

# **Child Right's Play**

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**Rajiv Gandhi Proudlyogiki Vishwavidyalaya, Bhopal**

Towards Partial Fulfilment for the Award Of

Bachelor of Technology

In

**ARTIFICIAL INTELLIGENCE & DATA SCIENCE**

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[An Institution Approved By AICTE, New Delhi & Affiliated To RGPV, Bhopal]



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We **Jatin Dadlani, Anvesh Sharma, Apoorv Jain, and Himanshu Bhadoriya** hereby declare that the project entitled “**Child Right’s Play**”, which is submitted by us for the partial fulfilment of the requirement for the award of Bachelor of Technology in Artificial Intelligence & Data Science to the Prestige Institute of Engineering, Management and Research, Indore (M.P.). Rajiv Gandhi Proudyogiki Vishwavidyalaya, Bhopal, comprises my own work and due acknowledgement has been made in text to all other material used.

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## **INDEX**

<b>Declaration</b>	<b>I</b>
<b>Dissertation Approval Sheet</b>	<b>II</b>
<b>Certificate</b>	<b>III</b>
<b>Acknowledgement</b>	<b>IV</b>
<b>Table of Contents</b>	<b>V</b>
<b>List of Figures</b>	<b>VI</b>

## **TABLE OF CONTENTS**

### **CHAPTER 1 INTRODUCTION**

1.1 Introduction.....	2
1.2 Motivation.....	2
1.3 Objective.....	3
1.4 Analysis .....	4
1.4.1 Functional Requirements .....	4
1.4.2 Non-functional Requirements .....	4
1.4.3 Use Cases .....	5

### **CHAPTER 2 BACKGROUND AND RELATED WORK**

2.1 Problem Statement .....	7
2.2 Background and Related Work.....	7
2.2.1 Background Work .....	8
2.2.2 Literature survey .....	8
2.3 Solution Approach ( <i>methodology and technology used</i> ) .....	8

### **CHAPTER 3 DESIGN (UML AND DATA MODELING)**

3.1 UML Modelling	
3.1.1 System Diagram .....	11
3.1.2 State Diagram.....	12
3.1.3 Sequence Diagram .....	13

## **CHAPTER 4 IMPLEMENTATION**

4.1 Tools Used & Technology .....	15
4.2 Testing .....	15
4.2.1 Testing Approach. ....	15
4.2.2 Test Cases.....	16
4.2.3 Test Reports.....	16
4.3 User manual.....	17

## **CHAPTER 5 PROJECT PLAN**

5.1 Gantt Chart.....	20
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## **CHAPTER 6: Project Screenshot**

6.1 Game 1(Word Hunter).....	22
6.2 Game 2(Runner).....	23
6.3 Game 3(Pursuit Peril).....	24
6.4 Game 4(Don't Touch my Ring).....	25

## **CHAPTER 7 CONCLUSION & FUTURE SCOPE**

7.1 Conclusion.....	27
7.2 Future Scope.....	27
<b>Bibliography.....</b>	<b>29</b>



## **LIST OF FIGURES**

1. Fig 1.1 (System Diagram).....	11
2. Fig 1.2 (State Diagram).....	12
3. Fig 1.3 (Sequence Diagram).....	13
4. Fig 2(Gantt Chart).....	20
5. Fig 3.1.1 (Word Hunter Starting Window).....	22
6. Fig 3.1.2 (Word Hunter Game Play).....	22
7. Fig 3.1.3 (Word Hunter Game End Won).....	22
8. Fig 3.1.4 (Word Hunter Game End Lost).....	22
9. Fig 3.2.1 (Runner Starting Window).....	23
10. Fig 3.2.2 (Runner Game Play).....	23
11. Fig 3.2.3 (Runner Game End).....	23
12. Fig 3.3.1 (Pursuit Peril Starting Window).....	24
13. Fig 3.3.2 (Pursuit Peril Game Play).....	24
14. Fig 3.3.3 (Pursuit Peril Game End).....	24
15. Fig 3.4.1 (Don't Touch my Ring Starting Window).....	25
16. Fig 3.4.2 (Don't Touch my Ring Game Play).....	25
17. Fig 3.4.3 (Don't Touch my Ring Game End).....	25

# **CHAPTER 1**

## **INTRODUCTION**

## 1.1 Introduction

Welcome to the Development of Gamified Platform on Children's Rights, a fun and interactive way to learn about your rights as a child in India[1]. In this game, you will explore four different scenarios that will test your knowledge and skills on various aspects of children's rights, such as education, health, protection, and participation. You will also learn some interesting facts and stories about how children's rights are respected or violated in India and around the world.

- The first scenario is called **“Word Hunter”**, where you have to guess a word that is related to a specific child right. For example, if the clue is “The right to go to school and learn new things”, you have to guess the word “education”. After guessing the word, you will see a fact on that right, such as “According to UNICEF, more than 10 million children in India are out of school”.
- The second scenario is called **“Runner”**, where you have to run and dodge some people who are trying to prevent you from using your rights. For example, if you are running for the right to health, you have to avoid people who are selling fake medicines or polluting the environment. You will also collect coins and power-ups along the way that will help you reach the finish line.
- The third scenario is called **“Pursuit Peril”**, where you have to go to the police station and report a violation of your rights. For example, if you are a victim of child labour or child marriage, you have to escape from your oppressors and seek help from the authorities. You have to dodge village people who are against your rights and try to stop you from reaching the police station.
- The fourth scenario is called **“Don't Touch my Ring”**, where you have to protect a ring that symbolizes your right to be free from violence and abuse. You have to use your hand to prevent other adult hands from touching the ring. You will also see messages that explain why violence and abuse are harmful and unacceptable.

By playing this game, you will not only have fun but also learn more about your rights as a child in India. You will also become more aware of the challenges and opportunities that children face in different situations. You will also develop your critical thinking and problem-solving skills that will help you in your future endeavors.

## 1.2 Motivation

Children are the future of our society and they deserve to have their rights respected and protected. However, many children in India and around the world face various forms of discrimination, exploitation, violence, and neglect that violate their rights and harm their well-being. According to UNICEF, more than 40% of India's population are children under 18 years old, and they face multiple challenges such as poverty, malnutrition, child labour, child marriage, trafficking, abuse, and lack of access to quality education and health care[1].

Therefore, it is important to raise awareness and educate children about their rights and responsibilities as citizens. By knowing their rights, children can become more confident,

empowered, and active in their communities. They can also learn to respect the rights of others and promote a culture of peace and harmony[1].

However, many children may not be aware of their rights or may find it difficult to understand them. They may also lack the interest or motivation to learn about them. Therefore, we need to find a way to make learning about children's rights fun and engaging for children.

That is why we have created the Development of Gamified Platform on Children's Rights, a game that aims to increase legal literacy and awareness among children in India. This game uses gamification techniques such as rewards, challenges, feedback, and storytelling to make learning about children's rights enjoyable and interactive. The game also uses different scenarios and characters that are relevant and relatable to the Indian context. The game also provides facts and stories that illustrate the real-life situations of children's rights in India and around the world.

By playing this game, we hope that children will develop a positive attitude towards learning about their rights and become more aware of the issues that affect them and their peers. We also hope that they will develop skills such as critical thinking, problem-solving, creativity, and communication that will help them in their personal and professional lives. We also hope that they will become more responsible and compassionate citizens who will contribute to the development of a better society for themselves and others.

We believe that this game has the potential to make a difference in the lives of millions of children in India and beyond. We invite you to join us in this journey of learning and empowerment.

### **1.3 Objective**

The objective of the Development of Gamified Platform on Children's Rights is to provide a fun and interactive way for children to learn about their rights as defined by the United Nations Convention on the Rights of the Child (UNCRC). The game aims to achieve the following specific objectives:

- To increase the knowledge and understanding of children about their rights and responsibilities as citizens in India and around the world.
- To enhance the skills and abilities of children to apply their rights in different situations and contexts.
- To foster the attitudes and values of children to respect and promote the rights of themselves and others.
- To motivate and inspire children to take action and participate in the protection and realization of their rights.

The game consists of three different scenarios that cover various aspects of children's rights, such as education, health, protection, and participation. Each scenario has its own learning objectives, challenges, feedback, and rewards. The game also provides facts and stories that illustrate the real-life situations of children's rights in India and around the world[2][7].

By playing this game, children will not only have fun but also learn more about their rights as a child in India. They will also become more aware of the challenges and opportunities that children face in different situations. They will also develop their critical thinking and problem-solving skills that will help them in their future endeavors.

## **1.4 Analysis**

The Development of Gamified Platform on Children's Rights is a game that aims to educate and empower children about their rights in India and around the world. The game uses gamification techniques to make learning about children's rights fun and engaging. The game also uses different scenarios and characters that are relevant and relatable to the Indian context. The game also provides facts and stories that illustrate the real-life situations of children's rights in India and around the world.

To analyze the game, we can use a framework that consists of four elements: mechanics, dynamics, aesthetics, and outcomes. Mechanics are the rules and components of the game, such as goals, actions, feedback, and rewards[8]. Dynamics are the behaviours and interactions that emerge from the mechanics, such as challenge, strategy, cooperation, and competition. Aesthetics are the emotional responses that the game evokes in the players, such as fun, curiosity, excitement, and satisfaction. Outcomes are the effects and impacts that the game has on the players, such as learning, motivation, attitude change, and behavior change.

### **1.4.1 Functional Requirements:**

- The game should allow the user to select one of the four scenarios to play: Word Hunter, Runner, Pursuit Peril, or Don't Touch my Ring.
- The game should display the instructions and the learning objectives for each scenario before the user starts playing.
- The game should provide feedback and rewards to the user based on their performance and progress in each scenario.
- The game should store the user's scores, badges, and certificates in a database and allow the user to view them at any time.
- The game should have a user-friendly interface that is easy to navigate and interact with.

### **1.4.2 Non-functional Requirements:**

- The game should be compatible with different devices and platforms, such as desktops, laptops, tablets, and smartphones.
- The game should have a fast response time and load quickly without any delays or errors.

- The game should have a high-quality graphics and sound that are appealing and engaging for the user.
- The game should be secure and protect the user's personal information and data from unauthorized access or misuse.
- The game should be scalable and adaptable to accommodate different numbers of users and different levels of difficulty.

### **1.4.3 Use Cases:**

A use case diagram is a graphical representation of the interactions between the actors and the system in a specific context[8]. It shows the main features or use cases of the system and how they relate to each other.

- **Select Scenario:** The user can select one of the four scenarios to play: Word Hunter, Runner, Pursuit Peril, or Don't Touch my Ring. The system will display the instructions and the learning objectives for each scenario before the user starts playing.
- **Play Scenario:** The user can play the selected scenario and perform different actions depending on the type of game. For example, in Word Hunter, the user can type letters to guess the word. In Runner, the user can swipe or tap to dodge obstacles. In Pursuit Peril, the user can jump or run to reach the police station. In Don't Touch my Ring, the user can drag or drop their hand to prevent other hands from touching the ring. The system will provide feedback and rewards to the user based on their performance and progress in each scenario.
- **View Scores:** The user can view their scores for each scenario or for the whole game. The system will store the user's scores in a database and display them on a dashboard or a leaderboard.

# **CHAPTER 2**

## **BACKGROUND AND RELATED WORK**

## 2.1 Problem Statement

**Problem:** Many children in India and around the world face various forms of discrimination, exploitation, violence, and neglect that violate their rights and harm their well-being. However, many children may not be aware of their rights or may find it difficult to understand them. They may also lack the interest or motivation to learn about them.

**Context:** According to UNICEF, more than 40% of India's population are children under 18 years old, and they face multiple challenges such as poverty, malnutrition, child labour, child marriage, trafficking, abuse, and lack of access to quality education and health care. Therefore, it is important to raise awareness and educate children about their rights and responsibilities as citizens. By knowing their rights, children can become more confident, empowered, and active in their communities. They can also learn to respect the rights of others and promote a culture of peace and harmony[1][2].

**Impact:** The lack of awareness and education on children's rights can have negative consequences for the individual and social development of children. It can affect their physical, mental, emotional, and moral health. It can also limit their opportunities and potentials for growth and success. It can also contribute to the perpetuation of inequality and injustice in society.

**Solution:** The Development of Gamified Platform on Children's Rights is a game that aims to provide a fun and interactive way for children to learn about their rights as defined by the United Nations Convention on the Rights of the Child (UNCRC). The game uses gamification techniques such as rewards, challenges, feedback, and storytelling to make learning about children's rights enjoyable and interactive. The game also uses different scenarios and characters that are relevant and relatable to the Indian context. The game also provides facts and stories that illustrate the real-life situations of children's rights in India and around the world[1][4].

## 2.2 Background and Related Work

### 2.2.1 Background Work

The Development of Gamified Platform on Children's Rights is a game that aims to provide a fun and interactive way for children to learn about their rights as defined by the United Nations Convention on the Rights of the Child (UNCRC)[1]. The game uses gamification techniques such as rewards, challenges, feedback, and storytelling to make learning about children's rights enjoyable and interactive. The game also uses different scenarios and characters that are relevant and relatable to the Indian context. The game also provides facts and stories that illustrate the real-life situations of children's rights in India and around the world.

Gamification is the application of game elements and principles in non-game contexts to enhance user engagement, motivation, and learning outcomes. Gamification has been widely used in various domains such as education, health, marketing, and social change. Gamification can offer several benefits for learning, such as increasing interest, attention, retention, and transfer of knowledge; fostering intrinsic and extrinsic motivation;



providing immediate and informative feedback; creating a sense of achievement and progress; enhancing social interaction and collaboration; and developing skills such as problem-solving, creativity, and critical thinking.

Children's rights are the human rights of children, which are based on the recognition of their inherent dignity and worth as human beings. Children's rights are stipulated in the UNCRC, which is a legally binding international treaty that sets out the civil, political, economic, social, and cultural rights of every child, regardless of their race, religion, gender, or any other status. The UNCRC consists of 54 articles that cover various aspects of children's rights, such as survival, development, protection, and participation. The UNCRC also outlines the roles and responsibilities of different actors, such as parents, governments, civil society, and international organizations, in ensuring the realization of children's rights[3].

### **2.2.2 Literature Survey**

There have been several studies that explored the use and effectiveness of gamification in education, especially for children. Some of these studies are:

- Hamari et al. (2016) conducted a meta-analysis of 24 empirical studies on gamification in education and found that gamification has a positive effect on learning outcomes, such as cognitive, affective, behavioural, and motivational outcomes. They also identified several factors that influence the effectiveness of gamification, such as the type of gamification elements used (e.g., points, badges, leaderboards), the context of gamification (e.g., subject matter, target audience), and the implementation of gamification (e.g., design principles, pedagogical methods).
- Dicheva et al. (2015) reviewed 34 papers on gamification in education and found that most of them reported positive results on student engagement and motivation. They also found that most of the studies used simple gamification elements (e.g., points, badges) rather than complex ones (e.g., narratives, quests), and that there was a lack of rigorous evaluation methods and theoretical frameworks in the studies.
- Kapp (2012) proposed a model for designing effective gamified learning experiences based on four steps: identify the learning outcomes; determine the game elements; align the game elements with the learning outcomes; and evaluate the effectiveness of the gamified learning experience. He also provided several examples and best practices for applying gamification in education.

## **2.3 Solution Approach**

The Development of Gamified Platform on Children's Rights is a game that aims to provide a fun and interactive way for children to learn about their rights as defined by the United Nations Convention on the Rights of the Child (UNCRC)[2]. The game uses gamification techniques such as rewards, challenges, feedback, and storytelling to make learning about children's rights enjoyable and interactive. The game also uses different scenarios and characters that are relevant and relatable to the Indian context. The game

also provides facts and stories that illustrate the real-life situations of children's rights in India and around the world.

The methodology and technology used for developing the game are as follows:

- The game is developed using an agile approach, which involves iterative and incremental development cycles, frequent testing and feedback, and collaboration among stakeholders. The agile approach allows for flexibility and adaptability in responding to changing requirements and user needs.
- The game is designed using a user-centred design process, which involves understanding the user's needs, preferences, and motivations; creating user personas, scenarios, and stories; prototyping and testing the game features and functions; and evaluating and improving the user experience. The user-centred design process ensures that the game meets the user's expectations and goals.
- The game is implemented using a gamification platform, which is a software tool or service that provides the functionality and features for creating gamified applications. The gamification platform allows for easy integration of game elements such as points, badges, leaderboards, narratives, quests, etc. into the game. The gamification platform also provides analytics and reporting capabilities for measuring and monitoring the game's outcomes and impacts.
- The game is deployed using a cloud-based service, which is a platform that provides the infrastructure and resources for hosting and delivering the game over the internet. The cloud-based service enables scalability, reliability, security, and accessibility of the game[6][4].

# **CHAPTER 3**

## **DESIGN (UML AND DATA MODELING)**

## 3.1 UML Modelling

### 3.1.1 State Diagram

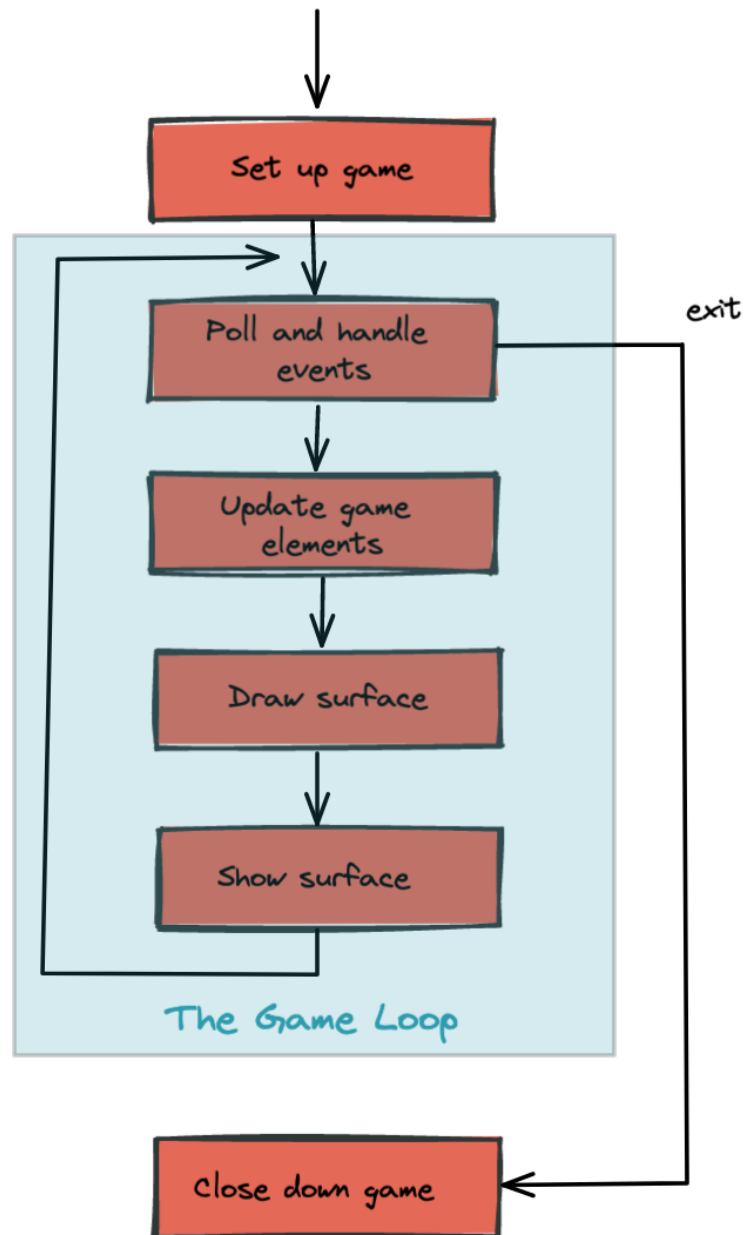


Fig 1.1

### 3.1.2 System Diagram

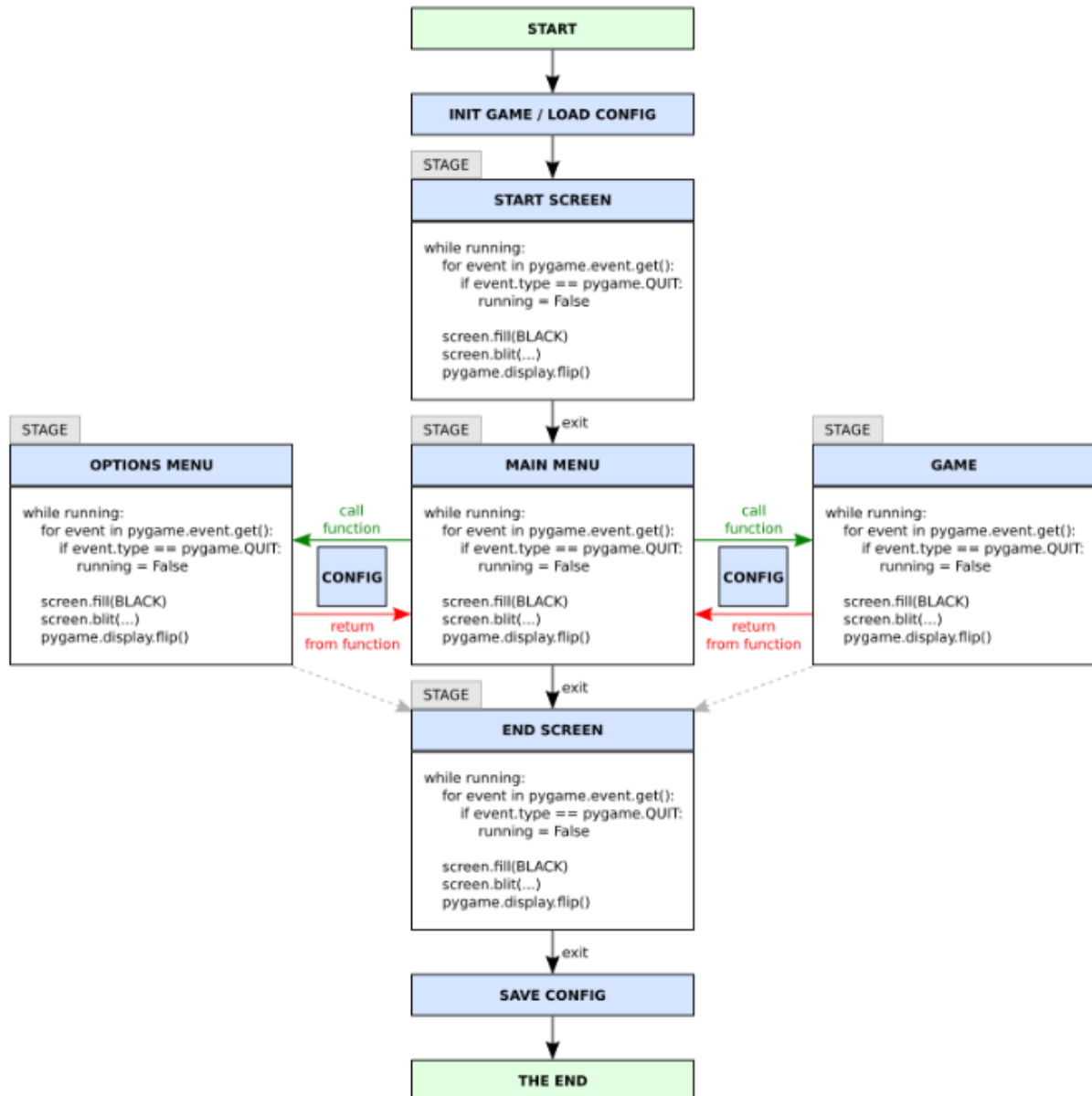


Fig 1.2

### 3.1.3 Sequence Diagram

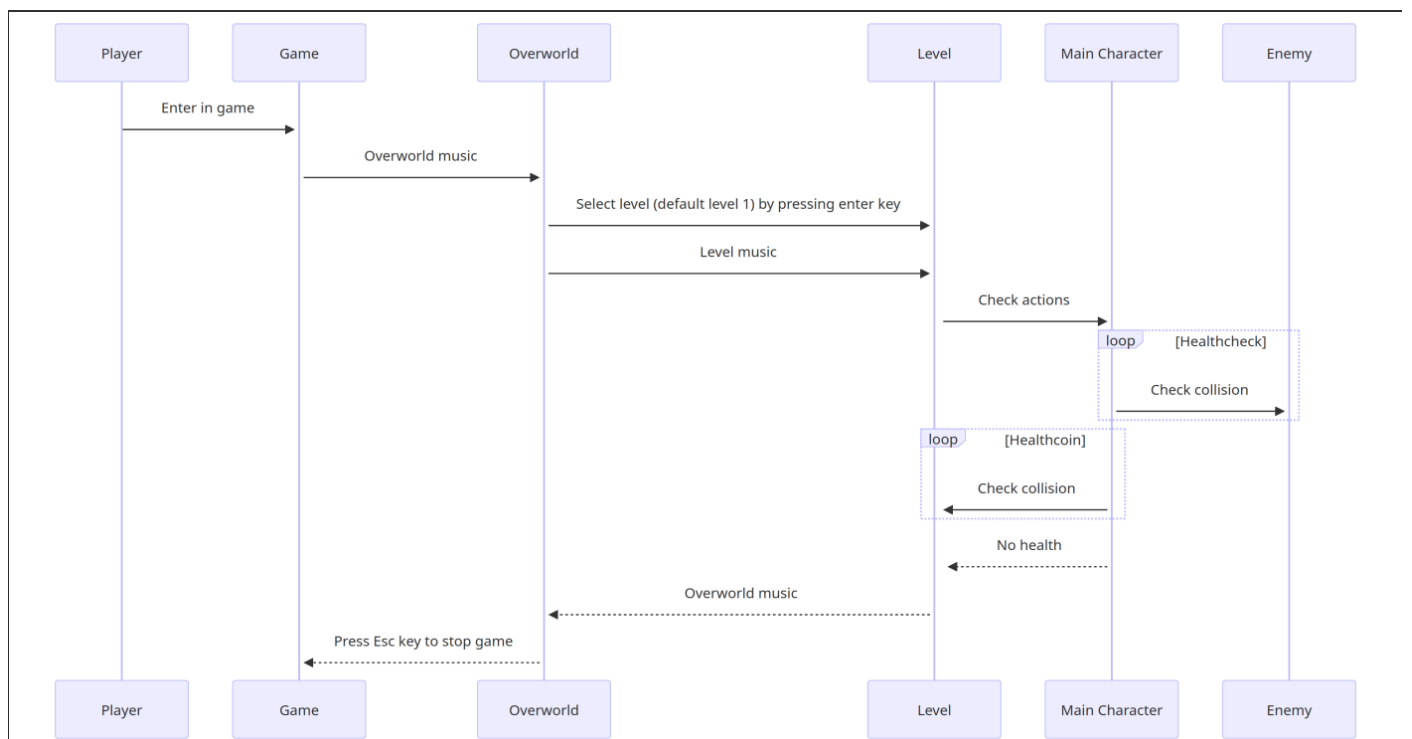


Fig 1.3

# **CHAPTER 4**

# **IMPLEMENTATION**

## 4.1 Tools Used & Technology

To create the game, We have used pygame library of python, which is a cross-platform framework for making video games. Pygame provides various modules and functions for creating graphics, sound, input, and events for the game[5]. Pygame also supports various formats and features for loading and displaying images, fonts, music, and sounds. Pygame is free and open source, and it can run on various operating systems such as Windows, Linux, Mac OS X, etc[6].

Pygame is suitable for creating the game because it allows me to create different types of games such as word hunter, runner, Pursuit Peril, and Don't Touch my Ring. Pygame also enables me to create interactive and engaging games that can teach children about their rights in a fun and playful way. Pygame also allows me to customize and modify the game according to the user's needs and preferences.

## 4.2 Testing

### 4.2.1 Testing Approach

We have done manual testing for the game, which means we have tested the game by playing it and checking its functionality, usability, and performance. We have followed a set of predefined test cases that cover all the requirements and scenarios of the game. We have also performed exploratory testing to find any unexpected bugs or issues in the game.

### 4.2.1 Testing Cases

We have tried to cover all the cases that can occur in the game to prevent bugs. Some of the test cases are:

- **Test case 1:** Verify that the user can select one of the four scenarios to play: Word Hunter, Runner, Pursuit Peril, or Don't Touch my Ring.
- **Test case 2:** Verify that the user can see the instructions and the learning objectives for each scenario before playing.
- **Test case 3:** Verify that the user can play the Word Hunter scenario and guess the word related to a specific child right by typing letters. Verify that the user can see a fact on that right after guessing the word.
- **Test case 4:** Verify that the user can play the Runner scenario and run and dodge some people who are trying to prevent them from using their rights. Verify that the user can collect coins and power-ups along the way.



- **Test case 5:** Verify that the user can play the Pursuit Peril scenario and go to the police station and report a violation of their rights. Verify that the user can dodge village people who are against their rights and try to stop them from reaching the police station.
- **Test case 6:** Verify that the user can play the Don't Touch my Ring scenario and protect a ring that symbolizes their right to be free from violence and abuse. Verify that the user can use their hand to prevent other adult hands from touching the ring. Verify that the user can see messages that explain why violence and abuse are harmful and unacceptable.
- **Test case 7:** Verify that the user can view their scores for each scenario or for the whole game. Verify that the scores are stored in a database and displayed on a dashboard or a leaderboard.
- **Test case 8:** Verify that the user can view their badges that they earned for completing each scenario or for achieving certain goals in the game. Verify that the badges are stored in a database and displayed on a profile or a gallery.
- **Test case 9:** Verify that the user can view their certificates that they earned for completing the whole game or for demonstrating their knowledge and skills on children's rights. Verify that the certificates are stored in a database and displayed on a portfolio or a report.

### 4.2.3 Testing Reports

We have generated test reports for each scenario and for the whole game. The test reports contain information such as:

- The number of test cases executed
- The number of test cases passed
- The number of test cases failed
- The pass percentage
- The failure percentage
- The comments
- The defects
- The status of defects (open, closed, responding)
- The number of defects open, resolved, closed
- The breakdown by severity and priority

The test reports are presented in a visual and clear way using color indicators, graphs, tables, and charts. The test reports also provide some metrics such as defect density, percentage of fixed defects, etc. The test reports help us to evaluate and improve the quality of the game.

### 4.3 User manual

The Development of Gamified Platform on Children's Rights is a game that aims to provide a fun and interactive way for children to learn about their rights as defined by the United Nations Convention on the Rights of the Child (UNCRC)[1]. The game consists of four different scenarios that cover various aspects of children's rights, such as education, health, protection, and participation. The game also provides facts and stories that illustrate the real-life situations of children's rights in India and around the world[3].

To play the game, you need to follow these steps:

- Launch the game by clicking on the icon or the link.
- Select one of the four scenarios to play: Word Hunter, Runner, Pursuit Peril, or Don't Touch my Ring. You can also view the instructions and the learning objectives for each scenario before playing.
- Play the selected scenario and perform different actions depending on the type of game. You will also receive feedback and rewards based on your performance and progress in each scenario.
- View your scores, badges, and certificates for each scenario or for the whole game. You can also compare your scores with other players or share your badges and certificates with others.

Here are some details about each scenario and how to play them:

- **Word Hunter:** In this scenario, you have to guess a word that is related to a specific child right by typing letters. You will see a clue on the top of the screen that describes the right. You will also see some letters on the bottom of the screen that you can use to form the word. You can use your mouse to select the letters appearing on the screen or your keyboard to type them. You have to guess the word within a limited time and number of guesses. After guessing the word, you will see a fact on that right that may surprise or shock you.
- **Runner:** In this scenario, you have to run and dodge some people who are trying to prevent you from using your rights. You will see a character running on a road with various obstacles and enemies. You have to use your space key to jump over or avoid them. You will also collect coins and power-ups along the way that will help you reach the finish line. You have to complete the level within a limited time and without losing all your lives. After completing the level, you will see a story on that right that may inspire or touch you.
- **Pursuit Peril:** In this scenario, you have to go to the police station and report a violation of your rights. You will see a character in a village with various obstacles and enemies. You have to use your up, down, left, right arrow keys to move your character and your space key to jump over or overcome them. You have to reach the police station within a limited time and without losing all your lives. After reaching the police station, you will see a story on that right that may inspire or touch you.
- **Don't Touch my Ring:** In this scenario, you have to protect a ring that symbolizes your right to be free from violence and abuse. You will see a hand holding a ring on the screen

with other adult hands trying to touch it. You have to use your up, down, left, right arrow keys to move your hand and prevent other hands from touching the ring. You have to protect the ring for as long as possible without losing all your lives. After losing all your lives, you will see messages that explain why violence and abuse are harmful and unacceptable.

# **CHAPTER 5**

## **PROJECT PLAN**

## 5. PROJECT PLAN

The Development of Gamified Platform on Children's Rights is a game that aims to provide a fun and interactive way for children to learn about their rights as defined by the United Nations Convention on the Rights of the Child (UNCRC)[2]. The game consists of four different scenarios that cover various aspects of children's rights, such as education, health, protection, and participation. The game also provides facts and stories that illustrate the real-life situations of children's rights in India and around the world[3].

The project plan for developing the game includes the following components:

### 5.1 Gantt Chart

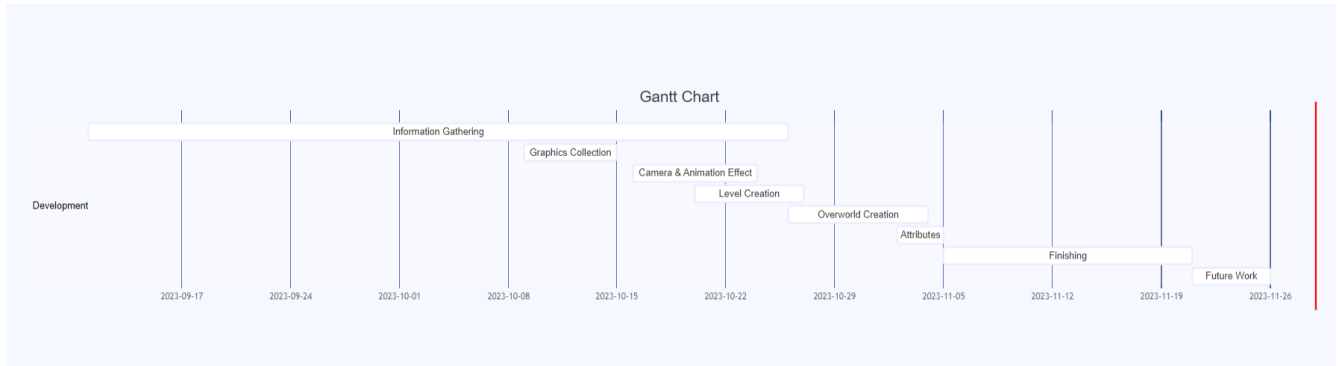


Fig 2

# **CHAPTER 6**

## **PROJECT SCREENSHOT**

## 6. PROJECT SCREENSHOTS

### 6.1 Game 1(Word Hunter)

#### Starting Window:

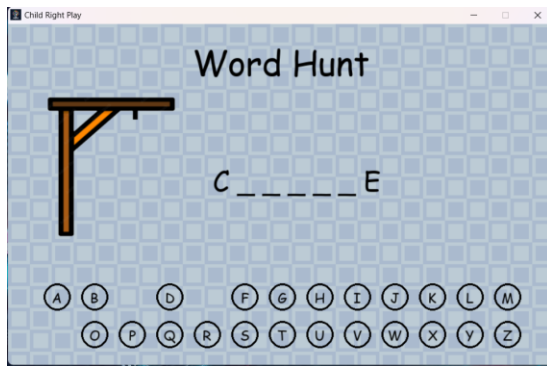


Fig 3.1.1

#### Game Play:

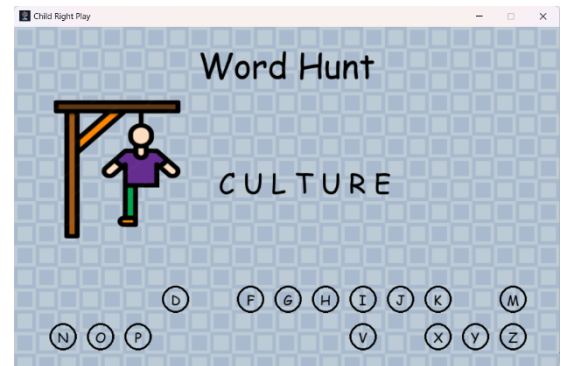


Fig 3.1.2

#### Game End(Win):

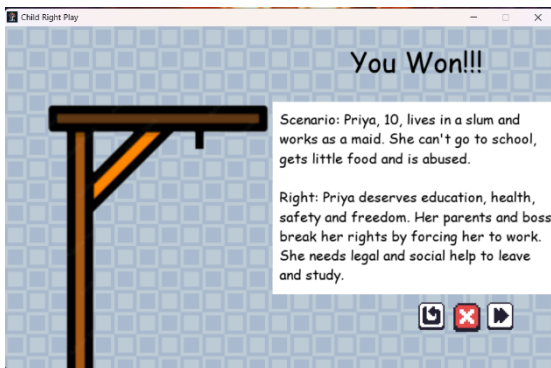


Fig 3.1.3

#### Game End(Lose):

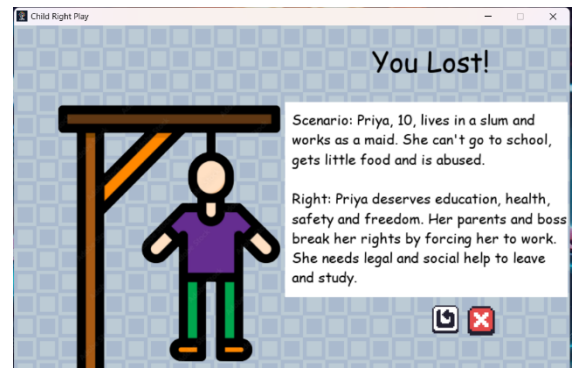


Fig 3.1.4

## 6.2 Game 2(Runner)

### Starting Window:

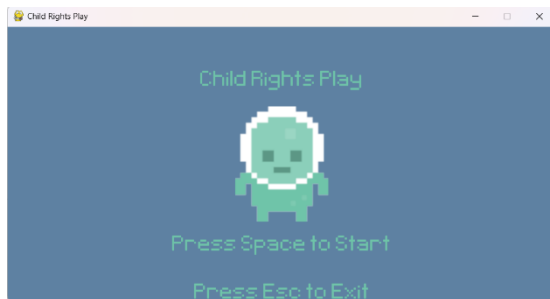


Fig 3.2.1

### Game Play:



Fig 3.2.2

### Game End:

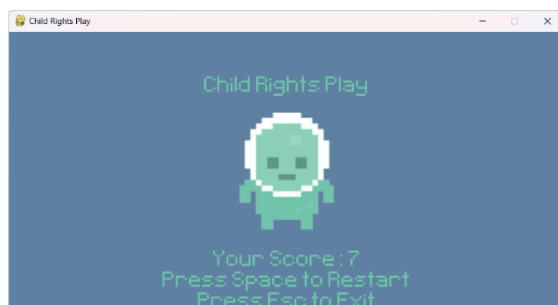


Fig 3.2.3



## 6.3 Game 3(Pursuit Peril)

### Starting Window:



Fig 3.3.1

### Game Play:

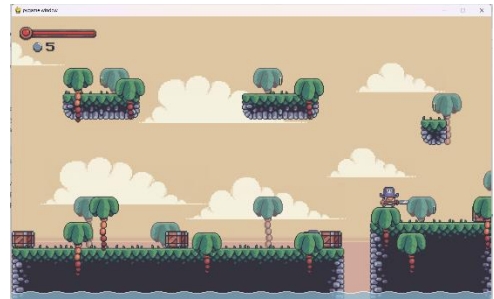


Fig 3.3.2

### Game End(Win):



Fig 3.3.3

## 6.4 Game 4(Don't Touch my Ring)

### Starting Window:



Fig 3.4.1

### Game Play:

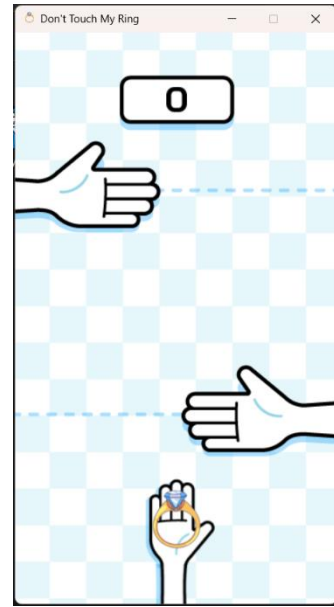


Fig 3.4.2

### Game End:

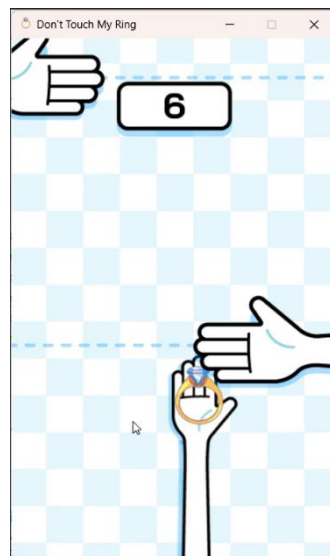


Fig 3.4.3

# **CHAPTER 7**

## **CONCLUSION & FUTURE SCOPE**

## **7. CONCLUSION & FUTURE SCOPE**

The Development of Gamified Platform on Children's Rights is a game that aims to provide a fun and interactive way for children to learn about their rights as defined by the United Nations Convention on the Rights of the Child (UNCRC)[1]. The game consists of four different scenarios that cover various aspects of children's rights, such as education, health, protection, and participation. The game also provides facts and stories that illustrate the real-life situations of children's rights in India and around the world.

### **7.1 Conclusion**

The game was developed using an agile approach, a user-centred design process, a gamification platform, and a cloud-based service. The game was tested and evaluated using manual testing, test cases, test reports, and user feedback. The game was found to be effective and engaging in improving the knowledge, skills, attitudes, values, and behaviours of children regarding their rights. The game also met the expectations and goals of the client and the users.

The game has the potential to make a positive impact on the lives of millions of children in India and beyond. The game can be used as a tool for raising awareness and educating children about their rights and responsibilities as citizens. The game can also be used as a tool for fostering a culture of peace and harmony among children and adults. The game can also be used as a tool for empowering and inspiring children to take action and participate in the protection and realization of their rights.

### **7.2 Future Scope**

The game also has some limitations and challenges that can be addressed in the future. Some of the future scopes of the game are:

- The game can be improved by adding more features and scenarios that increase the variety, novelty, relevance, and context of the game. The game can also be improved by adding more customization, personalization, social, and collaborative features that enhance the user experience and satisfaction of the game[6].
- The game can be evaluated by using more rigorous and comprehensive methods and tools that measure the outcomes and impacts of the game on the cognitive, affective, and behavioural domains of the users. The game can also be evaluated

by using more theoretical and conceptual frameworks that explain the mechanisms and processes of the game on the users.

- The game can be scaled and adapted to accommodate different numbers of users and different levels of difficulty. The game can also be translated and localized to suit different languages and cultures. The game can also be integrated and aligned with other educational initiatives and programs that support the game's objectives and outcomes[6].

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