadlines, so you can play at your own pace and shape your farm and your life in Pelican Town however you want. Inspired by these elements, the game uses a first-person, single-player simulation with relaxing gameplay, farming mechanics, and an inventory system to create an engaging yet calming experience.



Figure 3. Harvest Moon

Harvest Moon is a classic farming simulation series where players inherit a small rural farm and work to restore and expand it. Players grow crops, raise livestock, gather resources, and improve their farm through daily care and seasonal cycles. Each season brings new crops, weather changes, and farm activities, creating a relaxing yet rewarding gameplay loop. Beyond farming, players interact with villagers, build friendships, participate in festivals, and can even marry and start a family, shaping their life in the village at their own pace. Inspired by these elements, the game uses a 3D, single-player simulation with a casual art style, structured farming mechanics, and a relaxing progression system to create an immersive and engaging farming experience.



Figure 4. Potion Craft

Potion Craft is an alchemist simulator where players take on the role of a medieval potion maker, running their own shop and crafting potions by physically mixing ingredients, grinding herbs, and experimenting on an interactive alchemy map. Players must manage daily customer requests, set prices, and refine recipes to improve their skills, while gradually unlocking new ingredients and potion effects. Each day presents opportunities to balance creativity, efficiency, and customer satisfaction, creating a dynamic yet calming gameplay loop. Inspired by these elements, the game applies a single-player simulation approach with management mechanics and a relaxing pace, allowing players to focus on strategy, experimentation, and steady progression, all within an immersive and hands-on environment unique to the world of farming



Figure 5. Farming Simulator

Farming Simulator 25 lets players build and manage their own farm using realistic machinery and tools, cultivating a variety of crops while overseeing daily farm operations. Players work across diverse 3D environments, handle resource management, and make strategic decisions to grow their farm, balancing efficiency with care. Inspired by these elements, the game applies a first-person, 3D simulation approach with casual management mechanics and a relaxing pace, allowing players to immerse themselves in farm life while enjoying a hands-on, self-paced, and engaging experience.

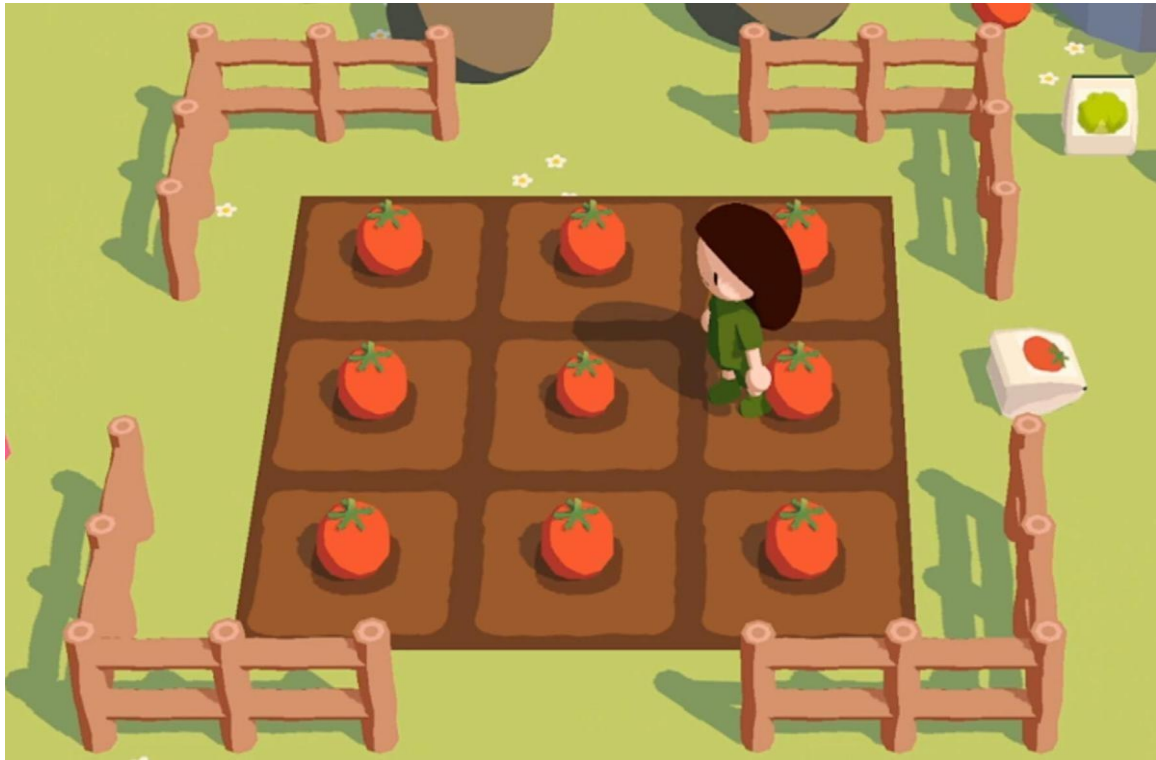


Figure 6. Cozy Island

Cozy Island is a relaxing life-simulation game set on a charming island where players can grow vegetables, raise animals, go fishing, explore freely, and enjoy quirky items and mini-games at their own pace. The island encourages creativity, allowing players to build secret bases, collect unique furniture, and interact with the environment in a calm, self-directed way. Inspired by these elements, the game applies a 3D, single-player simulation with a casual art style, structured farming mechanics, and a relaxing pace, giving players an immersive experience that balances exploration, management, and creativity while maintaining a soothing, enjoyable rhythm.



Figure 7. Planet Crafter

Planet Crafter is a survival simulation game where players transform a barren planet into a thriving, habitable environment. Players gather resources, manage critical systems like oxygen, water, temperature, and energy, and expand infrastructure while unlocking new technologies, balancing long-term planning with efficient resource management. Inspired by these elements, the game uses a 3D, single-player simulation with management mechanics, a relaxing pace, and an inventory system, allowing players to strategically shape the environment while enjoying an immersive and calming experience focused on exploration, sustainability, and thoughtful decision-making.



Figure 8. Slime Rancher

Slime Rancher is a first-person, 3D farming and simulation game where players manage a ranch populated with a variety of colorful slimes, each producing unique and valuable resources. Players explore a vibrant world, gather materials, care for slimes, organize their ranch space, and upgrade equipment to improve efficiency and productivity. The gameplay emphasizes balancing exploration, strategic planning, and light resource management, encouraging experimentation with different slime combinations and ranch layouts. Inspired by these elements, the game applies a first-person, single-player design with a casual art style, structured management mechanics, and a relaxing pace, providing an immersive experience where players can enjoy creative problem-solving, steady progression, and a colorful, engaging simulation that is both fun and soothing.



Figure 9. PEAK

PEAK is a 3D, first-person survival and exploration game where players navigate treacherous mountain terrain while managing stamina, supplies, and environmental hazards. The gameplay emphasizes careful planning, resource management, and adapting to changing conditions, challenging players to make strategic decisions to survive. Inspired by these elements, the game uses a first-person perspective with a casual art style and an inventory system, creating an immersive experience that balances risk, exploration, and relaxed, thoughtful gameplay while allowing players to engage with survival mechanics in a visually appealing and accessible environment.



Figure 10. Cult of the Lamb

Cult of the Lamb is a unique hybrid game that combines fast-paced action combat with base-building and management systems. Players explore hostile areas through dungeon-style gameplay while also managing a cult by gathering resources, assigning tasks, and maintaining follower needs. Progression depends on balancing combat success with effective community and resource management. The game emphasizes strategic planning, leadership, and the consequences of player decisions within both combat and simulation systems.



Figure 11. Heartopia

Heartopia is a relaxing life-simulation game that blends farming, crafting, exploration, and home customization in a colorful open world. Players gather resources, grow crops, raise animals, cook food, and build relationships with NPCs while developing their own personalized island space. The game emphasizes creativity, self-expression, and gentle progression rather than competition or time pressure. Through activities like farming, trading, decorating, and quest completion, Heartopia promotes resource gathering, planning, and community interaction within a cozy and stress-free environment.

Table 1. Game Matrix Similarities

Game Titles	3D	First Person Perspective	Single player	Simulation	Art Style	Casual	Farming Mechanics	Management	Relaxing	Inventory System
Stardew Valley		✓	✓	✓		✓	✓		✓	✓
Harvest Moon	✓		✓	✓	✓	✓	✓		✓	✓
Potion Craft			✓	✓				✓	✓	
Farming Simulator	✓	✓	✓	✓		✓		✓	✓	
Cozy Island	✓		✓		✓	✓	✓		✓	
Planet Crafter	✓		✓	✓				✓	✓	✓
Slime Rancher	✓	✓	✓		✓			✓	✓	
Peak	✓	✓			✓	✓				✓
Cult of the Lamb			✓	✓			✓	✓		
Heartopia	✓		✓	✓	✓	✓			✓	

2.4 Synthesis

The reviewed literature and studies collectively highlight the growing role of technology, simulation, and interactive systems in promoting sustainable agriculture, environmental awareness, and resource management. Local literature and studies emphasize the challenges faced by Philippine agriculture, such as limited land, uneven development, climate-related risks, and institutional constraints, while also presenting solutions through urban farming, vertical farming, smart agriculture, and educational technologies. Research on vertical gardening and smart indoor farming demonstrates how efficient space usage, controlled environments, and technological integration can improve food security and

sustainability, particularly in urban settings. At the same time, studies on gardening and agricultural education underscore the physical, psychological, and educational benefits of engaging with farming related activities, reinforcing the value of experiential and interactive learning approaches.

Foreign literature and studies further support the use of simulation and farming games as effective tools for education, reflection, and awareness-building. Research shows that farming and simulation games can improve players' understanding of agricultural systems, resource management, and sustainability while also providing stress relief, emotional engagement, and increased self-efficacy. Related systems and games such as *Stardew Valley*, *Farming Simulator*, *Planet Crafter*, and *Slime Rancher* demonstrate how mechanics like seasonal progression, market systems, resource constraints, and environmental interaction can model real-world processes in an engaging and accessible way. Together, these references justify the development of High-Rise Harvest as a first- person 3D vertical farming simulation that integrates sustainable farming concepts, resource management, and interactive gameplay to educate and engage players while addressing real-world agricultural and environmental challenges.

Chapter 3

METHODOLOGY

3.1 Requirement Analysis

3.1.1 Operational Feasibility

High-Rise Harvest is designed to operate on the Windows Operating System, which is widely used and accessible to the target audience of PC players and students. The game will be developed as a singleplayer PC application, ensuring ease of deployment without the need for complex server infrastructure or online connectivity. The control scheme will rely on standard keyboard and mouse inputs, which are familiar to most PC users. Because the gameplay focuses on intuitive farming, trading, and resource management mechanics, players can easily understand and interact with the system without requiring specialized training. From a development perspective, the researchers are knowledgeable in game design and development tools, allowing them to operate and manage the system efficiently. Regular testing will also be conducted on Windows-based machines to ensure compatibility, performance stability, and smooth gameplay experience. Overall, the project is operationally feasible because it runs on a common platform, uses standard hardware, and supports accessible user interaction.

3.1.2 Technical Feasibility

The development of High-Rise Harvest will utilize industry-standard and up-to-date software tools. Unity will be used as the main game engine for development, scripting,

physics, and system integration. Blender will be used for 3D modeling, texturing, and asset creation, while Autodesk Maya will support advanced 3D modeling, animation, and rigging. These tools are widely used in the game development industry and are capable of supporting the creation of a first-person 3D simulation game with interactive environments, animations, user interface systems, and gameplay mechanics. The researchers possess foundational knowledge and practical experience in 3D modeling, animation, and game programming, which are essential for implementing core systems such as farming mechanics, inventory management, market trading, non-player character interaction, and seasonal progression. Modern personal computers are also capable of running Unity-based games efficiently, making it technically viable to test and deploy the game without requiring specialized or high-end equipment. Therefore, the project is technically feasible because the required software, hardware, and technical skills are available and sufficient for development.

3.1.3 Economic Feasibility

The development of High-Rise Harvest is considered economically feasible because it will primarily rely on free and accessible resources. The researchers will use free or educational versions of development tools such as Unity, Blender, and Maya. In addition, royalty-free audio assets, including background music and sound effects, will be used to avoid licensing costs. Most of the 3D models, animations, and other game assets will be created by the researchers themselves, reducing the need for outsourcing or paid asset purchases. Since the project is academic in nature and not intended for commercial distribution during

development, there are no major financial investments required for production. The main resources involved are time, effort, creativity, and technical skills from the research team.

Because software tools, audio assets, and development resources are either free or already available, the project can be completed with minimal to no financial cost, making it economically sustainable for the researchers.

Table 2. Economic Feasibility Table

Category	Application	Price	Description
Game Engine	Unity	Free Personal Account	A cross-platform game engine
Programming	Microsoft Visual Studio 2022	Free	a full-featured, 64-bit Integrated Development Environment (IDE) from Microsoft used to develop computer programs, websites, web apps, web services, and mobile apps
3D Modeling	Autodesk Maya	Free license (student from FEU Tech)	a 3D computer graphics application used to create assets for interactive 3D applications
	Blender	Free	a free and open source 3D computer graphics software tool set used for creating animated films, visual effects, art, 3D printed models, motion graphics, interactive 3D

	Adobe Substance Painter	Free license (student from FEU Tech)	a the industry-standard software for creating, texturing, and rendering 3D models in real-time
Music/Sound Effects	Pixabay	Free	a popular website offering a vast library of free, high-quality, royalty-free stock media, music, and sound effects
Communication	Microsoft Teams	Free	a cloud-based digital workspace within Microsoft 365 that centralizes communication and collaboration.

3.1.4 Schedule Feasibility

Table 3. Gantt Chart Schedule for Project Management

TASK	JANUARY				FEBRUARY				MARCH			APRIL
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Chapter 1												
Chapter 2												
Chapter 3												
2D Art Concept												
Storyline												
3D Assets												

3.2 Project Design

3.2.1 Game Overview

High-Rise Harvest is a farming simulation game centered on sustainability, vertical farming, and family responsibility. The game follows Bobbito, who takes over his grandfather Lolo Grice's backyard farm after he becomes ill and is hospitalized. As a child, Lolo Grice experienced famine and once failed to earn money for his family, which inspired his dream of starting his own farm. Bobbito later took interest in this dream and helped fulfill it. What begins as caring for crops grows into a full-scale vertical farming operation to pay for Lolo Grice's hospital bills.

The player manages a small farm in a rural setting, growing crops, defending them from pests and animals, and making strategic decisions about which produce to sell to meet increasing seasonal quotas. Throughout the game, Bobbito learns modern and sustainable farming practices, particularly vertical farming, while interacting with NPCs who provide guidance, supplies, delivery services, and market opportunities.

The gameplay focuses on balancing resource management, crop quality, inventory limitations, and market demands. Crops can lose value due to pests, parasites, or neglect, encouraging players to actively maintain their farm using tools such as pest sprays, fences, and sanitizing agents. Each season presents new crops, higher difficulty, and greater financial pressure, testing the player's ability to maintain a sustainable and profitable farming system.

The narrative-driven progression emphasizes themes of love, sacrifice, environmental awareness, and responsible consumption and production, culminating in multiple endings based on the player's success in managing the farm and settling the hospital bills.

3.2.2. Genre

The genre of High-Rise Harvest is a Simulation and Management Farming Game with elements of resource management, survival, and educational gameplay. It incorporates light narrative storytelling and strategic decision-making, allowing players to learn about vertical farming practices while engaging in meaningful progression systems.

The game features various NPCs, including neutral characters such as buyers, suppliers, and advisors, as well as enemy entities like pests and animals that threaten crop quality and harvest yield. These elements combine to create a relaxed yet challenging farming experience that rewards planning and sustainability. Additionally, players must carefully balance resources such as water, energy, and time while adapting to changing conditions that affect crop growth and productivity. Through these mechanics, the game encourages players to understand the importance of efficient farming methods and sustainable agricultural practices.

3.2.3. Platform

High-Rise Harvest is designed to be played on PC platforms using a keyboard and mouse. All gameplay mechanics, including movement, farming actions, inventory management, and interactions, are optimized for standard PC peripherals.

The developers recommend playing on a PC due to the precision required for farming tasks, inventory handling, and inspection of crops within the vertical farming system.

3.2.4. Target Audience

The target audience for High-Rise Harvest consists of players who enjoy farming simulation and management games with strategic decision-making elements. The game is particularly appealing to players who appreciate relaxed yet goal-oriented gameplay, resource management, and meaningful narrative progression.

The themes of sustainability, vertical farming, and family responsibility may also attract players with interests in environmental awareness, agriculture, and educational simulation games. Due to its simple controls, low-poly art style, and non-violent gameplay, the game is accessible to a wide age range, primarily targeting players aged 13 to 30, while remaining enjoyable for younger audiences.

The game will utilize the Entertainment Software Rating Board (ESRB) rating system to clearly define its intended audience. High-Rise Harvest is expected to fall under the E10+ (Everyone 10 and Older) or Teen category, as it contains mild thematic elements such as

financial pressure, illness, and survival mechanics, but no graphic violence or inappropriate content. This classification makes the game suitable for both casual and younger players while maintaining depth for older audiences.

3.2.5. Basic Premise

The story of High-Rise Harvest follows Bobbito, a young farmer entrusted with the care of his grandfather Lolo Grice's backyard farm after Grice becomes seriously ill and is hospitalized. Before falling sick, Lolo Grice had already begun planting crops, but his condition prevented him from completing the work. Through a letter left behind, he asks Bobbito to continue maintaining the farm in his absence.

As Bobbito tends to the crops, he realizes that the farm can become more than just a garden. By expanding it into a vertical farming system, he can grow vegetables and fruits efficiently and sell them to earn money. His ultimate goal is to generate enough income to cover his grandfather's hospital bills while ensuring the farm's long-term sustainability.

Throughout the game, Bobbito encounters various NPCs who assist in his journey such as suppliers, buyers, and delivery workers while also facing challenges such as pests, parasites, and animals that threaten crop quality and yield. The player must strategically manage crops, tools, inventory space, and market demands, adapting their farming approach each season to survive increasing difficulty and financial pressure.

3.2.6. Setting

High-Rise Harvest is set primarily in Lolo Grice's backyard farm, located in a rural or provincial area. The main farming area serves as the core gameplay space, featuring vertical farming structures, planting containers, and defensive tools used to protect crops.

Additional locations include a small house connected to the farm, where story elements and interactions take place; a storage shed used for inventory and resource management; and the city market, where Bobbito sells harvested crops and purchases seeds, tools, and equipment from local vendors.

The game world progresses through seasonal changes Spring, Autumn, Summer, and Winter each introducing new crops, environmental challenges, and increased difficulty. These settings emphasize the contrast between peaceful rural farming and the pressures of economic survival, reinforcing the game's themes of perseverance, sustainability, and family devotion.

3.2.7 Controls

- **Player Controls**

The peripherals that can be used to play the game are keyboards and mouse.



Figure 12. Mouse



Figure 13. Keyboard

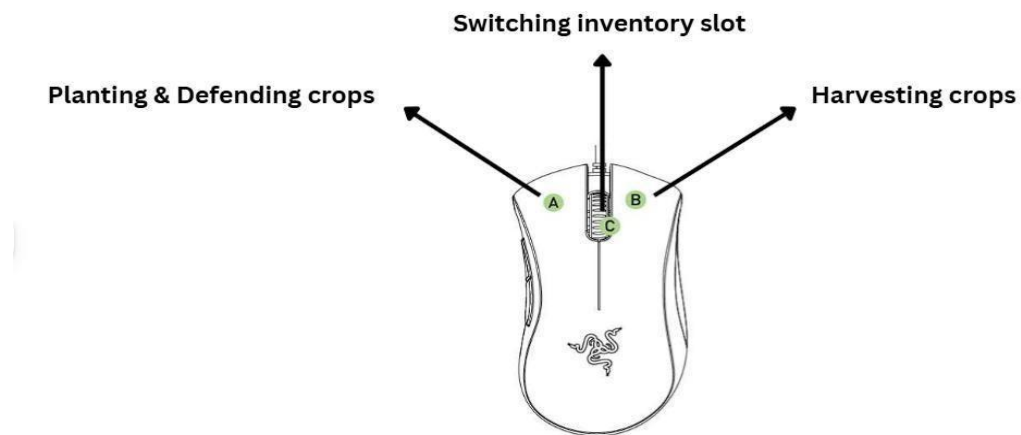


Figure 14. Mouse Controls

Left Mouse Button (LMB) – Planting and Defending

Right Mouse Button (RMB) – Harvesting Crops

Scroll Wheel – Switching Inventory Slot



Figure 15. Keyboard Controls

WASD – Character Movement

E – Interaction

Q – Drop Item

1,2,3,4,5 – Hotbar slots (when inventory is full, must drop 1 item to pick another up)

ESC – Pause the game and access the menu settings

3.2.8 Gameplay

Main Menu

- **Start: Leads to a secondary menu where the player can:**
 - Start a new game
 - Load an existing saved game
- **Settings: Players can adjust:**
 - Overall volume
 - Toggle background music
 - Other customization options
- **Exit: Closes the game.**

Background soundtrack: calm, lo-fi aesthetic for a relaxed and immersive atmosphere.

The game consists of a story mode following a linear seasonal progression, where the player takes on the role of Bobbito, managing his grandfather Lolo Grice's farm. The game is single-player only.

In story mode, the player will experience:

- Farm management, including planting, watering, fertilizing, and harvesting crops.
- Crop protection against animals and insects using tools such as water balloons, anti-infection sprays, and heat lamps.
- Interaction with NPCs, primarily Jose, who guides Bobbito through tutorials and side quests.
- Seasonal challenges affecting crop growth and yield (e.g., heat in summer, freezing in winter).
- Progression through four levels, each corresponding to a season: Spring, Autumn, Summer,

and Winter.

A. Levels/Stages

3.2.3.1 Level 1 – Spring (Tutorial)

Story & Cutscene:

- Lolo Grice is shown inside his house, weak and sick, writing a letter about his worries regarding the farm.
- Uncle Jose drops Bobbito off at the house; Bobbito finds and reads the letter, learning Lolo Grice is in the hospital and entrusting the farm to him.
- The next morning, screen displays: “Level 1 – Spring”

Dialogue & Main Objective:

- **Jose:** “Bobbito, this farm is what will help us pay for your Lolo Grice’s hospital bills. We need to grow and sell crops so we can earn enough money before the season ends.”
- **Jose:** “Alright Bobbito, at the start of every farm is the process of learning how to maintain the farm and manage yourself properly.”

Tutorial Flow:

1. Movement & Stamina

- Panel shows: “Press W, A, S, D to move”
- Panel shows: “Hold SHIFT to run, but be mindful since running drains your stamina”
- Arrow points to stamina bar

2. Tools & Interaction

- **Jose:** “Walk up to the tools and press E to equip it. You can also press E to interact with other things here in the farm.”

3. Planting Crops

- **Jose:** “Well, a farm must start somewhere. Here, use the seeds leftover from my farm to start your first crops.”
- Equip the seed pack and press LEFT MOUSE BUTTON to plant.
- Water indicator appears.
- **Jose:** “Oh right silly me I forgot the most important part, WATER. Equip the watering can and refill it using the poso or water pump.”
- Water the seed to start growth cycle.

4. Town Market

- **Jose:** “Here is the town market where you buy other seeds appropriate for different seasons and upgrades to expand and keep the farm sustainable.”
- Upgrade shop interface appears: “This is the upgrades shop, you can buy equipment here such as additional vertical farming plots and fertilizers amongst many other things.”
- Seeds shop interface appears: “This is the seeds shop, here you can buy different seeds appropriate for different seasons. Just make sure to buy and plant seeds that are in season, otherwise, the seed planted out of season would grow much slower. Therefore, it will be less sustainable. Also make sure to keep an eye on the stocks since different seeds are not always available in the market.”
- **Jose:** “It’s getting dark now, let’s head back to the farm.”

5. Returning to Farm & Sleep

- Jose: “Alright Bobbito, that’s it for today, we’ll continue this tomorrow morning.”
- Next morning, Bobbito wakes up: “Rise and shine Bobbito, we have a long day ahead

of us. First thing morning, always keep your plants hydrated. Oh look, the crop grew, keep it up and it might grow with excellent quality. Produce with excellent quality are more profitable compared to normal ones. Oh and by the way a few more things to remember, You can use fertilizers on the crops, fertilizers make the crops grow more produce, yields more to harvest. Which can be bought in the upgrades shop or be created using the compose box, any unprofitable crops or harvest can be put in the compose box to make natural fertilizers. Fertilizers from the shop have more chance to give extra crop yields but is expensive, while natural fertilizers have a lower chance to give extra crop yields but is free and can be made using only the compose box.”

6. Crop Protection – Squirrels

- Squirrel appears above crops with exclamation mark.
- **Jose:** “Drats! The crops are starting to attract wildlife now. Quick! fill these balloons with water and get ready to chuck ’em.”
- Fill water balloons and interact with crops (E) to open minigame interface.
- Throw water balloons (LEFT MOUSE BUTTON) to scare squirrel away.
- **Jose:** “Great job scaring the squirrel away, those critters are a huge problem. They keep eating all the produce leaving us nothing to sell. Hey tell you what, eliminate them critters for me and I might have something to give you in return.”
- Side quest counter appears for squirrels driven away.

7. Crop Protection – Caterpillars

- **Jose:** “Uh oh, look Bobbito, a caterpillar. These bugs are a clear sign that a crop is infected, to remove them you must spray them with an anti-infection spray. Here, borrow my spray, equip it and hold the LEFT MOUSE BUTTON to spray the

caterpillar with it.”

- Jose: “You can buy equipment like the water balloon and the anti-infection spray used to defend your farm in the town market.”

8. Harvesting Crops

- **Jose:** “Ah, the crops are finally ready to harvest. There are two ways to harvest crops depending on how it grows.”
- Above-ground crops → equip shears, press RIGHT MOUSE BUTTON; minigame determines crop quality.
- Below-ground crops → equip trowel, press RIGHT MOUSE BUTTON; minigame determines crop quality.
- Inventory limit: 10 per crop.
- Load harvested crops into Jose’s truck (E).
- **Jose:** “Nice job on harvesting the crops, you’re a natural nephew! Now load it in the truck and I’ll take care of the rest by selling it in the city.”

9. Selling Crops & Compost

- Next day, Jose returns with profits.
- **Jose:** “Here nephew, here are the profits from your harvest as well as the produce that spoiled and failed to sell. Don’t worry, you can put them in the compose box and reuse it to make natural fertilizers.”
- **Jose:** “Well Bobbito, those are the basics in farming. It is now up to you to handle your grandfather’s farm. Call me whenever you need anything.”

Gameplay Loop – Level 1:

- Check the calendar in the shed to see the current season

- Buy seeds from the town shop
- Plant crops in the vertical farm pots
- Water crops when needed
- Use fertilizer to increase crop yield
- Protect crops from squirrels using water balloons
- Wait for crops to grow
- Harvest crops when ready
- Load produce into Jose's truck
- Sell crops
- Use the compost box for spoiled crops
- Repeat until the seasonal quota is reached

Success Condition:

- Earn 5,000 Shep before season ends → Level 1 completed. Screen displays “Level 2 – Autumn.”

Failure Condition:

- Quota not reached → cutscene shows Bobbito worried, Game Over. Player can Play Again or Quit.

3.2.3.2 Level 2 – Autumn

Story & Setup:

- Screen displays: “Level 2 – Autumn”
- Normal farming routine continues.

Wild Boar Introduction:

- Jose: “Bobbito, be careful of wild boars. Not only do they eat the crops, they destroy the farm plots entirely. Use the water balloon to drive them away.”
- Boar minigame → requires 3 water balloons to scare off.
- Wild boars can destroy plots; crops in destroyed plots become unprofitable.

Gameplay Loop – Level 2:

- Water crops
- Fight plant infection
- Scare away squirrels (every 3–5 minutes)
- Drive away wild boars using water balloons
- Protect vertical farm plots from destruction
- Harvest crops and load into truck
- Sell crops if desired
- Buy upgrades if desired
- Repeat until season ends

Success Condition:

- Earn 15,000 Shep → Level 3 – Summer

Failure Condition:

- Quota not reached → cutscene shows farm bankruptcy, Game Over

3.2.3.3 Level 3 – Summer

Story & Setup:

- Screen displays: “Level 3 – Summer”
- Summer introduces drying crops (sun icon) and more aggressive animals.

Dialogue & Instructions:

- Jose: “Bobbito, summer is very hot. You must water the crops consistently. If you forget, the plants may dry out.”
- Jose: “Animals are much feistier and hungrier during summer. They might try to eat your crops. Good luck!”

Gameplay Loop – Level 3:

- Water crops (watch for sun icon)
- Fight plant infection
- Scare away squirrels (every 3–5 minutes)
- Drive away raccoons at night
- Protect crops from animals using water balloons
- Harvest crops and load into truck
- Sell crops if desired
- Buy upgrades if desired
- Repeat until season ends

Success Condition:

- Earn 35,000 Shep → Level 4 – Winter

Failure Condition:

- Quota not reached → cutscene shows farm bankruptcy, Game Over

3.2.3.4 Level 4 – Winter (Final Level)

Story & Setup:

- Screen displays: “Level 4 – Winter”
- Winter introduces freezing crops (snowflake icon) and more frequent aggressive animals.

Dialogue & Instructions:

- Jose: “Bobbito, winter is very cold. You must watch your crops carefully. They might freeze and die during the cold season.”
- Jose: “To prevent your crops from freezing, you can buy a Heat Lamp from the upgrade shop! It protects plants for 5 minutes and can be recharged with batteries.”
- Jose: “Animals are more likely to feed on your crops during winter because food is scarce.”

Gameplay Loop – Level 4:

- Water crops
- Watch for snowflake indicators
- Use Heat Lamps to defrost and protect crops
- Fight plant infection
- Scare away squirrels (every 3–5 minutes)
- Defend crops from more frequent animals
- Harvest crops and load into truck
- Sell crops if desired
- Buy upgrades if desired
- Repeat until season ends

Success Condition (Game Ending):

- Earn 50,000 Shep → final cutscene shows farm saved, Lolo Grice healthy, screen displays “Congratulations! You Saved the Farm.”

Failure Condition:

- Quota not reached → cutscene shows farm bankruptcy, Game Over

Game Balance Sheet

Table 4. Selling Prices of Crops in Spring Season

SPRING					
Crop	Base Yield	Base Price	Fertilizer Bonus Yield	Final Yield	
Calamansi	2	20	1	3	
Radish	3	24	1.5	4.5	
Green Onions	3	26	0	3	
Carrot	3	30	1.5	4.5	
Lettuce	2	28	1	3	
Normal Season + Quality					
Normal Season – Normal Quality	Total Earnings	Normal Season – High Quality	Total Earnings	Normal Season - Excellent Quality	Total Earnings
20	60	25	75	35	105
24	108	30	135	42	189
26	78	32.5	97.5	45.5	136.5
30	135	37.5	168.75	52.5	236.25
28	84	35	105	49	147
Off-Season + Quality					
Off-Season - Normal Quality	Total Earnings	Off-Season - High Quality	Total Earnings	Off-Season - Excellent Quality	Total Earnings
25	75	31.25	93.75	43.75	131.25
30	135	37.5	168.75	52.5	236.25
32.5	97.5	40.625	121.875	56.875	170.625
37.5	168.75	46.875	210.9375	65.625	295.3125
35	105	43.75	131.25	61.25	183.75
Opposite Season + Quality					
Opposite - Normal Quality	Total Earnings	Opposite - High Quality	Total Earnings	Opposite - Excellent Quality	Total Earnings
35	105	43.75	131.25	61.25	183.75
42	189	52.5	236.25	73.5	330.75
45.5	136.5	56.875	170.625	79.625	238.875
52.5	236.25	65.625	295.3125	91.875	413.4375
49	147	61.25	183.75	85.75	257.25

Table 5. Selling Prices of Crops in Autumn Season

Autumn					
Crop	Base Yield	Base Price	Fertilizer Bonus Yield	Final Yield	
Blueberries	2	28	1	3	
Carrot	4	36	2	6	
Beets	4	40	2	6	
Cucumbers	4	44	2	6	
Potato	4	48	2	6	
Normal Season + Quality					
Normal Season – Normal Quality	Total Earnings	Normal Season – High Quality	Total Earnings	Normal Season - Excellent Quality	Total Earnings
28	84	35	105	49	147
36	216	45	270	63	378
40	240	50	300	70	420
44	264	55	330	77	462
48	288	60	360	84	504
Off-Season + Quality					
Off-Season - Normal Quality	Total Earnings	Off-Season - High Quality	Total Earnings	Off-Season - Excellent Quality	Total Earnings
35	105	43.75	131.25	61.25	183.75
45	270	56.25	337.5	78.75	472.5
50	300	62.5	375	87.5	525
55	330	68.75	412.5	96.25	577.5
60	360	75	450	105	630
Opposite Season + Quality					
Opposite - Normal Quality	Total Earnings	Opposite - High Quality	Total Earnings	Opposite - Excellent Quality	Total Earnings
49	147	61.25	183.75	85.75	257.25
63	378	78.75	472.5	110.25	661.5
70	420	87.5	525	122.5	735
77	462	96.25	577.5	134.75	808.5
84	504	105	630	147	882

Table 6. Selling Prices of Crops in Summer Season

Summer					
Crop	Base Yield	Base Price	Fertilizer Bonus Yield	Final Yield	
Strawberries	3	30	1.5	4.5	
Beans	4	42	2	6	
Tomatoes	5	60	2.5	7.5	
Peppers	5	66	2.5	7.5	
Celery	4	54	2	6	
Normal Season + Quality					
Normal Season – Normal Quality	Total Earnings	Normal Season – High Quality	Total Earnings	Normal Season - Excellent Quality	Total Earnings
30	135	37.5	168.75	52.5	236.25
42	252	52.5	315	73.5	441
60	450	75	562.5	105	787.5
66	495	82.5	618.75	115.5	866.25
54	324	67.5	405	94.5	567
Off-Season + Quality					
Off-Season - Normal Quality	Total Earnings	Off-Season - High Quality	Total Earnings	Off-Season - Excellent Quality	Total Earnings
37.5	168.75	46.875	210.9375	65.625	295.3125
52.5	315	65.625	393.75	91.875	551.25
75	562.5	93.75	703.125	131.25	984.375
82.5	618.75	103.125	773.4375	144.375	1082.8125
67.5	405	84.375	506.25	118.125	708.75
Opposite Season + Quality					
Opposite - Normal Quality	Total Earnings	Opposite - High Quality	Total Earnings	Opposite - Excellent Quality	Total Earnings
52.5	236.25	65.625	295.3125	91.875	413.4375
73.5	441	91.875	551.25	128.625	771.75
105	787.5	131.25	984.375	183.75	1378.125
115.5	866.25	144.375	1082.8125	202.125	1515.9375
94.5	567	118.125	708.75	165.375	992.25

Table 7. Selling Prices of Crops in Winter Season

Winter					
Crop	Base Yield	Base Price	Fertilizer Bonus Yield	Final Yield	
Raspberry	3	34	0	3	
Beets	5	64	2.5	7.5	
Radish	5	72	0	5	
Spinach	6	90	0	6	
Green Onions	6	100	3	9	
Normal Season + Quality					
Normal Season – Normal Quality	Total Earnings	Normal Season – High Quality	Total Earnings	Normal Season - Excellent Quality	Total Earnings
34	102	42.5	127.5	59.5	178.5
64	480	80	600	112	840
72	360	90	450	126	630
90	540	112.5	675	157.5	945
100	900	125	1125	175	1575
Off-Season + Quality					
Off-Season - Normal Quality	Total Earnings	Off-Season - High Quality	Total Earnings	Off-Season - Excellent Quality	Total Earnings
42.5	127.5	53.125	159.375	74.375	223.125
80	600	100	750	140	1050
90	450	112.5	562.5	157.5	787.5
112.5	675	140.625	843.75	196.875	1181.25
125	1125	156.25	1406.25	218.75	1968.75
Opposite Season + Quality					
Opposite - Normal Quality	Total Earnings	Opposite - High Quality	Total Earnings	Opposite - Excellent Quality	Total Earnings
59.5	178.5	74.375	223.125	104.125	312.375
112	840	140	1050	196	1470
126	630	157.5	787.5	220.5	1102.5
157.5	945	196.875	1181.25	275.625	1653.75
175	1575	218.75	1968.75	306.25	2756.25

Table 8. Shop Prices of Seeds

SEED SHOP				
SPRING				
Crop Name	Seed Cost	Growth Days	Base Yield	Base Sell Price
Calamansi	8	2 days	2	20
Radish	10	3 days	3	24
Green Onions	10	3 days	3	26
Carrot	14	4 days	3	30
Lettuce	12	4 days	2	28
AUTUMN				
Crop Name	Seed Cost	Growth Days	Base Yield	Base Sell Price
Blueberries	12	3 days	2	28
Carrot	16	5 days	4	36
Beets	18	5 days	4	40
Cucumbers	20	6 days	4	44
Potato	22	6 days	4	48
SUMMER				
Crop Name	Seed Cost	Growth Days	Base Yield	Base Sell Price
Strawberries	14	3 days	3	30
Beans	18	4 days	4	42
Tomatoes	26	7 days	5	60
Peppers	28	8 days	5	66
Celery	24	7 days	4	54
WINTER				
Crop Name	Seed Cost	Growth Days	Base Yield	Base Sell Price
Raspberry	16	4 days	3	34
Beets	30	6 days	5	64
Radish	34	6 days	5	72
Spinach	40	8 days	6	90
Green Onions	44	9 days	6	100

Table 9. Shop Prices of Upgrades

UPGRADE SHOP			
Item	Cost (Shep)	Effect	Design Purpose
Basic Vertical Plot	500	2 crops at once	Early expansion
Advanced Vertical Plot	1,200	4 crops at once	Mid-game optimization
Hydroponic Vertical Plot	2,200	4 crops + 10% faster growth	Late-game efficiency
Basic Soil	100	Normal growth	Starter
Enriched Soil	300	+10% faster growth	Mid-game
Premium Smart Soil	700	+30% faster growth	Late-game optimization
Battery	120	Powers Heat Lamp	
Premium Fertilizer	300	+2 yield (70%)	Mid-game efficiency
Pest Spray	150	Removes infection	Prevents value loss
Water Balloon	50	Scares animals	Skill-based defense
Heat Lamp	800	Freeze protection	Late-game necessity

3.2.9 Context Diagram

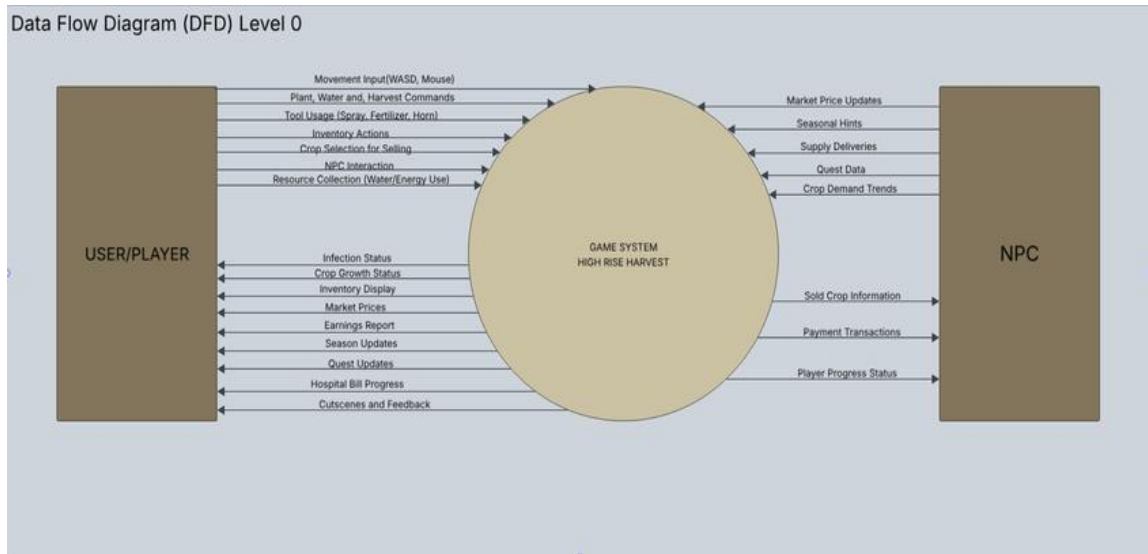


Figure 16. Level 0 Data Flow Diagram

The diagram shows how the User/Player and NPC interact with the *High-Rise Harvest* game system. The player sends inputs such as movement, farming actions, and resource use, which the system processes and returns as outputs like crop status, inventory, earnings, and updates. The NPC provides data such as market prices, quests, and seasonal hints, while receiving transaction and progress information. This represents the system's overall data flow at a high-level view.

3.2.10 Data Flow Diagram

Data Flow Diagram Level 1

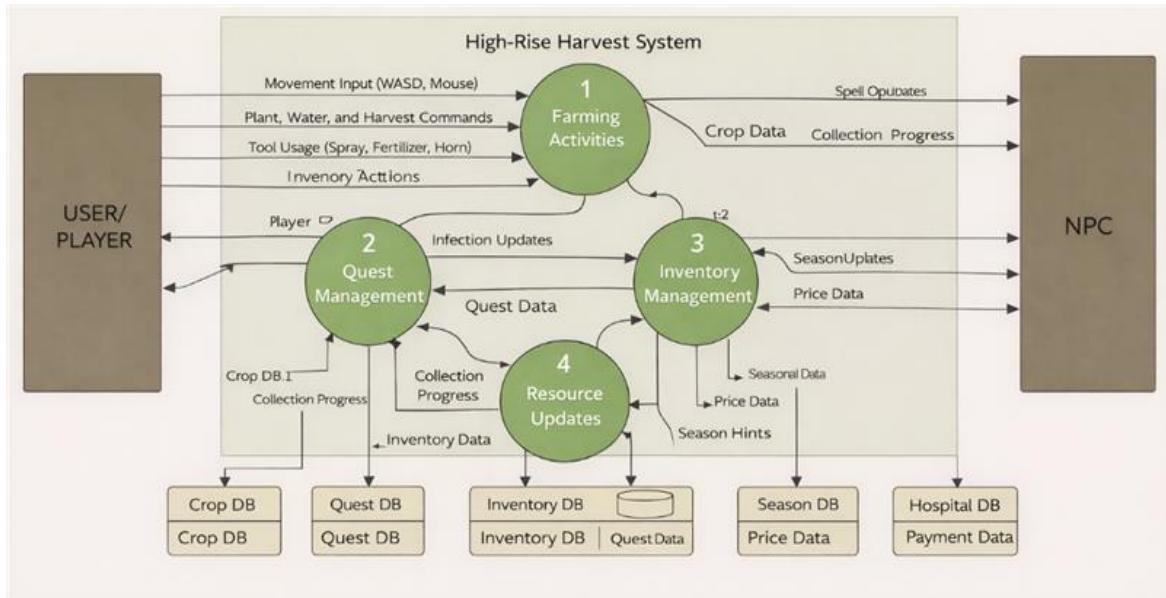


Figure 17. Level 1 Data Flow Diagram

The gameplay of *High-Rise Harvest* is powered by seven connected systems: Crop Management, Inventory, Market, Resources, NPC Interaction, Seasonal Progression, and Defense. These systems rely on Player Money and Season Data, which track funds and environmental conditions. Player actions like planting, watering, and using tools, along with automatic events such as weather and animal attacks, continuously update these systems. Managing them successfully lets players unlock crops, progress through seasons, and work toward paying the family's hospital bills.

3.2.11 Unified Modeling Language

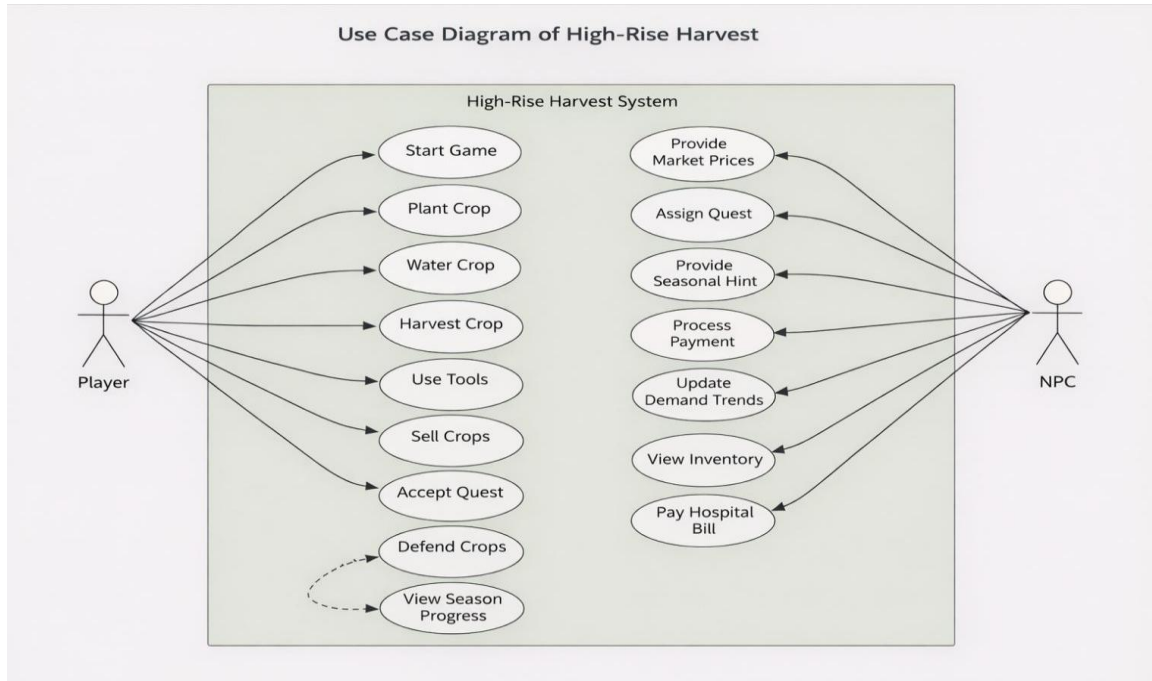


Figure 18. UML, Use Case Diagram

The Use Case Diagram for *High-Rise Harvest* illustrates the interactions between the two primary actors, the Player and the NPC, within the system boundary of the game. The Player is responsible for initiating gameplay and performing core farming activities such as planting crops, watering crops, harvesting produce, using tools, selling crops, accepting quests, defending crops, and viewing season progress. These actions directly affect the game's economic system, resource management, and seasonal progression mechanics. On the other hand, the NPC supports the system by providing market prices, assigning quests, giving seasonal hints, processing payments, updating demand trends, and managing hospital bill transactions. Through these interactions, the system ensures dynamic gameplay by integrating farming simulation, trading, quest management, and progression systems within a structured environment.

3.3 System Architecture

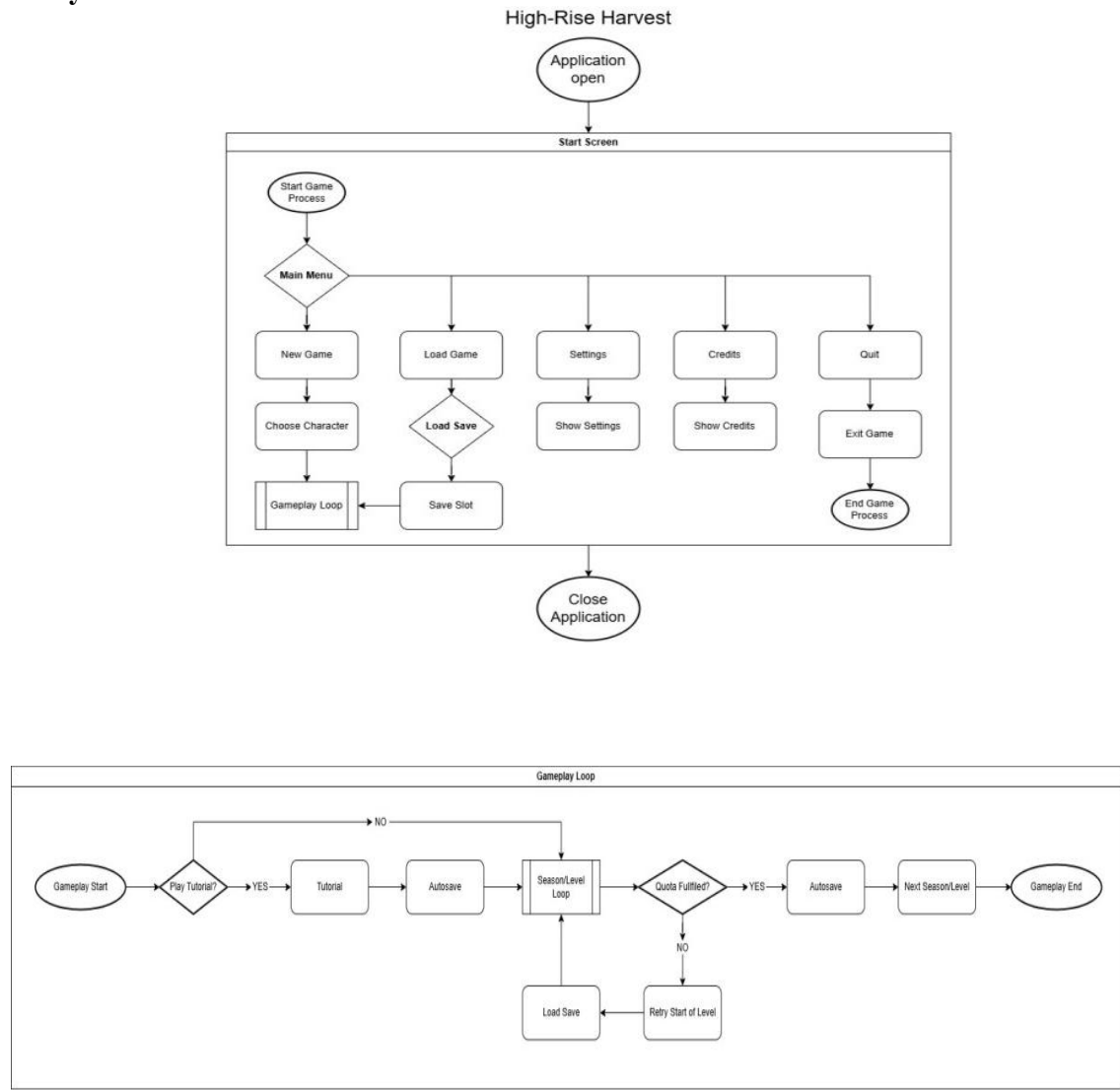


Figure 19. Game Flow

Game Flow

The game begins at the Main Menu. For new players, the menu displays New Game, Settings, Credits, and Quit. For returning players, a Continue option becomes available, allowing them to resume from their last saved progress.

Selecting New Game prompts the player to choose between two characters (male or female). After character selection, the game starts with a tutorial to introduce the mechanics, followed by Level 1 gameplay. The Continue option loads the most recent saved progress. Settings allows players to adjust configurable options, while Credits displays the developers, project adviser, client, and official project links. Choosing Quit prompts a confirmation message before exiting the game.

The gameplay progression begins with the tutorial and continues through four levels. After completing each level, the game automatically saves and gives the player an opportunity to purchase items before transitioning to the next level. If the player fails a level, they restart from the beginning of that level and are given up to three attempts to succeed. Failing three times triggers a bad-ending cutscene where the farm becomes bankrupt or destroyed. Successfully completing all four levels results in a good-ending cutscene where Lolo Grice's hospital bills are paid and the farm prospers.

3.3 Project Development

3.3.1 Hardware Specification

3.3.1.1 System Requirements (Minimum)

- **CPU:** Intel Core i3 1.80 GHz or AMD equivalent
- **Memory:** 4 GB RAM
- **Graphics Card:** NVIDIA GeForce GT 430 or AMD Radeon HD 5450 File Size: 4 GB

- **File Size:** 4 GB
- **OS:** Windows 7 64-bit
- **Storage:** 10 GB available space
- **Input Devices:** Keyboard & Mouse

3.3.1.2 System Requirements (Recommended)

- **CPU:** Intel Core i3 2.20 GHz or AMD equivalent
- **Memory:** 8 GB RAM
- **Graphics Card:** NVIDIA GeForce GTX 550 Ti or AMD Radeon HD 6770
- **File Size:** 4 GB
- **OS:** Windows 10 64-bit
- **Storage:** 10 GB available space
- **Input Devices:** Keyboard & Mouse

3.3.2 Software Specification

Adobe Photoshop - is a raster graphics editor that the proponents used in creating the final concept art and some of the 2D assets and UI.

Autodesk Maya - is a professional 3D animation, modeling, simulation, and rendering toolset that the proponents used in creating and texturing 3D environment and prop models.

Blender - is a free and open-source 3D computer graphics software toolset that the proponents used in creating and texturing 3D environment, character and prop models.

Microsoft Visual Studio - is an integrated development environment that the proponents used in programming the capstone project.

Microsoft Word - is a word processing software that the proponents used to write, format, and finalize documentation, reports, and written requirements for the capstone project.

Substance Painter - is the reference texturing app that the proponents used in finalizing the texturing of the 3D models.

Unity (2021, 2022) - Unity Cross-Platform Game Engine can be used to program both 2D and 3D multiplatform games in real time and it is what the proponents used as a game engine in creating this capstone project.

3.3.3 Development Model

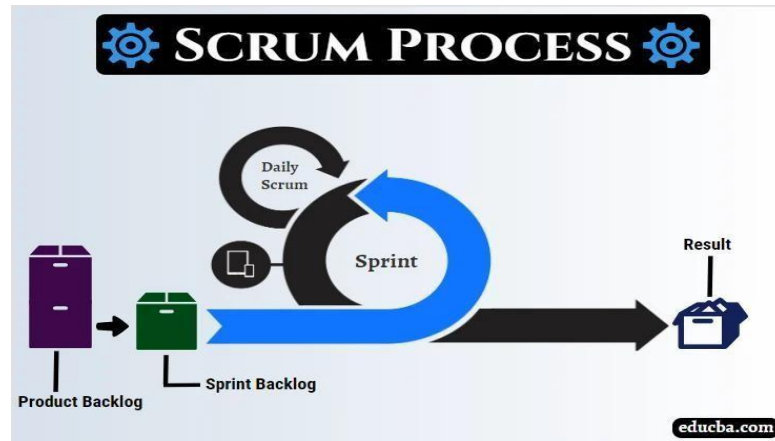


Figure 20. Scrum Development Model

The proponents will develop *High-Rise Harvest: A Farming Simulation Game Raising Awareness of Vertical Farming Practices* using the Scrum development approach, dividing production into short sprints to efficiently complete tasks such as coding mechanics, designing assets, and implementing systems. A product backlog will list all game requirements, while each sprint backlog will contain tasks to be finished within a sprint.

The Project Manager will act as Scrum Master to monitor progress and ensure balanced workload distribution. Daily scrums will be conducted to review progress and resolve issues, and sprint reviews will evaluate completed features. The framework will be adapted to support collaboration, early bug detection, and continuous improvement to ensure the game meets its objectives.

3.4 Data Gathering

Data gathering will be conducted during the department's Open House event at Far Eastern University Institute of Technology, where respondents will be invited to participate in game testing through an interactive kiosk prepared by the proponents. Quantitative data will be collected using evaluation surveys distributed on-site after participants experience the game demo and story presentation, assessing Story, Gameplay, Sound, Animation, and Visuals to measure overall quality and effectiveness in promoting awareness of vertical farming practices. The study will involve 50 target respondents selected through convenience sampling, a non-probability method in which participants are chosen based on availability and accessibility during the event, enabling the proponents to efficiently gather sufficient data to evaluate the game's accessibility, clarity, and impact on a general audience.

3.5 Software Testing

The proponents will conduct Alpha Testing once the game reaches approximately 40 percent of development to identify early issues related to gameplay mechanics, visuals, performance, and usability. Feedback gathered during this phase will be used to improve the game's functionality and design while preventing critical bugs from affecting later development stages. Upon reaching 80 percent completion, another round of internal testing will be conducted together with the project adviser and client to further detect errors, polish game elements, and ensure that the mechanics and objectives of High-Rise Harvest: A Farming Simulation Game Raising Awareness of Vertical Farming Practices are functioning as intended. Afterward, Beta Testing will be carried out with selected

participants representing the target audience to evaluate the overall user experience and confirm that the game effectively communicates its advocacy on vertical farming awareness. Throughout all testing phases, the proponents will implement Black Box Testing, wherein testers will not receive instructions or assistance during gameplay. This approach allows the proponents to assess whether the tutorial, interface, and mechanics are clear enough for players to understand independently and to identify usability issues or hidden bugs that may appear during natural play.

3.6 Sampling Technique

The proponents will utilize convenience sampling as the sampling method for the study. The game will be presented during an Open House event at FEU Institute of Technology, and attendees who are available and willing to participate will serve as respondents. This method is appropriate because it enables the proponents to efficiently gather participants from the intended audience, particularly students and visitors interested in interactive digital media, while ensuring sufficient feedback to evaluate the game's clarity, accessibility, engagement, and effectiveness in promoting awareness of vertical farming concepts.

3.7 Statistical Treatment

Table 10. Likert Scale

Rating	Mean/Range	Linguistic Interpretation
5	4.21 - 5.00	Strongly Agree
4	3.41 - 4.20	Agree
3	2.61 - 3.40	Neutral
2	1.81 - 2.60	Disagree
1	1.00 - 1.80	Strongly Disagree

The study will use a five-point Likert scale to evaluate the results of the game testing. Respondents will rate each statement from Strongly Disagree (1) to Strongly Agree (5). Each response will be assigned a numerical value to allow quantitative analysis. The data will be analyzed using frequency counts, percentages, and weighted means to determine the overall evaluation of the game in terms of usability, gameplay experience, design, and satisfaction. The computed weighted mean will be interpreted using the mean ranges shown in the table. In addition, open-ended questions will be included to gather qualitative feedback. Responses will be analyzed thematically to identify common insights and suggestions, providing a more comprehensive evaluation of the game.

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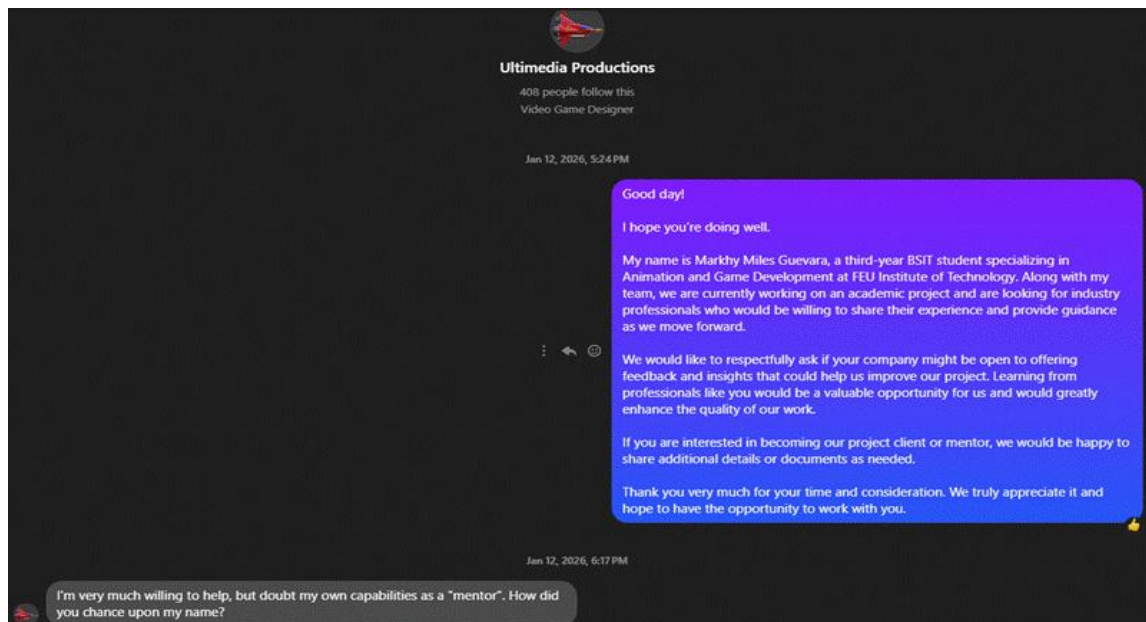
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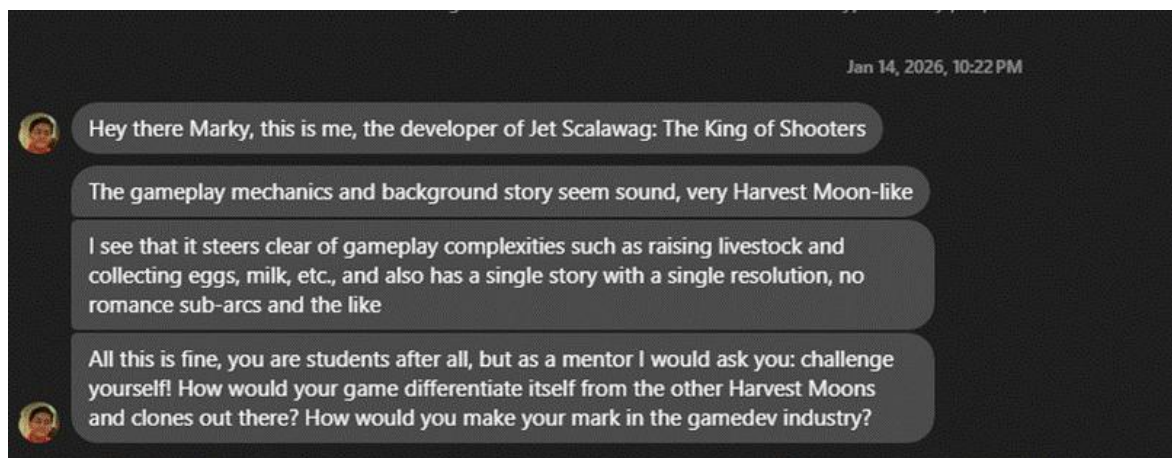
APPENDICES

Appendix A

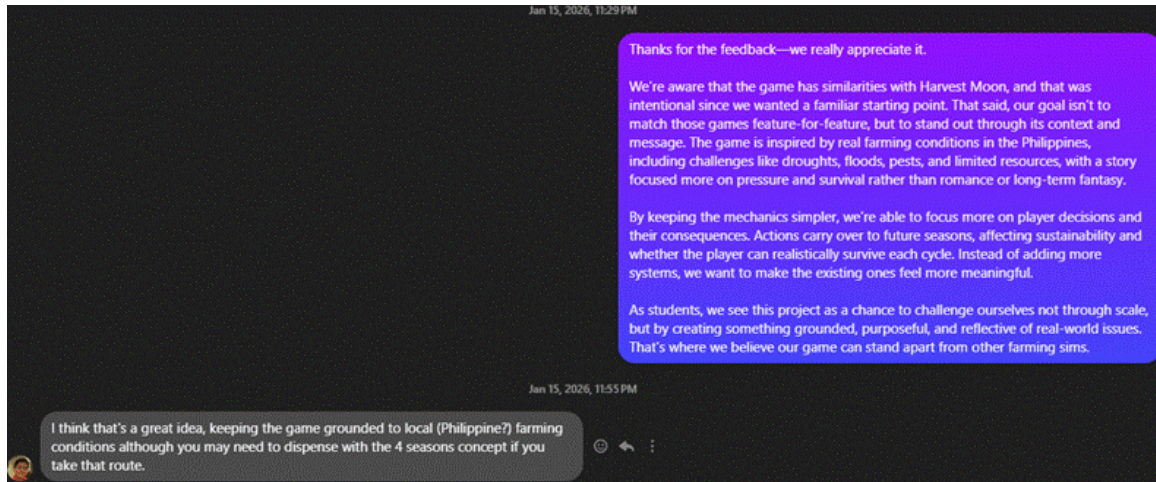
Communication Letter



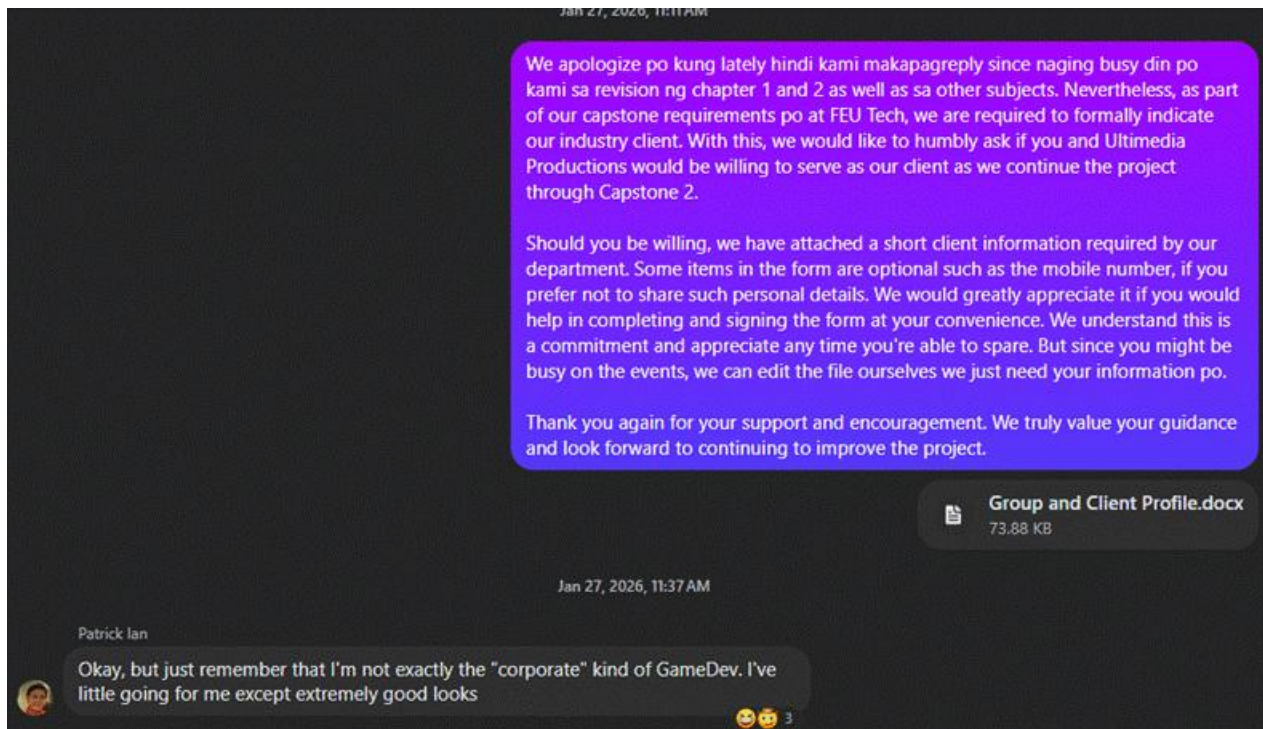
One of our members reached out to Mr. Peralta's company page, requesting to be our client and mentor.



Our mentor contacted a team member directly for smoother communication and shared constructive feedback on improving the game.



One of our members explains the game's direction and receives supportive advice and valuable insights.



One of our members formally asks the recipient to be the project's industry client and receives a lighthearted response.

Appendix B

Client Profile

INFORMATION TECHNOLOGY DEPARTMENT



GROUP PROFILE	
Course Code & Name:	IT0039 – Project Management
Section:	TX31
Course Adviser:	Ronel Ramos
Group/Team Name:	Ink & Embers
Group/Team Members: <i>(Include mobile number & e-mail address beside your name)</i>	1. Aceveda, Kyan Brandon P. - kpaceveda@fit.edu.ph, +639260969002 2. Agustin, Kenn Jiro - kagustin@fit.edu.ph, +639655649943 3. Concepcion, Patrick Dhale A. - paconcepcion@fit.edu.ph +639065854713 4. Guevara, Markhy Miles P. - mpguevara@fit.edu.ph +639925310864
Project Adviser:	Lorenzo Philip Cortes
Approved Project Title:	Seasonal Bloom
Nature of the Project:	Capstone Project

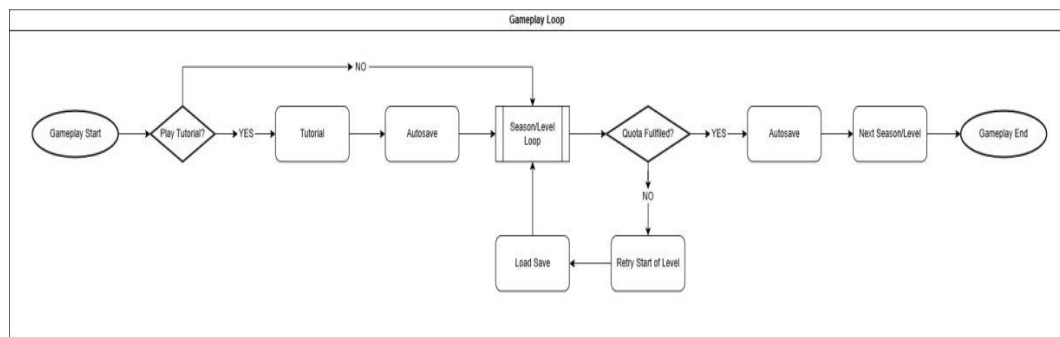
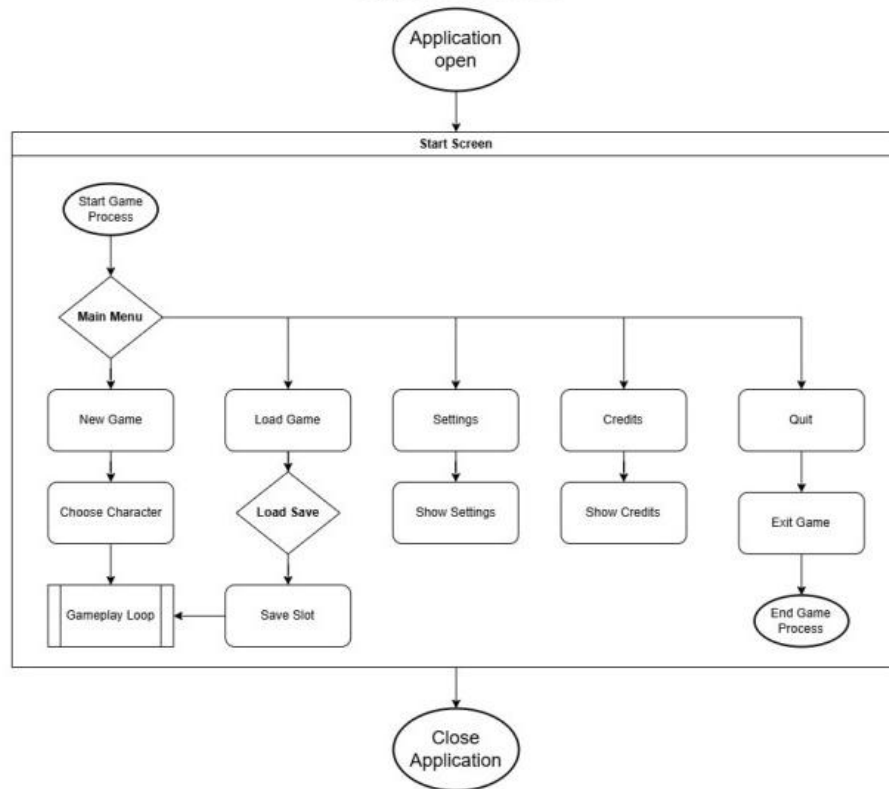


CLIENT PROFILE	
Client (Company Name):	Ultimedia Productions
Company brief description:	Ultimedia Productions is an indie studio built by a solo developer who loves creating fast, action-packed games of all kinds. Every project is crafted with raw passion, bold creativity, and the steady drive of a dedicated developer chasing something epic. The studio's flagship game, Jet Scalawag: The King of Shooters, takes inspiration from legends like Star Fox and Freespace and aims to deliver a space-shooting experience that hits harder, flies faster, and feels downright unforgettable.
Nature of Business:	Game Development
Contact Person:	Patrick Ian Peralta
Position/Designation:	Founder & CEO
Business Address:	678 Dr. Zavalla St., Barangay Kanluran , Sta. Rosa City, Laguna
Office Number:	09432654768
Mobile Number:	09432654768
Email Address:	patrickbperalta@yahoo.com

Appendix C

System Design

High-Rise Harvest



Appendix D

Mentoring Forms and Progress Reports

PROGRESS REPORT

1. Progress reports are required for students taking the course IT0039. This will be submitted weekly to monitor and reassure the academic progress of each group, that the project is going smoothly, and that it will be completed on the expected date.
2. Progress reports are the responsibility of the group and the Project Adviser. The Project Adviser ensures that each group submitted the form by the required date. This will be filed and used for evaluation.

PART A: TO BE COMPLETED BY THE GROUP		
Group Name: Ink & Embers	Program: Bachelor of Science in Information Technology with specialization in Animation & Game Development	
Member's Name: 1. Aceveda, Kyan Brandon P. 2. Agustin, Kenn Jiro 3. Concepcion, Patrick Dhale A. 4. Guevara, Markhy Miles	Term: ☐ 1 st ☒ 2 nd ☐ 3 rd	Academic Year: 2025 - 2026
Mentoring Day: Friday Mentoring Time: 9:30 AM Mentoring Venue: Online Meeting	Reporting Date: December 28, 2025	Reporting Week: Week 1
Title of the Project: Seasonal Bloom: A 3D Vertical Farming Simulation Game		

PART B: LIST OF ACTIVITIES DONE (List and describe each activities in detail)		
Date	Activity	Remarks
December 22, 2025	Our game was reviewed by our project adviser and had made some suggestions for the game which we then applied such as earning money to pay for Gramps' hospital bills by maintaining a sustainable farm and surviving each 30-day cycle without going bankrupt.	Yes that's right, you need a pointing system.
December 23, 2025	On this day we tried to do some possible objectives for our game like upgrade the farm to increase income, maintain Lolo's health and morale, and sustain the farm even after his hospital bills are paid.	Very good on the revision
December 24, 2025	We talked about what our NPC's will do in our game José (Delivery Man) – A close friend of Grice who helps Bobbito by delivering farm produce to buyers. He makes selling crops faster and more efficient. Boogoi (Selling Man) – A seasoned local farmer who runs the agricultural supply store. He provides seeds, tools, and farming advice. Marlyn Karen Davilla (Buying Woman) – A player who regularly buys crops from the farm. She is eager to learn and support vertical farming.	Yes NPCs needs to have a purpose
December 25, 2025	During the discussion, our project adviser suggested adding challenges such as plant parasites, animals that eat crops, and possible robbers. Which we then talked about on how can we apply this to our game.	The more challenging a game is the more it is intriguing
December 26, 2025	We discussed player progression, including skills that the player can level up. We also discussed player progression through safety and defense systems such as fences, pest control, and night security against robbers and animals.	Very good
December 27, 2025	We discussed the game setting, considering adding livestock farming, which could include a ranch and poultry area, along with a storage shed for managing resources.	^^
December 28, 2025	We discussed the game's endings like a good ending where bills are fully paid and the farm is stable, a neutral ending where the player survives but struggles, and a bad ending with bankruptcy and Lolo passing away.	Very good on your progress



PART C: TO BE COMPLETED BY THE MENTOR				
Grade Legend (To be used by the Mentor in grading student's activity) 95 – 100: Excellent 89 – 94: Very Good 83 – 88: Good 77 – 82: Fair 70 – 76: Poor 69 below: Inadequate				
Member's Name:	Assigned Task (50)	Participation (30)	Attendance (20)	TOTAL
1. Aceveda, Kyan Brandon P.				
2. Agustin, Kenn Jiro				
3. Concepcion, Patrick Dhale A.				
4. Guevara, Markhy Miles				


 Lorenzo Philip Cortes
 Project Adviser
Signature Over Printed Name

 December 28, 2025
 Date

PROGRESS REPORT

- Progress reports are required for students taking the course **IT0039**. This will be submitted weekly to monitor and reassure the academic progress of each group, that the project is going smoothly, and that it will be completed on the expected date.
- Progress reports are the responsibility of the group and the Project Adviser. The Project Adviser ensures that each group submitted the form by the required date. This will be filed and used for evaluation.

PART A: TO BE COMPLETED BY THE GROUP		
Group Name: Ink & Embers	Program: Bachelor of Science in Information Technology with specialization in Animation & Game Development	
Member's Name: 1. Aceveda, Kyan Brandon P. 2. Agustin, Kenn Jiro 3. Concepcion, Patrick Dhale A. 4. Guevara, Markhy Miles	Term: [] 1st [✓] 2nd [] 3rd	Academic Year: 2025 - 2026
Mentoring Day: Friday Mentoring Time: 9:30 AM Mentoring Venue: Online Meeting	Reporting Date: January 4, 2026	Reporting Week: Week 2
Title of the Project: Seasonal Bloom: A 3D Vertical Farming Simulation Game		

PART B: LIST OF ACTIVITIES DONE (List and describe each activities in detail)		
Date	Activity	Remarks
December 29, 2025	As a group we have been trying to finalize all of our concepts and works for our game so that it will be easy to understand for the client/mentor	Well done
December 30, 2025	On this day we have been trying to find a client which we need for our project capstone	Keep on looking for client
December 31, 2025	We had compiled a list of game development companies or studios, which we then directly messaged through their emails and facebook page's	Keep up the good work
January 1, 2026	We have not done anything this day because it was new year, this is our rest day	^^
January 2, 2026	Our group has been waiting for the responses from the companies/studios we have messaged	^^
January 3, 2026	We have asked our project adviser if we could have a meeting so that we could discuss more about what other ways we can find a client	^^
January 4, 2026	On this day we had a meeting with our project adviser which then asked us about our progress and also suggested where to find other clients	Very good on keeping me updated 

PART C: TO BE COMPLETED BY THE MENTOR				
Grade Legend (To be used by the Mentor in grading student's activity)				
95 – 100: Excellent		89 – 94: Very Good	83 – 88: Good	77 – 82: Fair
				70 – 76: Poor
				69 below: Inadequate
Member's Name:	Assigned Task (50)	Participation (30)	Attendance (20)	TOTAL
1. Aceveda, Kyan Brandon P.				
2. Agustin, Kenn Jiro				
3. Concepcion, Patrick Dhale A.				
4. Guevara, Markhy Miles				

Lorenzo Philip Cortes
Project Adviser
Signature Over Printed Name

January 4, 2026
Date

PROGRESS REPORT

- Progress reports are required for students taking the course IT0039. This will be submitted weekly to monitor and reassure the academic progress of each group, that the project is going smoothly, and that it will be completed on the expected date.
- Progress reports are the responsibility of the group and the Project Adviser. The Project Adviser ensures that each group submitted the form by the required date. This will be filed and used for evaluation.

PART A: TO BE COMPLETED BY THE GROUP			
Group Name: Ink & Embers	Program: Bachelor of Science in Information Technology with specialization in Animation & Game Development		
Member's Name: 1. Aceveda, Kyan Brandon P. 2. Agustin, Kenn Jiro 3. Concepcion, Patrick Dhale A. 4. Guevara, Markhy Miles	Term: [] 1 st [✓] 2 nd [] 3 rd	Academic Year: 2025 - 2026	
Mentoring Day: Friday Mentoring Time: 9:30 PM Mentoring Venue: Online Meeting	Reporting Date: January 11, 2026	Reporting Week: Week 3	
Title of the Project: Seasonal Bloom: A 3D Vertical Farming Simulation Game			

PART B: LIST OF ACTIVITIES DONE (List and describe each activities in detail)		
Date	Activity	Remarks
January 5, 2026	We have been searching for a client on this day and had to wait for their responses	Keep searching
January 6, 2026	On this day we have done the finalization of the crops/fruits that will be in the game	Very good, gradually finalize the elements of your game
January 7, 2026	We talked about how can we persuade the clients we messaged so that they can be interested in being our client	Good
January 8, 2026	Finalization of the concept of the game, Document organization	Present it to me once it's final
January 9, 2026	We had a meeting with our project adviser which we asked him about what we could do about the enemies for our game and the cycle of the game	Yep, i gave you my opinion
January 10, 2026	This day we have decided to pick some enemies that would be used for our enemies in the game	Good
January 11, 2026	We still are messaging a lot of game companies/studios that can be potential client for our game	Keep searching until you find one



PART C. TO BE COMPLETED BY THE MENTOR				
Grade Legend (To be used by the Mentor in grading student's activity)				
95 – 100: Excellent 89 – 94: Very Good 83 – 88: Good 77 – 82: Fair 70 – 76: Poor 69 below: Inadequate				
Member's Name:	Assigned Task (50)	Participation (30)	Attendance (20)	TOTAL
1. Aceveda, Kyan Brandon P.				
2. Agustin, Kenn Jiro				
3. Concepcion, Patrick Dhale A.				
4. Guevara, Markhy Miles				

Lorenzo Philip Cortes
Project Adviser
Signature Over Printed Name

January 11, 2026 
Date

PROGRESS REPORT

- Progress reports are required for students taking the course IT0039. This will be submitted weekly to monitor and reassure the academic progress of each group, that the project is going smoothly, and that it will be completed on the expected date.
- Progress reports are the responsibility of the group and the Project Adviser. The Project Adviser ensures that each group submitted the form by the required date. This will be filed and used for evaluation.

PART A: TO BE COMPLETED BY THE GROUP		
Group Name: Ink & Embers	Program: Bachelor of Science in Information Technology with specialization in Animation & Game Development	
Member's Name: 1. Aceveda, Kyan Brandon P. 2. Agustin, Kenn Jiro 3. Concepcion, Patrick Dhale A. 4. Guevara, Markhy Miles	Term: [] 1st [✓] 2nd [] 3rd	Academic Year: 2025 - 2026
Mentoring Day: Friday Mentoring Time: 9:30 AM Mentoring Venue: Online Meeting	Reporting Date: January 18, 2026	Reporting Week: Week 4
Title of the Project: Seasonal Bloom: A 3D Vertical Farming Simulation Game		

PART B: LIST OF ACTIVITIES DONE (List and describe each activities in detail)		
Date	Activity	Remarks
January 12, 2026	On this day we have found our client for the capstone	Communicate with your client
January 13, 2026	We have been talking to our client and sending them our overview of the game	Good
January 14, 2026	On this day we have been adjusting our final game overview	Show me once done
January 15, 2026	As a group we have started to make our Chapter 1 for the project	Good
January 16, 2026	We had a meeting with our project adviser and asked him some questions for our project	Don't hesitate to ask me questions, so that we can refine your game
January 17, 2026	We had some changes for the final concept and implemented it to our Chapter 1	Good, i discussed with your members my inputs
January 18, 2026	On this day we have finished the making of Chapter 1	I saw your chapter 1 and reviewed it, i approve it well done

PART C: TO BE COMPLETED BY THE MENTOR				
Grade Legend (To be used by the Mentor in grading student's activity)				
95 – 100: Excellent 89 – 94: Very Good 83 – 88: Good 77 – 82: Fair 70 – 76: Poor 69 below: Inadequate				
Member's Name:	Assigned Task (50)	Participation (30)	Attendance (20)	TOTAL
1. Aceveda, Kyan Brandon P.				
2. Agustin, Kenn Jiro				
3. Concepcion, Patrick Dhale A.				
4. Guevara, Markhy Miles				

Lorenzo Philip Cortes

Project Adviser

Signature Over Printed Name

January 18, 2026

Date

PROGRESS REPORT

1. Progress reports are required for students taking the course IT0039. This will be submitted weekly to monitor and reassure the academic progress of each group, that the project is going smoothly, and that it will be completed on the expected date.
2. Progress reports are the responsibility of the group and the Project Adviser. The Project Adviser ensures that each group submitted the form by the required date. This will be filed and used for evaluation.

PART A: TO BE COMPLETED BY THE GROUP		
Group Name: Ink & Embers	Program: Bachelor of Science in Information Technology with specialization in Animation & Game Development	
Member's Name: 1. Aceveda, Kyan Brandon P. 2. Agustin, Kenn Jiro 3. Concepcion, Patrick Dhale A. 4. Guevara, Markhy Miles	Term: [] 1st [✓] 2nd [] 3rd	Academic Year: 2025 - 2026
Mentoring Day: Friday Mentoring Time: 9:30 AM Mentoring Venue: Online Meeting	Reporting Date: January 25, 2026	Reporting Week: Week 5
Title of the Project: Seasonal Bloom: A 3D Vertical Farming Simulation Game		

PART B: LIST OF ACTIVITIES DONE (List and describe each activities in detail)		
Date	Activity	Remarks
January 19, 2026	On this day we have started to make our Chapter 2	Good keep me updated on your groups progress
January 20, 2026	Our group has been talking to our client about his background information so we could use it for our chapter 1 and chapter 2	Yep, gather info from your client
January 21, 2026	After our professor checked our paper, we needed to revise some parts of our chapter 1	^^
January 22, 2026	We had revised our chapter 1 while still making our chapter 2	Show me your chapter 1 and 2 once they're done
January 23, 2026	On this day we did not have a meeting with our project adviser because of how busy we are as a group	That's okay, i understand that
January 24, 2026	We had finished the revised version of our chapter 1 and almost done with the chapter 2	^^
January 25, 2026	As a group we finished chapter 2	Well done, i will review your chapter 2

PART C: TO BE COMPLETED BY THE MENTOR				
Grade Legend (To be used by the Mentor in grading student's activity)				
95 – 100: Excellent 89 – 94: Very Good 83 – 88: Good 77 – 82: Fair 70 – 76: Poor 69 below: Inadequate				
Member's Name:	Assigned Task (50)	Participation (30)	Attendance (20)	TOTAL
1. Aceveda, Kyan Brandon P.				
2. Agustin, Kenn Jiro				
3. Concepcion, Patrick Dhale A.				
4. Guevara, Markhy Miles				

Lorenzo Philip Cortes
 Project Adviser
Signature Over Printed Name

January 25, 2026
 Date

PROGRESS REPORT

- Progress reports are required for students taking the course **IT0039**. This will be submitted weekly to monitor and reassure the academic progress of each group, that the project is going smoothly, and that it will be completed on the expected date.
- Progress reports are the responsibility of the group and the Project Adviser. The Project Adviser ensures that each group submitted the form by the required date. This will be filed and used for evaluation.

PART A: TO BE COMPLETED BY THE GROUP		
Group Name: Ink & Embers	Program: Bachelor of Science in Information Technology with specialization in Animation & Game Development	
Member's Name: 1. Aceveda, Kyan Brandon P. 2. Agustin, Kenn Jiro 3. Concepcion, Patrick Dhale A. 4. Guevara, Markhy Miles	Term: [] 1st [✓] 2nd [] 3rd	Academic Year: 2025 - 2026
Mentoring Day: Friday Mentoring Time: 10:30 AM Mentoring Venue: Online Meeting	Reporting Date: February 2, 2026	Reporting Week: Week 6
Title of the Project: High-Rise Harvest: A Farming Simulation Game Raising Awareness of Vertical Farming Practices		

PART B: LIST OF ACTIVITIES DONE (List and describe each activities in detail)		
Date	Activity	Remarks
January 26, 2026	Our group has started making the chapter 3	That's good!
January 27, 2026	Made a Gantt chart which we put the scheduled flow of making the project	That's very good!
January 28, 2026	We have been making the prototypes for our game like icons, and movement of the game	Well done!
January 29, 2026	On this day we have talked about how can we make our prototypes better	Keep brainstorming!
January 30, 2026	We have sent our Chapter 1 and 2 to our project adviser to review it and we are waiting for his comments about the paper	Good!
February 1, 2026	After being informed that Sir Cortes was unfit to act as an advisor, we looked for another advisor. Ultimately, Dr. Magcuyao is our new advisor.	Unfortunate but Keep going!
February 2, 2026	On this day we made a MTeams group chat which we sent Dr. Magcuyao's our Chapter 1 and 2 for him to check	That's good!

PART C: TO BE COMPLETED BY THE MENTOR						
Grade Legend (To be used by the Mentor in grading student's activity)						
95 – 100: Excellent		89 – 94: Very Good	83 – 88: Good	77 – 82: Fair	70 – 76: Poor	69 below: Inadequate
Member's Name:	Assigned Task (50)	Participation (30)	Attendance (20)	TOTAL		
1. Aceveda, Kyan Brandon P.	50	30	20	100		
2. Agustin, Kenn Jiro	50	30	20	100		
3. Concepcion, Patrick Dhale A.	50	30	20	100		
4. Guevara, Markhy Miles	50	30	20	100		



Juan Paulo H. Magcuyao, PhD
Project Adviser
Signature Over Printed Name

2/4/2026
Date

PROGRESS REPORT

- Progress reports are required for students taking the course **IT0039**. This will be submitted weekly to monitor and reassure the academic progress of each group, that the project is going smoothly, and that it will be completed on the expected date.
- Progress reports are the responsibility of the group and the Project Adviser. The Project Adviser ensures that each group submitted the form by the required date. This will be filed and used for evaluation.

PART A: TO BE COMPLETED BY THE GROUP		
Group Name: Ink & Embers	Program: Bachelor of Science in Information Technology with specialization in Animation & Game Development	
Member's Name: 1. Aceveda, Kyan Brandon P. 2. Agustin, Kenn Jiro 3. Concepcion, Patrick Dhale A. 4. Guevara, Markhy Miles	Term: [] 1 st [✓] 2 nd [] 3 rd	Academic Year: 2025 - 2026
Mentoring Day: Friday Mentoring Time: 10:30 AM Mentoring Venue: Online Meeting	Reporting Date: February 9, 2026	Reporting Week: Week 7
Title of the Project: High-Rise Harvest: A Farming Simulation Game Raising Awareness of Vertical Farming Practices		

PART B: LIST OF ACTIVITIES DONE (List and describe each activities in detail)		
Date	Activity	Remarks
February 3, 2026	On this day we have completed the minor revisions for our Chapter 1 and 2	Nice job!
February 4, 2026	We have been progressing on making our Chapter 3	Very good!
February 5, 2026	Our member had done the items for our game in Autodesk Maya	That's good!
February 6, 2026	Through this day we have been juggling around making our activities and Chapter 3	Thank you for making an extra effort!
February 7, 2026	We had decided to continue Chapter 3 on the next day because of a Game Design project which needed to be submitted on this day	That's okay but keep working on it!
February 8, 2026	As a group we have done the feasibilities of the Chapter 3	Goodjob!
February 9, 2026	We are still working on the Chapter 3	Good!

PART C: TO BE COMPLETED BY THE MENTOR				
Grade Legend (To be used by the Mentor in grading student's activity) 95 – 100: Excellent 89 – 94: Very Good 83 – 88: Good 77 – 82: Fair 70 – 76: Poor 69 below: Inadequate				
Member's Name:	Assigned Task (50)	Participation (30)	Attendance (20)	TOTAL
1. Aceveda, Kyan Brandon P.	50	30	20	100
2. Agustin, Kenn Jiro	50	30	20	100
3. Concepcion, Patrick Dhale A.	50	30	20	100
4. Guevara, Markhy Miles	50	30	20	100


 Juan Paulo H. Magcuyao, PhD
 Project Adviser
 Signature Over Printed Name

2/9/2026

Date

PROGRESS REPORT

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2. Progress reports are the responsibility of the group and the Project Adviser. The Project Adviser ensures that each group submitted the form by the required date. This will be filed and used for evaluation.

PART A: TO BE COMPLETED BY THE GROUP		
Group Name: Ink & Embers	Program: Bachelor of Science in Information Technology with specialization in Animation & Game Development	
Member's Name: 1. Aceveda, Kyan Brandon P. 2. Agustin, Kenn Jiro 3. Concepcion, Patrick Dhale A. 4. Guevara, Markhy Miles	Term: [] 1st [✓] 2nd [] 3rd	Academic Year: 2025 - 2026
Mentoring Day: Friday Mentoring Time: 10:30 AM Mentoring Venue: Online Meeting	Reporting Date: February 16, 2026	Reporting Week: Week 8
Title of the Project: High-Rise Harvest: A Farming Simulation Game Raising Awareness of Vertical Farming Practices		

PART B: LIST OF ACTIVITIES DONE (List and describe each activities in detail)		
Date	Activity	Remarks
February 10, 2026	As a group have still been writing our Chapter 3	That's good!
February 11, 2026	We have already finished half the work on Chapter 3	Goodjob!
February 12, 2026	Our group finished the making of the concept artwork	Well done!
February 13, 2026	On this day we have been working on the tables in Chapter 3	That's good!
February 14, 2026	As a group we have finished our tables throughout Chapter 3	Well done!
February 15, 2026	We have sent our Chapter 3 to our project adviser to check	Good!
February 16, 2026	We have revised our Chapter 3 and also have been checked by our project adviser	That's good!

PART C: TO BE COMPLETED BY THE MENTOR				
Grade Legend (To be used by the Mentor in grading student's activity)				
95 – 100: Excellent 89 – 94: Very Good 83 – 88: Good 77 – 82: Fair 70 – 76: Poor 69 below: Inadequate				
Member's Name:	Assigned Task (50)	Participation (30)	Attendance (20)	TOTAL
1. Aceveda, Kyan Brandon P.	50	30	20	100
2. Agustin, Kenn Jiro	50	30	20	100
3. Concepcion, Patrick Dhale A.	50	30	20	100
4. Guevara, Markhy Miles	50	30	20	100


Juan Paulo H. Magcuyao, PhD
 Project Adviser
 Signature Over Printed Name

2/16/2026

Date

PROGRESS REPORT

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PART A: TO BE COMPLETED BY THE GROUP		
Group Name: Ink & Embers	Program: Bachelor of Science in Information Technology with specialization in Animation & Game Development	
Member's Name: 1. Aceveda, Kyan Brandon P. 2. Agustin, Kenn Jiro 3. Concepcion, Patrick Dhale A. 4. Guevara, Markhy Miles	Term: ☐ 1 st ☒ 2 nd ☐ 3 rd	Academic Year: 2025 - 2026
Mentoring Day: Friday Mentoring Time: 10:30 AM Mentoring Venue: Online Meeting	Reporting Date: February 23, 2026	Reporting Week: Week 9
Title of the Project: High-Rise Harvest: A Farming Simulation Game Raising Awareness of Vertical Farming Practices		

PART B: LIST OF ACTIVITIES DONE (List and describe each activities in detail)		
Date	Activity	Remarks
February 17, 2026	On this day we have finished our Chapter 3	That's good!
February 18, 2026	As a group we are fixing the proper alignments of our Chapters 1-3	Very good!
February 19, 2026	We are preparing our schedule for our mock defense this day	Well done!
February 20, 2026	We have fixed our page numbers on Chapters 1-3	Goodjob!
February 21, 2026	We have talked to our project adviser on how and what are we going to do in the mock defense	Good!
February 22, 2026	Our group is working on making the powerpoint for the mock defense	That's good!
February 23, 2026	We are still working on our powerpoint on this day	Keep working on it!

PART C: TO BE COMPLETED BY THE MENTOR				
Grade Legend (To be used by the Mentor in grading student's activity)				
95 – 100: Excellent 89 – 94: Very Good 83 – 88: Good 77 – 82: Fair 70 – 76: Poor 69 below: Inadequate				
Member's Name:	Assigned Task (50)	Participation (30)	Attendance (20)	TOTAL
1. Aceveda, Kyan Brandon P.	50	30	20	100
2. Agustin, Kenn Jiro	50	30	20	100
3. Concepcion, Patrick Dhale A.	50	30	20	100
4. Guevara, Markhy Miles	50	30	20	100


Juan Paulo H. Magcuyao, PhD
 Project Adviser
Signature Over Printed Name

2/23/26

Date

PROGRESS REPORT

1. Progress reports are required for students taking the course **IT0039**. This will be submitted weekly to monitor and reassure the academic progress of each group, that the project is going smoothly, and that it will be completed on the expected date.
2. Progress reports are the responsibility of the group and the Project Adviser. The Project Adviser ensures that each group submitted the form by the required date. This will be filed and used for evaluation.

PART A: TO BE COMPLETED BY THE GROUP		
Group Name: Ink & Embers	Program: Bachelor of Science in Information Technology with specialization in Animation & Game Development	
Member's Name: 1. Aceveda, Kyan Brandon P. 2. Agustin, Kenn Jiro 3. Concepcion, Patrick Dhale A. 4. Guevara, Markhy Miles	Term: [] 1 st [✓] 2 nd [] 3 rd	Academic Year: 2025 - 2026
Mentoring Day: Friday Mentoring Time: 10:30 AM Mentoring Venue: Online Meeting	Reporting Date: March 2, 2026	Reporting Week: Week 10
Title of the Project: High-Rise Harvest: A Farming Simulation Game Raising Awareness of Vertical Farming Practices		

PART B: LIST OF ACTIVITIES DONE (List and describe each activities in detail)		
Date	Activity	Remarks
February 24, 2026	We have finished our presentation for our mock defense	That's good!
February 25, 2026	We are trying to schedule our mock defense	Keep it up!
February 26, 2026	Our adviser checked our presentation and said it was good	Very good!
February 27, 2026	On this day we are still trying to get a schedule and also studying our paper	Keep going!
February 28, 2026	We have been studying our paper and preparing for the mock defense	Study it more!
March 1, 2026	On this day we have sent our document to our adviser	That's good!
March 2, 2026	We are going to do our mock defense	Goodluck!

PART C: TO BE COMPLETED BY THE MENTOR				
Grade Legend (To be used by the Mentor in grading student's activity)				
95 – 100: Excellent 89 – 94: Very Good 83 – 88: Good 77 – 82: Fair 70 – 76: Poor 69 below: Inadequate				
Member's Name:	Assigned Task (50)	Participation (30)	Attendance (20)	TOTAL
1. Aceveda, Kyan Brandon P.	50	30	20	100
2. Agustin, Kenn Jiro	50	30	20	100
3. Concepcion, Patrick Dhale A.	50	30	20	100
4. Guevara, Markhy Miles	50	30	20	100


 Juan Paulo H. Magcuyao, PhD
 Project Adviser
 Signature Over Printed Name

3/1/26
 Date

Appendix E

Project Advising Commitment Form



FEU Institute of Technology

MENTORING COMMITMENT FORM

CCS DEPARTMENT

Term and School Year

Date:

I, **Dr. Juan Paulo H. Magcuyao**, one of the faculty members of the College of Computer Studies under the IT Department, commits to the group/team as their Project Adviser, at least thirty (30) minutes of my time outside my residency hours starting on **02/01/2026**.

Below are the details of my mentoring:

Course Code and Name:	IT0039 Project Management
Section:	TX31
Course Adviser:	Ronel F. Ramos
Term and School Year:	2 nd Term 2025 – 2026
Group/Team Name:	Ink & Embers
Project Title:	"High-Rise Harvest: A Farming Simulation Game Raising Awareness of Vertical Farming Practices"
Group Members	Aceveda, Kyan - kpaceveda@fit.edu.ph, +639260969002 Agustin, Kenn Jiro - kagustin@fit.edu.ph, +639655649943 Concepcion, Patrick Dhale - paconcepcion@fit.edu.ph +639065854713 Guevara, Markhy Miles - mpguevara@fit.edu.ph +639925310864
Client (Company Name):	Ultimedia Productions
Mentoring Day:	Friday
Mentoring Time:	9:30 am
Mentoring Venue:	Online

Note for FEU Tech Associates: By signing in this form, the mentor acknowledges that he will voluntarily perform the mentoring duty outside of his regular working hours. Furthermore, it is understood that any amount to be paid by the College in the performance of this duty shall not be considered a demandable part of the mentor's salary or an established College practice or precedent but merely an act of gratuity on the part of the College which may be discontinued or revised at anytime at the College's sole discretion.

A handwritten signature in black ink, appearing to be 'JPM', written over a horizontal line.

Juan Paulo H. Magcuyao, PhD

Faculty

Signature Over Printed Name

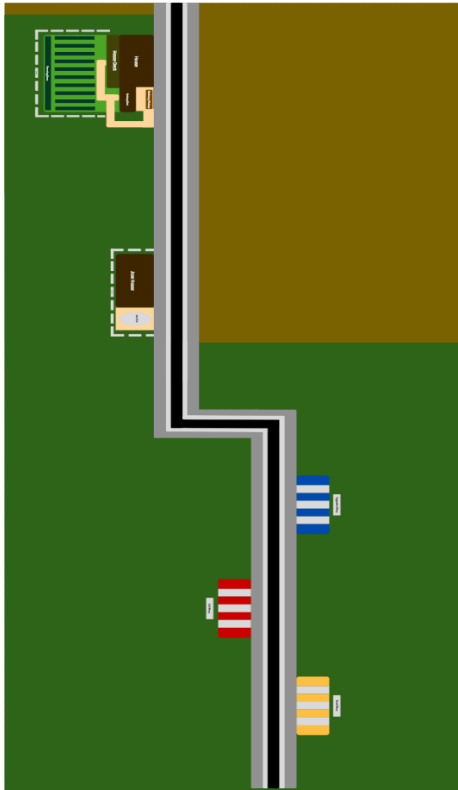
Appendix F

Characters and Map Layout

	Bobbito is the main playable character of High-Rise Harvest. He is the grandchild of Grice and takes responsibility for maintaining the family farm after his grandfather falls ill and is hospitalized. Through the player's control, Bobbito plants crops, manages resources, protects the farm from threats, and gradually develops the backyard into a vertical farming system to help pay for his grandfather's medical expenses.
	Grice is Bobbito's grandfather and the original owner of the farm. Before becoming ill, he dreamed of building a sustainable farm despite the hardships he experienced during his youth. After being hospitalized, he entrusts Bobbito with the responsibility of continuing his work and caring for the farm.

	José is responsible for collecting harvested crops from Bobbito and delivering them to the market. He also provides useful information about seasonal crop trends and profitability, helping the player make better farming decisions for the upcoming seasons.
	Marlyn Karen Davilla is a buyer at the market who purchases crops from José. She represents the market demand and helps determine the value of the farm's produce, influencing the economic progression of the game.
	Boogoi is a seasoned local farmer known for his years of hands-on experience in agriculture and deep understanding of crop management. He owns a well-stocked agriculture supply store where Bobbito regularly purchases essential farming items such as seeds, tools, and fertilizers. Beyond just selling goods, Boogoi also serves as a

	mentor figure, offering practical advice and valuable insights to help Bobbito improve his farming skills and make better decisions for his growing farm.
 The image contains four illustrations of farm pests: a brown squirrel with a large bushy tail, a grey raccoon with a striped tail, a brown boar with a small tusk, and a green caterpillar with yellow spots.	Caterpillars are pests that infect crops and reduce their quality if left untreated. Players must use pest control items or tools to prevent the infection from spreading across the farm. Boars are aggressive animals that may try to enter and attack the farm and damage crops or farming structures. Players must defend their farm and scare them away to prevent crop loss. Squirrels are small animals that steal or damage crops. Although less destructive than larger animals, they still reduce crop yield if not managed properly. Raccoons invade the farm at night or during certain events. They can disrupt farming operations by damaging crops or stealing harvested produce.

	The map layout of High-Rise Harvest is designed as a compact farming environment that allows players to easily navigate between key areas such as the farm lot, house, storage shed, pathways, and market stalls. The farm area on the left side is where Bobbito plants, waters, fertilizes, and harvests crops, while the house and storage areas support story events and resource management. On the right side, market stalls allow players to interact with NPCs like José, Boogoi, and Marlyn Karen Davilla to deliver crops, purchase tools and seeds, and sell harvested produce.
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Appendix G

Curriculum Vitae



ACEVEDA, KYAN BRANDON P.

About Me

I am currently a 3rd-year college student at FEU Institute of Technology pursuing a Bachelor of Science in Information Technology, majoring in Animation and Game Development. In my free time, I enjoy playing video games, playing basketball, creating 3D character models, and coding. In the future, I aspire to become a game developer and continue improving my skills as a developer in the game development industry.

Contact

 +926 0969 002

 kyan.aceveda@gmail.com

 16 Branches Street, Project 8
GSIS Village, Quezon City

Skills

- 3D Modeling
- Programming

Education

(2011-2016)

FIRST LINE INTEGRATED SCHOOL

Junior high School

(2017-2020)

DR. CARLOS S. LANTING COLLEGE

Senior high School

(2023-PRESENT)

FEU INSTITUTE OF TECHNOLOGY

BSIT - Animation And Game Development

Licenses & Certification:

CCNA: INTRODUCTION TO NETWORKS

Issued by Cisco Networking Academy on
November 27, 2024

CISCO CERTIFIED SUPPORT TECHNICIAN NETWORKING

Issued by Cisco Networking Academy on
February 15, 2025

INFORMATION TECHNOLOGY SPECIALIST FOR PYTHON

Issued by Certiport on February 15, 2025



AGUSTIN, KENN JIRO

About Me

I am currently a 3rd-year college student at FEU Institute of Technology pursuing a Bachelor of Science in Information Technology, majoring in Animation and Game Development. I have recently developed an interest in Live2D rigging. In my free time, I enjoy playing video games and watching movies, and I aspire to further improve my skills as a rigger in the future.

Contact

 +965 564 9943

 kenjeywoo@gmail.com

 3 Loro St. Villillia Village, Talipapa,
Novaliches, Quezon City

Skills

- 3D Modeling
- Programming

Education

(2011-2016)

IMMANUEL HOPE CHRISTIAN ACADEMY

Junior high School

(2017-2020)

DR. CARLOS S. LANTING COLLEGE

Senior high School

(2023-PRESENT)

FEU INSTITUTE OF TECHNOLOGY

BSIT - Animation And Game Development

Licenses & Certification:

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November 27, 2024

CISCO CERTIFIED SUPPORT TECHNICIAN NETWORKING

Issued by Cisco Networking Academy on
February 15, 2025

INFORMATION TECHNOLOGY SPECIALIST FOR PYTHON

Issued by Certiport on February 15, 2025



CONCEPCION, PATRICK DHALE A.

About Me

I am currently a 3rd-year college student at FEU Institute of Technology pursuing a Bachelor of Science in Information Technology, majoring in Animation and Game Development. I have recently developed an interest in game system development. In my free time, I enjoy playing video games, and I aspire to further improve my skills as a game dev and a programmer in the future.

Contact

 +906 5854 713

 patcon.concepcion1304@gmail.com

 España Blvd, Sampaloc, Manila,
1008 Metro Manila

Skills

- 3D Modeling
- Programming

Education

• (2011-2016)

LA SALETTE OF AURORA

Junior high School

• (2017-2020)

TOP ACHIEVERS PRIVATE SCHOOL

Senior high School

• (2023-PRESENT)

FEU INSTITUTE OF TECHNOLOGY

BSIT - Animation And Game Development

Licenses & Certification:

CCNA: INTRODUCTION TO NETWORKS

Issued by Cisco Networking Academy on
November 9, 2023

Cisco Certified Support Technician Networking

Issued by Cisco Networking Academy on
February 15, 2025



GUEVARA, MARKHY MILES P.

About Me

I am currently a 3rd-year college student at FEU Institute of Technology pursuing a Bachelor of Science in Information Technology, majoring in Animation and Game Development. I have developed an interest in modeling and animation. In my free time, I enjoy playing video games, sports, going to the gym, cooking, and watching movies, and I aspire to become a game developer whose games are played by millions.

Contact

 +992 5310 864

 mpguevara@fit.edu.ph

 1 I. S. Senga St
Calumpang, City, Marikina, 1801
Metro Manila

Skills

- 3D Modeling
- Coding

Education

(2011-2016)

KALUMPANG ELEMENTARY SCHOOL

Junior high School

(2017-2020)

APEC SCHOOLS
Senior high School

(2023-PRESENT)

FEU INSTITUTE OF TECHNOLOGY
BSIT - Animation And Game Development

Licenses & Certification:

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