

# ZOMBIES APOCALYPSE (A 3D MOBILE GAME)



<b>DISCIPLINE</b>	:	COMPUTER SCIENCE
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ZOMBIES APOCALYPSE

FOR

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A PROJECT SUBMITTED IN THE PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE  
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## ABSTRACT

In this project, A 3D interactive game for Android users named” Zombies Apocalypse” is developed, Which invites players into a chilling adventure set within a haunted school overtaken by Zombies. This 3D mobile game challenges players to navigate through stages while gathering supplies to encounter zombie attacks. As players progress, they have to gather healing, and weapons to survive in the zombie’s abandoned school, we offer users a drawing-in and realistic gaming experience that will keep players attracted to the game and get our players ready for a world where every choice matters and staying alive is everything. so the players prepare for an immersive experience where remaining alive is the ultimate task.

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# Chapter 1

## INTRODUCTION

In the “Zombies Apocalypse” project, the aim is to develop an interactive 3D game targeting an audience aged 12-25. The game is designed for Android users. At the beginning of the “Zombies Apocalypse” game the character “student” has fallen asleep in a computing lab on the top floor of the CS&IT building. The computer makes a noise as it goes off “due to the building on lockdown” It wakes the character up. The character is unaware of what has happened in the building.

### 1.1 Purpose of the Project

The purpose of this project is to create a unique and entertaining mobile game that can be both immersive and fun. To match the needs of today’s mobile gaming by providing a high-quality gaming experience and offering Android users the complete game.

### 1.2 Communications and Work Plan

The project Communication plan and Project Report include the following:

Table 1.1: Reports Submission

Description	Timing	Audience	Creator/Author	Sign-off Authority
PROJECT PROGRESS RE-PORTS	Weekly	Team Member	Project Manager	Program Manager
HIGHLIGHT RE-PORTS	Monthly	Project Supervisor, Team Member	Project Manager	Program Manager
TRAINING PLAN	Before Publishing	Users and department managers	Change Manager	Project Sponsor

### 1.3 Scope of Project

The scope of the project includes:

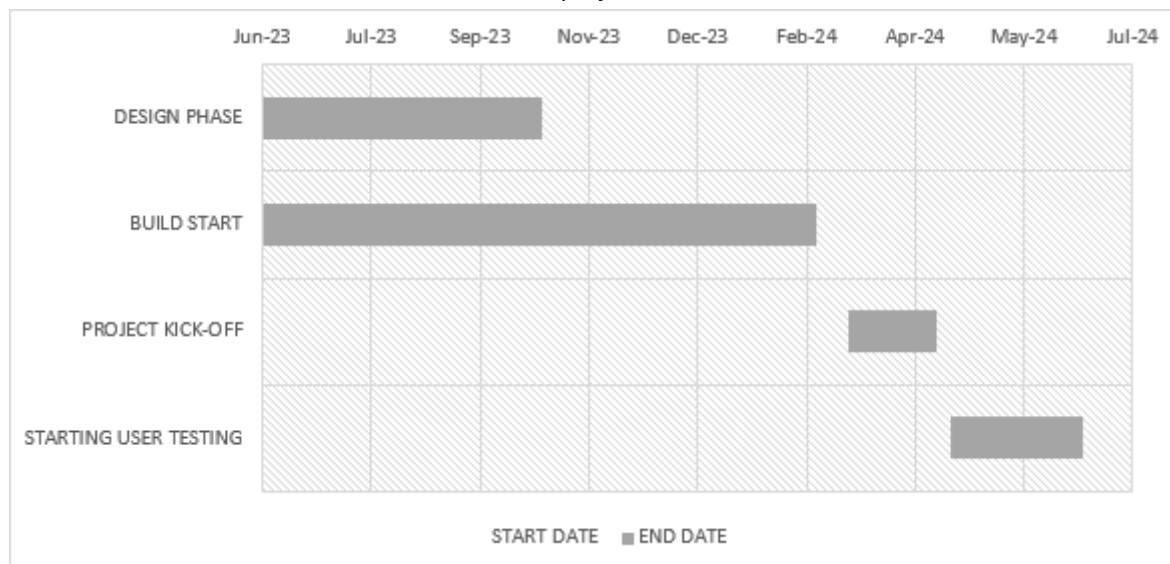
- Game development using Unity, Blender, Adobe PhotoShop, and Visual Studio
- Creation of 3D models for characters, buildings, and objects

- Implementation of gameplay ideas, including navigation
- Publishing the project on the Play Store for Android users

## 1.4 Project Milestones

The project Milestones include:

Table 1.2: project Milestone



## 1.5 Aims and Objectives

The objectives of the project are the following:

- To entertain users through our mobile game
- To offer an attractive game that engages the targeted audience
- To offer gameplay with a difficult progression to provide a satisfying challenge for players
- To provide users with an unforgettable gaming experience
- To create an engaging game with storylines
- To create an easily navigated and realistic game for Android users

## 1.6 Project Activities

- Concept and Design (Weeks 1-2)
- Gameplay Mechanics (Weeks 3-5)
- Level Design (Weeks 6-10)
- Art and Graphics (Weeks 11-16)
- Story and scripting (Weeks 17-19)
- Testing (Weeks 17-19)
- Quality Maintenance (Weeks 20-23)

- Final Art and Sounds (Weeks 24-27)
- User Interface (Weeks 28-30)
- Final Testing and Bug fixing (Weeks 31-32)

## 1.7 Financial/Budget Requirements

This section includes detailed information about the financial aspects related to the project, initiative, or proposal also this section is crucial for stakeholders and decision-makers to understand the economic implications and resources needed to support the endeavor.

### 1.7.1 Google Developers Account

Publishing the game on the Play Store is a paid task and we need a Google Console account for it, also called a Google Developers account, so that account fee is included.

### 1.7.2 Revenue Generation

For revenue generation, the ads are integrated into the game to earn some financial support from the game, this financial support will help us to improve the game's overall performance.

## 1.8 Resource Plan

A resource plan involves a full detailed description of the assets needed in our project to achieve project completion. These assets include personnel, equipment, materials, facilities, and any other requirements for project completion. Our project resource plan is given below.

Table 1.3: Roles and Responsibilities

Role	Responsibility	Skills Required
PROJECT MANAGER	Overall project management	Leadership
DESIGNERS	User interface and user experience design	UI/UX Design
MARKETING MANAGER	External communication and marketing efforts	Marketing
DEVELOPERS	Game Development	programmer, Gaming Logics
ANIMATORS	3D Modeling, icons, Animations	3D modelin

## 1.9 Development Requirement

The development requirements of a project relate to the particular criteria, functionalities, features, or results that must be accomplished during the development phase of the project. The development requirements for the Zombies Apocalypse is given below:

### 1.9.1 Unity Game Engine

Unity is the keystone of our game development journey for "Zombies Apocalypse." To craft our immersive digital world, depending on Unity's healthy suite of tools and features. Also prioritizing working with the latest version to utilize the full potential.

### 1.9.2 Blender/Maximo

Blender appears as an essential supporter. With its versatile toolkit for 3D modeling and animation, Prioritize the latest version of Blender to ensure compatibility with Unity and unlock its newest enhancements, or just use the Adobe 3D Modeling website called Maximo which provides a large number of characters with their animations. [1]

### 1.9.3 Adobe Photoshop

Adobe Photoshop is our trusted companion in this game. Designing stunning 2D graphics, textures, and UI elements that raise the overall beautiful appeal of our game. Prioritizing the latest version of Photoshop to seamlessly integrate with Unity's asset pipeline and tap into its cutting-edge features.

### 1.9.4 Visual Studio

Coding is the heart and soul of our game demands, For a reliable programming environment Visual Studio perfectly fits this requirement. Whether scripting intricate gameplay mechanics or refining logic, relying on the most up-to-date version of Visual Studio ensures a fluid and seamless coding experience, we prefer to use Visual Studio because it is also interconnected with the Unity Game Engine which is used for making our game.

## 1.10 Device Requirement

The hardware requirements for the "Zombies Apocalypse" game include:

- An Android-Device with a minimum Android Version 6.0 or is required to download this game
- Having 4GB RAM or above is required to play the game efficiently
- A minimum of 600MB or more storage is required for downloading the game
- The user who has a powerful device shall be able to enjoy the game with full experience

- The game requires an Internet connection for specific features, such as login to the game, or updating the game
- The game considers factors for power utilization to ensure the game does not drain the device battery extremely

## 1.11 Initial Risk Log

The initial risk log commonly highlights possible difficulties that might affect the project's successful conclusion. It acts as a thorough record of problem-solving potential unsteady blocks that could delay project success. This document enables teams to early challenge issues before they increase. Within this record, risks are identified, sorted, and examined to scale their probable effect and likelihood of happening. The following is our project's Initial Risk log:

Table 1.4: Initial risk log

Description	Likelihood	Impact	Mitigating Actions
Timeline Delays	High	Very High	Continuously monitoring the overall project progress and ensuring that phase is completed on time
Team Collaboration	Medium	Medium	Regular Communication between team members
Inability to recruit skilled resource	Medium	High	Engage with Professionals
Technical Complexity	Medium	Medium	Ensuring proficiency in the Tools and technology

## Chapter 2

# BACKGROUND STUDY

The birth of video games has slowly shifted the meaning of traditional games into digitalized multimedia games. The term games refers to the meaning of video games. Nowadays, games can be played on almost any device, and that is why developing games can be a profitable industry. To support the growth of the gaming industry,

- Original Equipment Manufacturers publicly distribute their software development kit and application programming interface to attract people to become “indie developers”
- According to Pressman, a game is a kind of software that provides entertainment

### 2.1 Growth of the Gaming Industry

The gaming industry has seen significant growth through progressions in developments, visuals, and continuous collaboration mechanics. From humble 2D games to cheerful 3D encounter games, the gaming business has consistently pushed limits. The historical development of gaming is traced in this chapter, highlighting significant turning points and trends that have shaped the current gaming ecosystem.

#### 2.1.1 Role of Graphics in Gaming

Top-notch visuals upgrade the overall gaming experience. The significance of high graphics in our project is to enhance user engagement and satisfaction, which examines the significance of visuals in attracting and recalling gamers.

#### 2.1.2 Mobile Gaming

Mobile gaming has developed into a certain type of diversion, capturing many clients globally. From relaxed puzzles to intense multiplayer encounter games, multipurpose games take care of a wide range of interests. The comfort of gaming on cell phones and tablets has democratized the gaming divisions, allowing anybody with a workable gadget to take part in the gaming local area. Which pushes the innovation of mobile gaming.



## 2.2 Unity as a Game Development Platform

With a wide-ranging set of tools and features to help developers realize their creative ideas, Unity Game Engine stands out as a healthy and adaptable platform for game development. Its natural point of interface and comprehensive documentation make it available to developers to change their ability levels, from beginners to old professionals. The resource store “Unity Asset store” further improves Unity’s capacities by giving a fabulous library of resources, modules, and instruments to speed up and smooth out work processes. Unity’s active community also enhances the development experience by encouraging collaboration and knowledge sharing.

## 2.3 Related Games

In the world of mobile gaming, there are many different aspects that make up the gaming community but the projects discussed below are closely related to our game.

### 2.3.1 Dead Trigger: Survival shooter [2]

A popular mobile first-person shooter, Dead Trigger tosses players into a world attacked by zombies. Which was created by Dead Trigger Games in 2012, it offers extraordinary shootouts against the zombies, with attractive interactivity and shocking gameplay. The following are the pros and cons of this game.

#### PROS

- Captivating gameplay with extraordinary shootouts against zombies
- Dazzling upgrades the glowing experience
- Strategic personalization is possible with weapons

#### CONS

- Using in-app purchases may be perceived as disturbing
- Missions can become boring over time

### 2.3.2 Dead Target [3]

A 3D Game, created by VNG Game Studios, submerges players in a post-apocalyptic world loaded up with zombies. It draws in ongoing interaction and creates an immersive experience. The following are the pros and cons of this game.

#### PROS

- Drawing in interactivity with different difficulties
- The game’s striking 3D graphics increase player engagement
- Players can upgrade and redesign weapons

**CONS**

- Heavy reliance on in-app purchases
- Missions and targets might feel repetitive
- Frequent ads disturb gameplay flow

**2.3.3 Mad Zombies: Offline Game [4]**

Mad Zombies offers players a first-person shooter experience set in a zombie-infected world. Its offline gaming ability makes it ideal. The following are the pros and cons of this game.

**PROS**

- Offline gameplay allows for gaming without internet access
- Engaging shooting mechanics and responsive controls
- Variety of zombie types keeps gameplay interesting

**CONS**

- Gameplay becomes repetitive over time
- Lack of complexity in the storyline
- Rapid ads disrupt gameplay

**2.3.4 Into the Dead [5]**

Into the Dead, an unending game provides a captivating experience in a post-apocalyptic world loaded up with zombies. Its immersive climate and addictive gameplay keep players engaged. The following are the pros and cons of this game.

**PROS**

- An immersive atmosphere creates tightness and excitement
- Randomized levels and unlockable items

**CONS**

- Heavy reliance on in-app purchases
- Gameplay mechanics become repetitive over time
- Irregular performance issues that disrupt the experience

### 2.3.5 Dead Effect 2 [6]

Dead Effect 2, a first-person shooting game developed by Bad-Fly, offers a bright storyline and different weapon interactions with upgrades. Its outstanding graphics and sound design add to its peak. The following are the pros and cons of this game.

#### PROS

- Compelling storyline with well-developed characters
- A variety of weapons and upgrades enhance gameplay complexity
- Attractive graphics and sound design create a realistic experience

#### CONS

- Linear-level design limits exploration
- Rare bugs or technical issues disrupt gameplay

### 2.3.6 Zombie Frontier 3: Sniper Fps [7]

Zombie Frontier 3 offers a different scope of missions and boss fights, engaging gameplay mechanics, and customization options. Its high-quality graphics and sound design enhance the immersion of the game. The following are the pros and cons of this game.

#### PROS

- Attractive Gameplay Mechanics
- Impressive Visuals and Sound Design
- **Customization Choices:** Players have the opportunity to customize their gaming experience by customizing weapons and stuff as per their preferences and playstyle

#### CONS

- Existence of Disturbing Advertisements and In-App Purchases
- Limited Content Difficulty may not offer enough challenge for some players

## 2.4 Summary

In this chapter, we dive into the growth of gaming, from classic games to modern multimedia experiences. We discussed how graphics play a crucial role in engaging users and enhancing satisfaction. Additionally, we reviewed some existing games which are related to this game and their strengths and weaknesses to guide our project development effectively.

## Chapter 3

# REQUIREMENT ANALYSIS

Requirement Analysis assists as a primary phase, laying the foundation for the entire project. This critical stage involves thorough checks and understanding of the needs, desires, and constraints of the project. By accurately gathering and analyzing requirements, both functional and non-functional, we can gain insights into the scope and objectives of the project.

Functional requirements define the specific functionalities and features that the software must possess to meet user needs effectively. These requirements typically outline the actions the system must perform and the outcomes it should produce, serving as the building blocks for development.

Through Requirement Analysis, we can not only define what the software should do but also create the limits within which it must operate. We write down some of our project's functional and non-functional requirements

### 3.1 Requirement Gathering Technique

To gather the requirements for the "Zombies Apocalypse", a combination of techniques such as interviews with team members and the project supervisor were employed. This technique helped us to collect valuable information from the users.

#### 3.1.1 Functional Requirements

The functional requirement is the first step for the game developers to perform to meet the user's needs and achieve the goal of the project. The functional requirements describe the software functionalities. It answers the question of what should the game do. All functional requirements are explained below:

**FR1. User Interface:** The game shall have a user-friendly user interface through which the player can play the game

**FR2. Weapons:** The game should have weapons through which the player can kill zombies

**FR3. Zombies:** The game must have zombies in it to make the game more interesting

**FR4. Pickups:** The game should have pickups, in case the player needs to restore health or

needs to pick up Ammo, weapons

**FR5. Story:** The game must have been in the story mode and the story should be an interesting

**FR6. Levels:** The game must have at least six user-engaging levels in it for players to play

**FR7. Keys:** Keys must be collected to complete the game and the key should be essential for passing the mission.

**FR8. Resume:** The game must have a resume button through which the player can pause and continue the game

**FR9. Quit:** If the player clicks the quit button the player must return to the device user interface

### 3.1.2 Non-Functional Requirements

The Non-functional requirements are also known as the quality attributes of the project, the Non-functional define the overall usability of the project and also focus on the project's reliability, performance, and security of the project. Our project's non-functional requirements are explained below:

**NF1. Performance Analysis:** The game should have good performance such as smooth gameplay, also the game should maintain consistent performance without slowdowns or crashes in case of players increase

**NF2. Scalability:** The game should allow for updates such as new features, assets, or game mechanics without disrupting existing gameplay or requiring reinstallation

**NF3. Usability:** The User interface should be user-friendly through which users can easily navigate the game settings or play the game

**NF4. Reliability:** The game should be free of bugs and errors and Ensure that the game runs reliably across different devices seamlessly

**NF5. Security:** User authentication service should be secure in the Firebase to ensure that the user's data is secure

## 3.2 Summary

This chapter provides a comprehensive overview of the system's functional and supplementary requirements, addressing the diverse needs of its users. the degree of ambiguity that warrants further clarification within this document.

## Chapter 4

# SYSTEM DESIGN

System design is a structured process to create and maintain effective information systems that meet customer needs. It involves studying current systems or business methods, finding areas for improvement, and designing solutions to meet those needs. Here's a quick introduction to key concepts in framework analysis and design.

### 4.1 Activity Diagram

An activity diagram serves as a visual guide in software engineering, depicting the flow of actions within a system or process. It resembles a roadmap, steering developers and stakeholders through the steps and decisions needed to accomplish a specific objective. This dynamic blueprint captures the sequence of actions, decisions, and transitions that unfold during a task or process. Activity diagrams are invaluable in understanding complex systems and facilitating effective communication across teams by illustrating how different components interact and progress over time.

Activity diagrams look like interconnected flowcharts, with nodes representing specific actions or decision points. They empower designers to picture the sensible progression of control inside a framework, featuring conditions, equal exercises, and places of synchronization. By separating complex cycles into reasonable advances and outwardly outlining occasions, activity diagrams empower developers to identify bottlenecks, optimize workflows, and ensure efficient task execution. Essentially, they go about as a visual device for understanding the complex succession of exercises in programming frameworks, giving experiences into both the general design and itemized conduct of the framework. the following is the activity diagram of our game in which we explained the activities of our game in detail.

Activity diagrams play a key role not only in the initial stages of software development but throughout the entire software lifecycle. As projects progress, activity diagrams serve as living documents, reflecting modifications in system behavior and features. They stand in a collective understanding among team members, and superintendent them through growing requirements and emerging obstacles. Moreover, these diagrams promote continuous enhancement by facilitating iterative adjustments to processes and workflows. Our project activity diagram is given below.

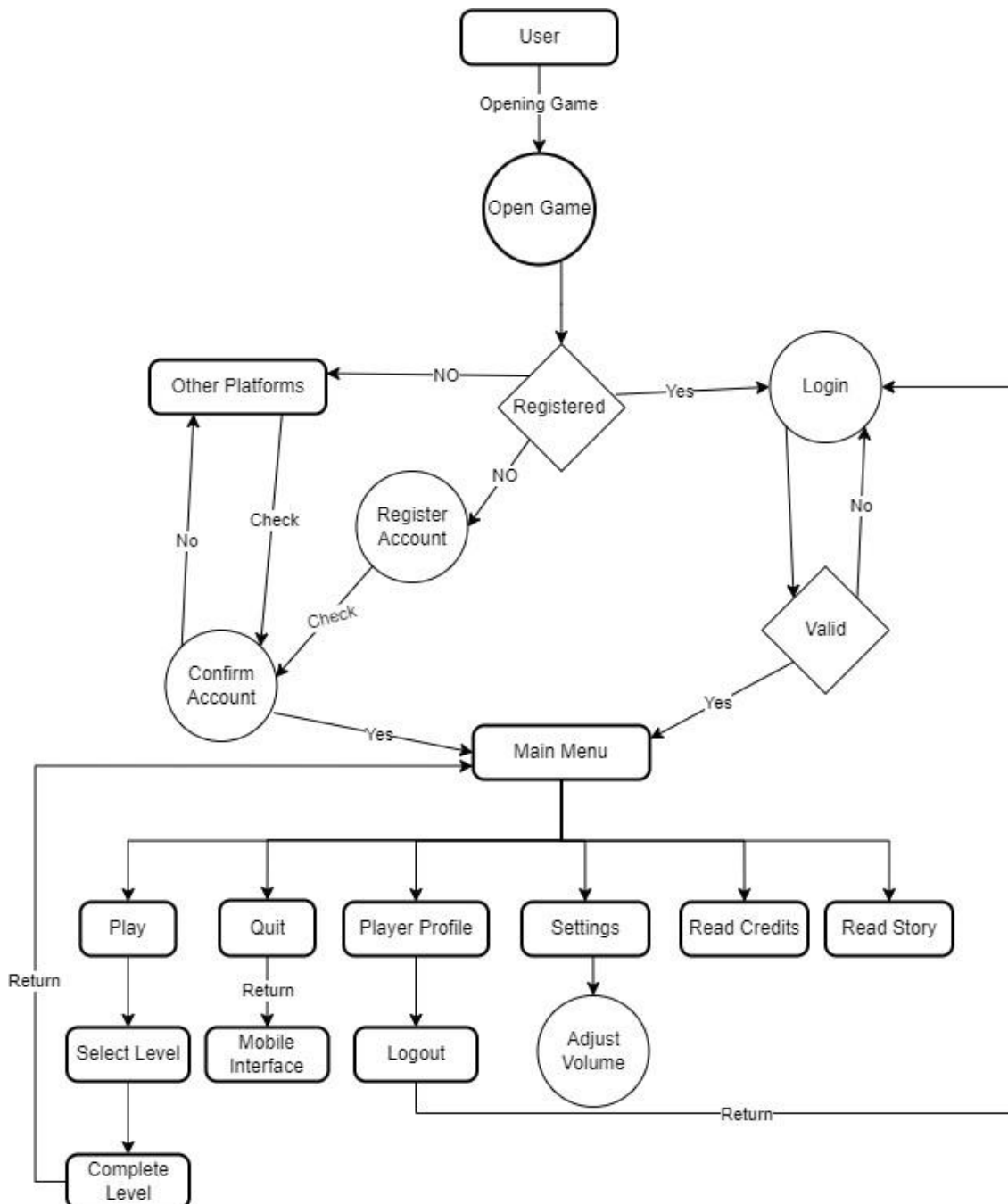


Figure 4.1: Activity Diagram

## 4.2 Sequence Diagram

A sequence diagram is a type of interaction diagram because it shows how the project will work and also describes the flow of work and in what order a group of objects will work together. These diagrams are used in software development for starting a new project or in an existing process. The other names for the sequence diagram are event diagrams and scenarios. The given below diagram is our project sequence diagram.

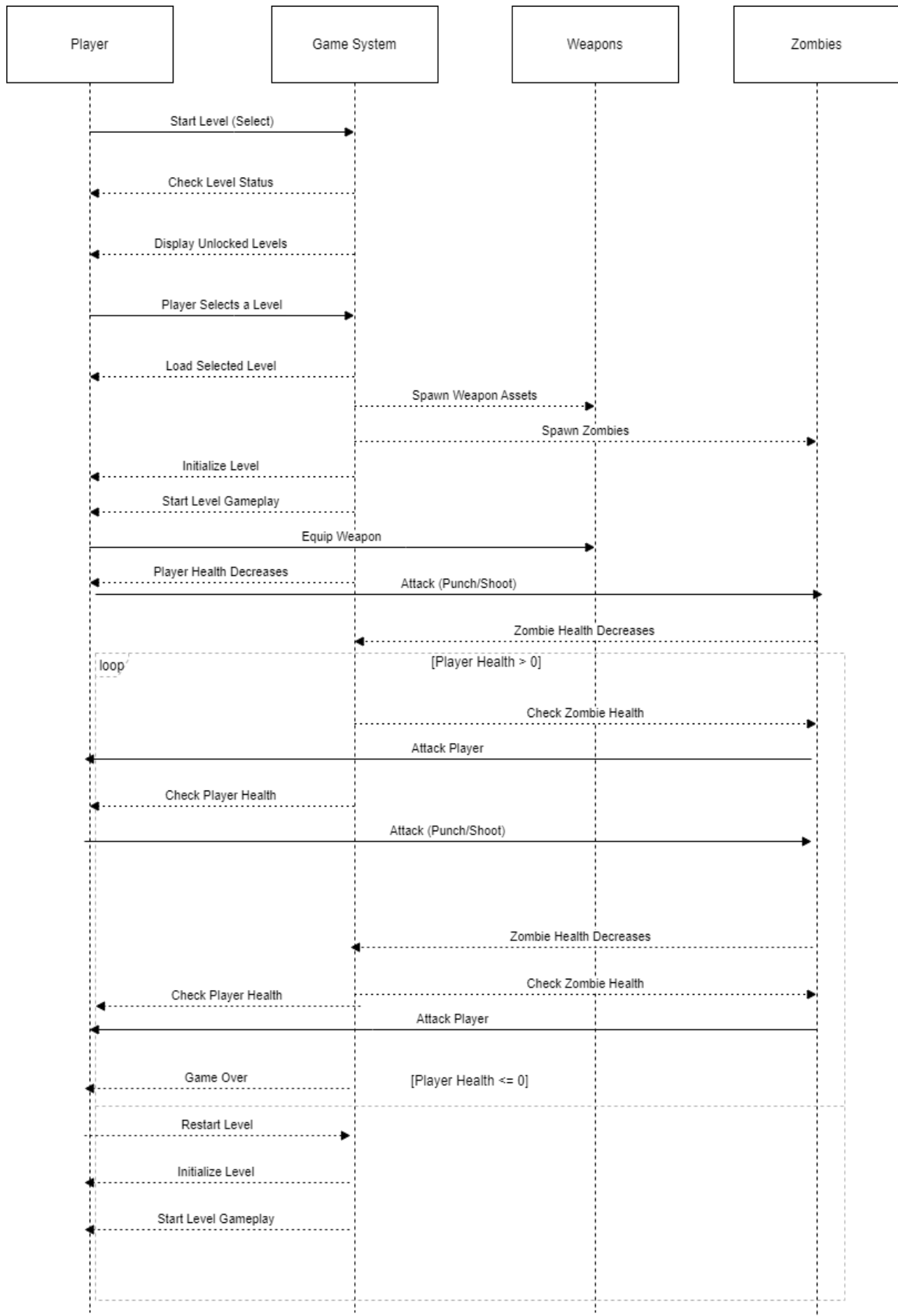


Figure 4.2: Sequence Diagram



### 4.3 Data Flow Diagram

A data flow diagram (DFD) is a graphical portrayal utilized in computer programming to show the progression of information inside a framework. It shows how information moves to start with one cycle and then onto the next, the way things are put away, handled, and changed as they travel through the framework. DFDs consist of various elements such as processes, data stores, data flows, and external entities. The DFDs of our game are mentioned Below.

#### 4.3.1 Level 0

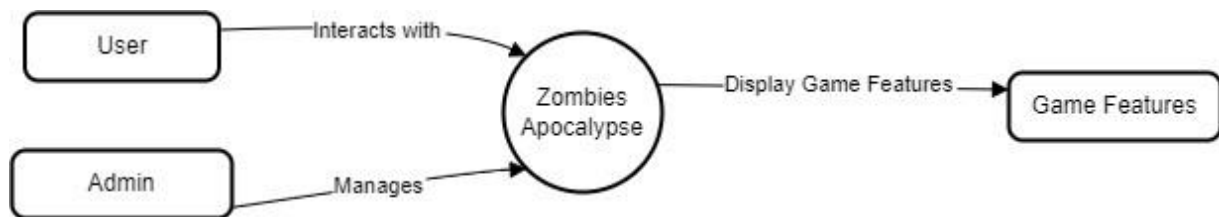


Figure 4.3: Level 0 Data Flow Diagram

#### 4.3.2 Level 1

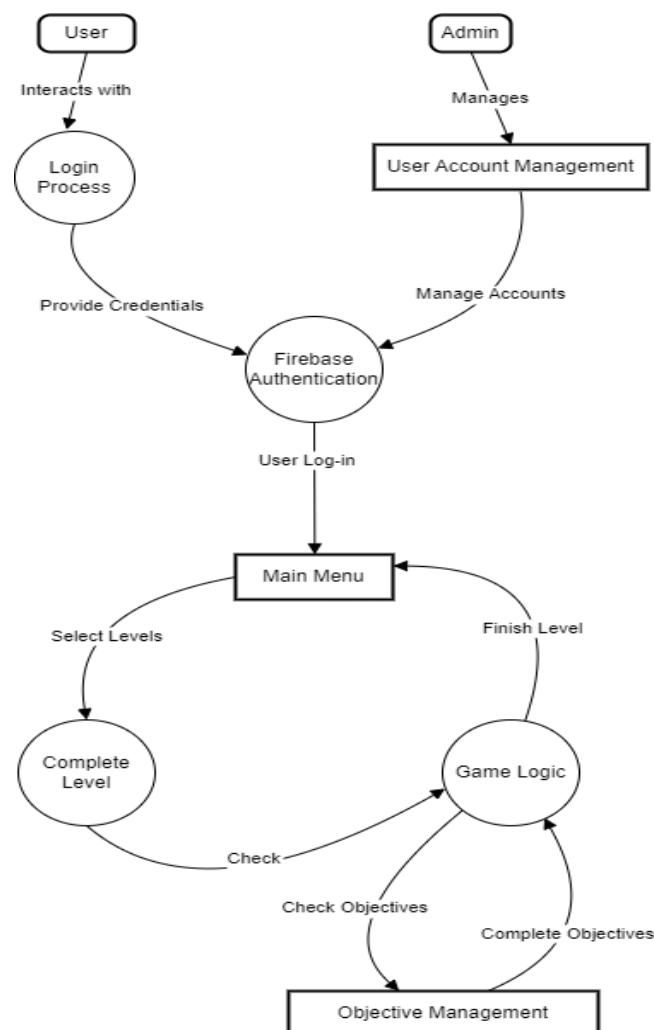


Figure 4.4: Level 1 Data Flow Diagram

## 4.4 Summary

The System Design chapter explains how the system is structured, using diagrams like Activity, System Sequence, and Dataflow Diagrams. Activity diagrams show how actions flow, System Sequence Diagrams display user interactions and flow diagrams. Together, these diagrams help understand the system's workings and make decisions during development.

## Chapter 5

# METHODOLOGY

Methodology involves a particular approach or a series of methods utilized for research, problem-solving, or accomplishing distinct objectives across a range of disciplines like science, engineering, social sciences, and business. It establishes the structure for the execution of a study or project, detailing the procedures, data collection methods, analysis approaches, and result interpretation. In research, strategy is pivotal for ensuring the trustworthiness, validity, and authenticity of the findings. It furnishes researchers with a coherent pathway to navigate through their investigations.

### 5.1 Software Development Life Cycle

The Software Development Life Cycle (SDLC) for "Zombies Apocalypse" includes a structured approach to game development, ensuring the successful creation, deployment, and maintenance of the interactive 3D game. We utilized an Agile development approach to create the game, utilizing iterative development cycles and teamwork to effectively deliver features and adapt to changing needs.

#### 5.1.1 Planning Phase

- During this initial phase, teaming up to define game goals, requirements, and constraints of the game
- Also discussed some key activities which include highlighting gaming markets, defining target-audience preferences, outlining game features, and establishing a project timeline and budget

#### 5.1.2 Design Phase

- In the design phase, put the conceptual ideas that were discussed in the planning phase and transform those ideas into detailed specifications and blueprints
- Made some game mechanics, user interface (UI) design, and level layouts, and documented some storyline elements
- utilizing tools such as Unity, Maximo, and Adobe Photoshop to create UI Icons, 3D models, textures, and other assets

### 5.1.3 Development Phase

- The game design specifications are implemented in this phase.
- writing codes, integrate assets, implement gameplay mechanics, and conduct iterative testing to ensure the functionality and performance of the game
- Regularly collaborates with the team to maintain consistency and alignment with game goals

### 5.1.4 Testing Phase

- In the testing phase, wide-ranging testing is conducted to distinguish and fix any defects or issues in the game
- using several testing methods, including functional testing, usability testing, and performance testing, to confirm the game's quality and stability
- Also collect feedback from beta testers to polish the game experience

### 5.1.5 Deployment Phase

In the Deployment phase, we prepared the game for release to the intended audience on the Play Store.

## 5.2 Development Work Flow

In this section, The workflow of our game development was discussed to follow it strictly while making our game successful

### 5.2.1 Gathering Requirements and Analyzing

- Collected all the needed requirements for the game
- Examine these requirements carefully to make sure they're clear and complete
- Figured out the main features and functions the game needs

### 5.2.2 Designing and Making Prototypes

- Come up with a detailed plan with a team to make this game
- Build prototypes to give a visual idea of how the game is played, how it'll look, and how the user interface function looks like
- Keep refining these prototypes based on feedback until the design feels right

### 5.2.3 Developing and Putting into Action

- Use Unity to create the game environment, with a focus on making realistic 3D models and textures using Blender or using free assets available online that fulfill our needs
- Write the game's logic, like how the player moves, how zombies behave, and how weapons work, using C# in Visual Studio
- Add in sound effects and music to make the game more immersive

### 5.2.4 Testing and Fixing Bugs

- Test the game regularly to find and fix any glitches or problems
- Try out different situations to make sure the game works well on various devices and platforms
- Get feedback from testers and use it to improve the game

### 5.2.5 Releasing and Keeping Up

- Get the game ready to go on Android devices, making sure it runs smoothly and works well
- Put the game up on the Google Play Store so people can download and play it
- Keep updating the game in the future to fix any issues that come up and add new features based on what players want

## 5.3 Summary

In this chapter, we discuss the game development cycle, and the development workflow, which is the explanation of how we follow our work progress to achieve our project success.

## Chapter 6

# IMPLEMENTATION

In this chapter, we encapsulate the blueprint for transforming conceptual ideas into concrete manifestations, detailing the requisite specifications and directives for facilitating smooth implementation. It guides through the complex technical details, clarifying the structural groundwork, and operational complexities imperative for project fruition. Covering everything from Firebase configurations to system interfaces, every surface is complicatedly designed to match the project's overarching goals.

### 6.1 Firebase Design

Firebase is a type of database that is hosted on the internet. It differs from traditional databases because it uses a document model to store data. With Firebase, storing and update data in real-time such as when a user recovers his account.

Firebase is created using the powerful infrastructure of Google, which means it is designed to handle large amounts of data and can automatically adjust to handle increased demands. Apart from storing data, Firebase also offers additional features like analytics (tracking and analyzing user behavior), authentication (verifying user identities), performance monitoring (keeping an eye on how well the app is running), messaging (sending notifications to users), crash reporting (detecting and reporting app crashes), and many other useful functions.

### 6.2 Firebase View

Following are the Firebase Design Views that are included in our game.



Figure 6.1: Firebase Overview

## 6.3 User Authentication

The user authentication view of the application is utilized in Firebase to store user authentication information such as email and password. This information is used to authenticate the user each time they attempt to login into the game.

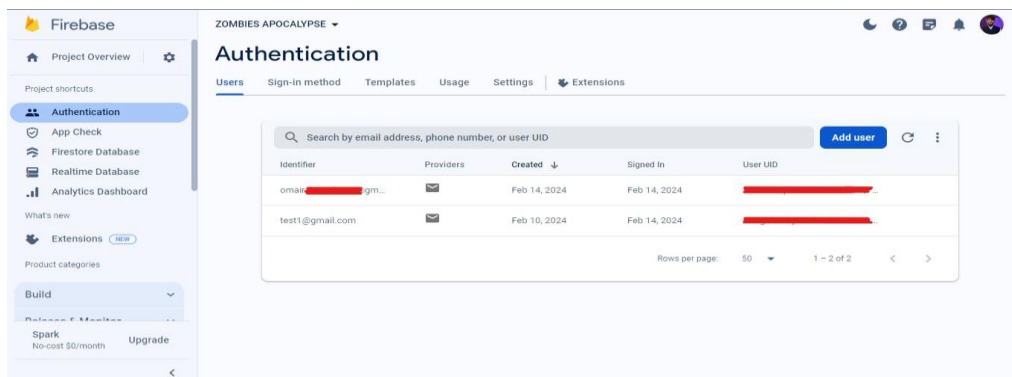


Figure 6.2: Firebase Authentication

## 6.4 User Interface

Zombies Apocalypse is a 3D game that provides the user with an entertaining game. What makes Zombies Apocalypse different from other games is that it's free and open for everyone to use, the user has full control of the player's movements. There are fewer ads which makes the game more realistic and gives the user a good experience.

Let's see how to play the game:

### 6.4.1 Login Screen

The first screen fills in as the essential road for users to get into the game, Here they have options to sign in through Facebook, Google, or as a guest, or use their existing account. for those who haven't enrolled yet, they also have an opportunity to complete the signup process to create their account.



Figure 6.3: Login Screen

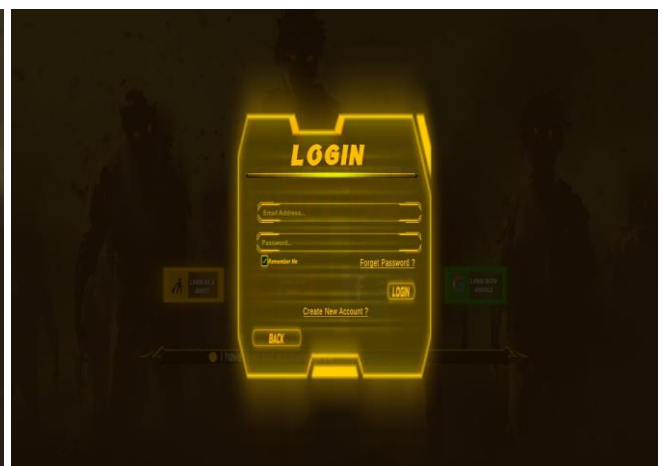


Figure 6.4: Login Panel

### 6.4.2 Account Creation

Users have the capability to create their account by completing the sign-up process, when the account creation process is completed then the user can simply log in from that account. below the signup Screen panel is given:



Figure 6.5: Account Creation

### 6.4.3 Recover Account

In case users forget their account password, they can restore their accounts. Upon the submission of their account email, the system automatically dispatches a recovery email to the registered email address. All users need to do is provide the email address related to their records.

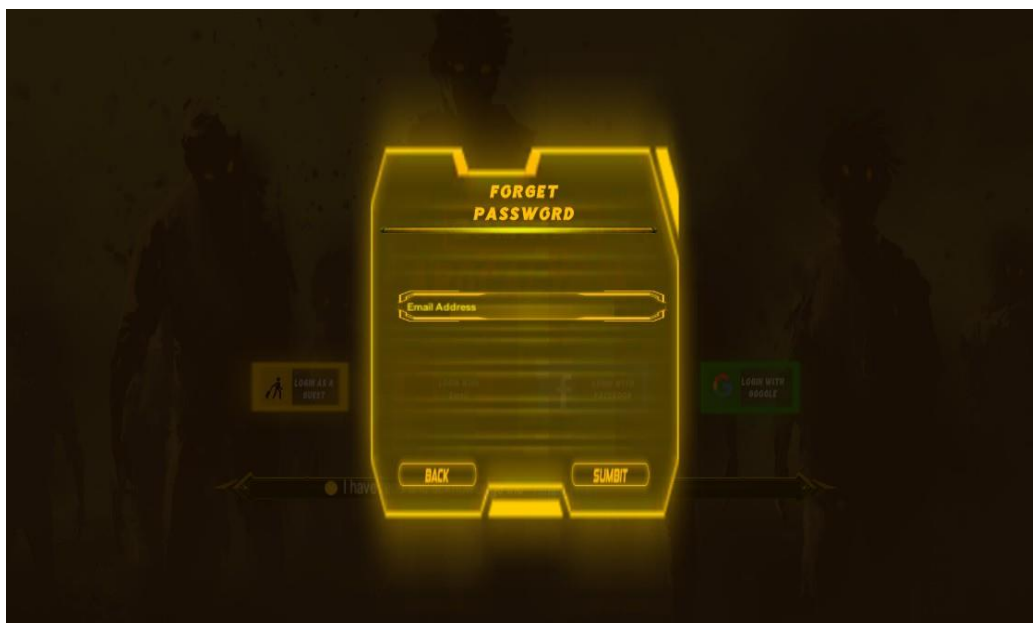


Figure 6.6: Recover Password



### 6.4.4 Confirm Panel

After a successful login, the users encounter a fresh panel offering the choice to either continue with their current account or revert to the login screen for access to alternative login methods or different accounts.

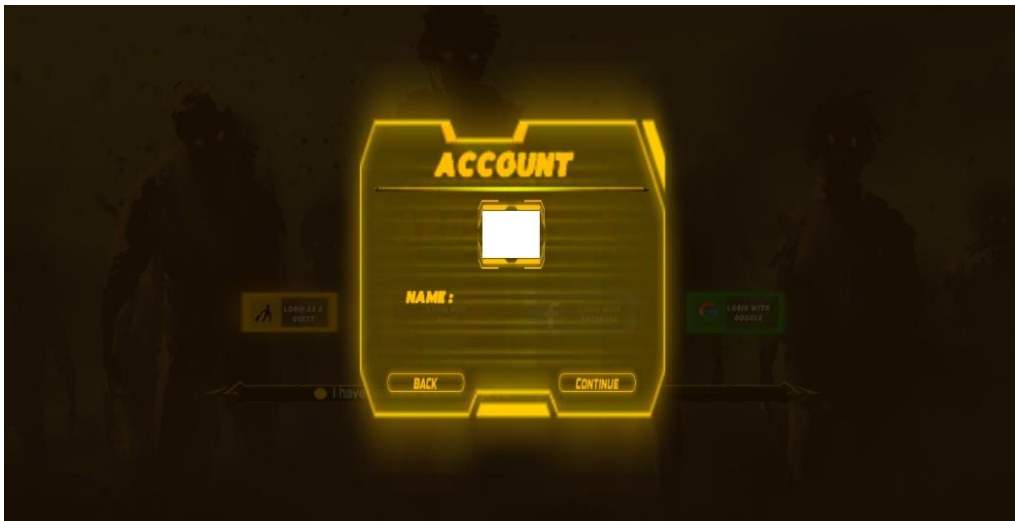


Figure 6.7: Confirm Account

### 6.4.5 Main Menus

Upon successful login, users flawlessly transition to the Main Menu of the game, which acts as the central hub for accessing many features and functionalities of the game. Here, users come across a host of options designed to supply their individual preferences and enhance their gaming experience. They can effortlessly navigate through different levels. Also, users have the convenience of accessing features such as logging out or immersing themselves in the captivating narrative woven throughout the game.



Figure 6.8: Main Menu



Figure 6.9: Settings



Figure 6.10: Logout Panel



Figure 6.11: Levels

### 6.4.6 User Interface

Created a basic and user-friendly UI to make sure that users fully understand the UI easily in the game and play the game easily the figure of our UI basic control is given below:

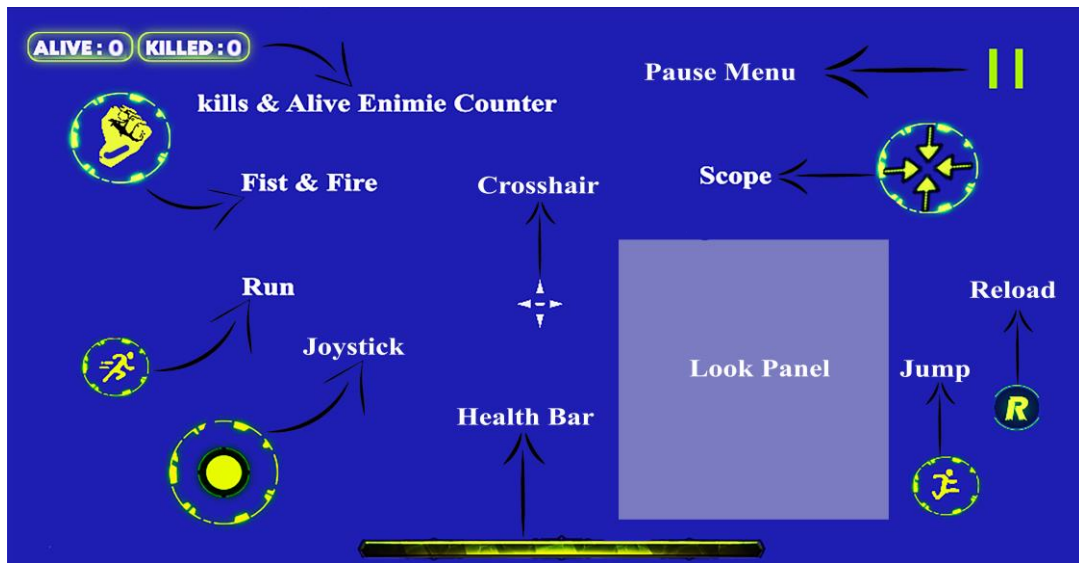


Figure 6.12: Controlled UI

## 6.5 Summary

In this chapter, the overall game Interface includes the login screen, registration of the user in which the user can create their account, main menu of the game, login screen through which the user log-in to the game, level selection, and user interface.

## Chapter 7

# TESTING

In this chapter, we provide a brief overview of the data or observations obtained during the research, sometimes utilizing tables and graphs. We present these findings objectively, without providing any interpretations or analyses. Subsequently, we explore the significance of these findings, drawing comparisons with previous research and elucidating their relevance to our research inquiry.

### 7.1 Software Testing

Software testing involves examining the functionality of software to determine if it aligns with the specified criteria and to uncover any possible flaws, ensuring the final product is free of faults. During testing, attention is given to each component of the software. Upon completion, the software is deployed in a controlled environment for testing. There are two primary categories of testing include:

#### 7.1.1 White Box Testing

white box testing focuses on scrutinizing the inner code, framework, and execution specifics of the game to guarantee its excellence and dependability. It involves testing individual components, parts, and algorithms within the game, as well as their interactions. When it comes to game development, white box testing provides several advantages, such as identifying vulnerabilities, ensuring code quality, and optimizing performance.

#### 7.1.2 Black Box Testing

Black box testing is a vital component of software testing and it plays a crucial role in ensuring the product's reliability, functionality, and security. Testers prioritize the validation of the application's inputs and outputs. In game development, black box testing involves examining the game's behavior and functionality from an output of the game perspective.

#### 7.1.3 Unit Testing

Unit testing for the Zombies Apocalypse game involves checking individual features like player movements, zombies approaching, and weapons to ensure they function accurately. each function of the overall features is tested independently to confirm that the result in the output is bug-free

### 7.1.4 Integration Testing

Integration testing for the Zombies Apocalypse game ensures that all the components work together seamlessly, validating the interaction between features like weapon systems, health systems, and many more features. It confirms the game's overall functionality, guaranteeing a cohesive user experience.

## 7.2 Test Cases

Table 7.1: Test Cases

TEST ID	DESCRIPTION	TEST CASE EXPECTED RESULT	TEST CASE ACTUAL RESULT	STATUS
Test Case 1	Create a new account	The User Should Successfully create a new account	The user Successfully created account	Passed
Test Case 2	Login to the game	The user Should Successfully login	The user Successfully login	Passed
Test Case 3	Recover account	The user Should Successfully recover their account	The User Successfully recovered account	Passed
Test Case 4	Logout from account	The user Should Successfully logout from account	The user Successfully logout	Passed
Test Case 5	Able to Read Game Story	The user can read the story of the game	The User Successfully read Story	Passed
Test Case 6	Able to Read Game credits	The user can read the credits of the game	The User Successfully read credits	Passed
Test Case 7	Volume Manager	The User Should able to adjust game volume	The user Successfully adjust volume	Passed
Test Case 8	Select Level of the Game	The User Should able to select game levels	the User Successfully selected game levels	Passed
Test Case 9	User-friendly UI	The Game Should have a user-friendly UI	The game has User-friendly UI	Passed
Test Case 10	Attractive gameplay	The Game Should have attractive gameplay	The Game has attractive gameplay	passed
Test Case 11	Game Objectives	The User Should able to complete level objectives	The User Successfully Completed the Game Objectives	Passed
Test Case 12	Player punch	The User Should able to punch	The User can punch	Passed
Test Case 13	Pickups items	The user should able to pick up weapons, Ammo, health, and keys	the user successfully picked items	passed
Test Case 14	Kill zombies	The User Should able to kill zombies	The User Successfully killed zombies	Passed

Table 7.2: Test Cases

TEST ID	DESCRIPTION	TEST CASE EXPECTED RESULT	TEST CASE ACTUAL RESULT	STATUS
Test Case 15	Restarting level	The User Should able to restart the level at any time while playing the game	The User Successfully restarted the level	Passed
Test Case 16	Locked Levels	The unfinished level should be locked	The unfinished levels are Successfully locked	Passed
Test Case 17	Unlocked Levels	The Completed levels should be unlocked	The Completed levels are Successfully unlocked	Passed
Test Case 18	Saving unlocked Levels	The Completed levels should be unlocked after restarting the game	The Completed levels Successfully remain unlocked after restarting the game	Passed
Test Case 19	Reset Levels	The game should have the ability to reset all the levels	The levels are Successfully Reset	Passed
Test Case 20	Quit Game	The User should able to exit from game	The user successfully exit the game	Passed

## Chapter 8

# CONCLUSION & FUTURE WORK

In the "Conclusion and Future Work" chapter, the essential findings are briefly outlined, Also discussed some progression in our project, This chapter also serves as the height of the final year project efforts, not only offering a roadmap for future searches of this project.

### 8.1 Conclusion

The development journey of the "Zombies Apocalypse" game has been an exciting and fulfilling project, aimed at making an immersive and attractive experience for our target audience. Throughout this project, our focus has been on several fundamental areas, which include the game design, development, careful testing, and seamless deployment, all intending to deliver a top-level mobile gaming experience.

From the start, our vision was to create an energetic 3D game set in a world teeming with zombies. outlining our objectives and goals, accurately documented in our project documentation.

At every step of the development process, following the Software Development Life Cycle (SDLC) guarantees the continuous creation, deployment, and maintenance of the game. Our difficult testing routine, surrounding both white box and black box testing methodologies, ensured the identification and resolution of any possible faults or issues, finishing in a final product that met our harsh quality benchmarks.

### 8.2 Future Work

- **Growth of Gameplay:** Presenting new levels, difficulties, and game modes to keep players connected with and invigorated
- **Improved Graphics:** Nonstop working on the game's designs to convey a more attractive and charming experience
- **Cross-Platform Compatibility:** Exploring choices for porting the game to different platforms like iOS to contact a wider audience
- **Additional Features:** Including new highlights like multiplayer modes, customizable characters, characters, and social sharing abilities to change up the gameplay

By seeking after these roads for future development, ensuring that "Zombies Apocalypse" stays a favorite among players, proceeding to give delight and energy to years to come

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