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Design and Implementation of Monopoly Game using Yoruba Language

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Abstract
Monopoly is a classic board game that simulates real estate trading and economic principles. Played by two to eight players, its objective is to accumulate wealth through strategic property acquisition and development, while bankrupting opponents. The game is known for its iconic board layout featuring properties named after real streets and locations, alongside utilities and railroads. Players roll dice to move around the board, purchasing properties they land on and collecting rent from opponents who land on their owned properties. Monopoly also incorporates chance and community chest cards that can either benefit or hinder players' financial positions but all the features use in playing the game was written in English language which is a common language in a large community. However, some non-educated people most especially people from western part of Nigeria always find interest in this game but their inability to read characters written in English has incapacitate them from playing the game. To resolve this problem a monopoly game using Yoruba Language that will allow larger audience and Yoruba like to participate in the game players and to monopolize property groups to increase rental income, making negotiations and trades essential components of game play was developed. The research methodology, flow chart and the board interface system are explored. The flow chart illustrates interactions between player, color representing each player, players turn, money deduction or addition when landed on each corner on the board. The new system, a monopoly game using Yoruba Language, is user-friendly interface and the players were able to play it conveniently with no stress.

Keywords- *Monopoly Game, Yoruba Language, iconic, Board game, Bankrupting*.

1. Introduction

A game is a structured activity that follows some rules and undertaken for entertainment, fun, or sometimes education. Games, though defined in various ways, generally involve competition, clear objectives, and decision-making within set rules. Beyond entertainment, they are deeply rooted in human culture, reflecting creativity, strategy, and social interaction across civilizations and historical periods. Various games like Chess, Ayo Olopon, Monopoly, Snake and Ladder, and Ludo have been created worldwide, but Monopoly stands out as both unique and educational, offering many valuable lessons. [1]

Monopoly game is a classic board game of economic strategy and financial management. Developed in the early 20th century, it has become one of the most iconic and widely played board games worldwide. Players move around a square board by rolling dice, buying and trading properties, and developing them with houses and hotels. The goal is to bankrupt opponents by charging rent when they land on owned properties. The game is developed by Elizabeth Maggie in 1903 [9]. The game involves buying and trading properties. The goal is to acquire monopoly which means owning all of the properties in a particular color group, and bankrupting all other players.

Monopoly is a classic board game that involves 2-8 players to compete before becoming the real estate tycoon. Players take turns by rolling dice to move around a game board lined with properties like streets and avenues. The goal is to strategically buy and develop these properties in order to collect rent from other players who land on them. By acquiring monopolies on properties of the same color group, players can increase the rent they charge, ultimately driving their opponents into bankruptcy and securing their victory [2].

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However, the existing monopoly game is being developed using English characters which do not allow a larger audience to have access to the game i.e. a player who does not understand English will not have access to play the game. To fill this gap a Monopoly game using Yorùbá character was developed to allow a larger audience to have access to the game.

2. Related Works

Janson [4], examined whether consumers in a monopolized game market are disadvantaged, the potential effects of abolishing the monopoly, and how the market could be improved for consumers through reforms or alternative regulations. The study is made through the perspective of law and economics. Legal practice, legislation and economic theory are used. To relate the theory to reality, the example of the Swedish game monopoly and Svenska Spel has been used. The conclusion is that the monopoly market situation currently on several game markets today is not the best solution for the individual consumer.

Kotrik [5], created a Monopoly game simulator which enabled agent-players with various strategies to play the game. The work goes through several levels; the first one is his own observation of participants on the principles of behavioural experiments; the second one is drilling information from literature about strategies of players followed by a synthesis of these two through their analysis. As a result of analysis, several outcomes of strategy are offered. All is completed with a strategy model for a human player. He later applied the model to an artificial agent-player using a rule-based system. Two optimizations of the strategy were applied. The first one used an approach of genetic algorithms which through evolution of certain parameters improved the strategy of an agent-player.

The second optimization was made with an aim to specify a decision-making process of an agent from a global perspective by means of a reinforcement learning approach using a neural network as a learning system to distinguish whether a decision of the strategy is correct or not. At the end of this work all four strategies were compared before their next optimization.

Kulkaini [6], investigated the impact of using a Monopoly Board Game (MBG) in the teaching-learning process of financial statement analysis (FSA) to information technology management students, who earlier had little or no finance or accounting prior educational background. The subjects were students (N=159) in an Indian University. The study; first, narrated the process of administering MBG; second, quantitatively analyzed the learning experience through a structured questionnaire to validate the research objectives. The study resulted in the creation of three factor-clusters namely cognizance, collaboration, and enthusiasm which impacted students and MBG learning experience over the traditional teaching-learning methods. Results showed that factors relating to cognizance are more impacting than collaboration and enthusiasm.

Nurofiah [8], investigated the Effect of Monopoly Game Based Learning on Students' concept mastery and Students' motivation in learning interaction of living things and its environment. The research method used in this research was quasi-experiment, involving experimental group and control group. The design used in this research is pre-test and post-test design. The sample was 29 students in 7th grade private school "X" in Bandung. The students' concept mastery was measured using an objective test and given at the pre-test and posttest, while the Students' Motivation was measured using a Likert Scale according to the ARCS motivational questionnaire. The result of this research based on the analysis of the data, that the normalized gain in experimental class was 0.48 (categorized as medium level). Meanwhile in control class is 0.29 (categorized as low level) the statistical test shows that there is a significant difference between experimental class and control class after the implementation of the treatment.

Kurniati & Paramitan [7], investigated the effectiveness of guidance and counselling with monopoly game media to improve to self-confidence of students in SMA Muhammadiyah 1 Magelang City. To do so, it employs experimental study with AOD (After Only Design). The result showed that guidance and counselling with monopoly game effectively improve the students' self-confidence. It was proven from the difference scores of self-confidence scale between experimental and control group in which the improvement of the experimental group is greater than the control group. The result of Paired sample Test showed significance

coefficient 0.001< 0.05, indicating that guidance and counselling with monopoly media is effective to improve the students' self-confidence in SMA Muhammadiyah 1 Magelang City. The implications of increasing self- confidence, look increasingly human, increasing communication skills, believing in self-reliance and being able to think positively.

3. Methodology

System development Life cycle (SDLC) model was used and the system developed was qualitative in nature. SDLC allows for the development of game features in phases, enabling a gradual implementation process, facilitates and revisiting implemented phases for adjustments and corrections and also ensuring continued alignment with the project scope for future updating.

The system design encompasses the component required to implement the proposed alternative system effectively. The User Interface (UI) was used was intuitive and friendly, it allows user to select the number of players and selecting colors to be represented by each player. The interface feature aspect of the design including choosing of color, selecting numbers of players, bidding a property.

The game board have a lot of features and a lot of rules. On this aspect, once a user land on a property he will be left with no option than to buy the property, user can also trade a property if he is short of money and there is room for trading property.

HTML was used to design an interface for the monopoly game, CSS was used to style it, and Java script was used to integrate the monopoly board game featuring Yoruba language that allow larger audience to have access to the game and interact with the game, JavaScript was used to add engaging game play mechanics. Figure 1 shows the dynamism of the system flow.

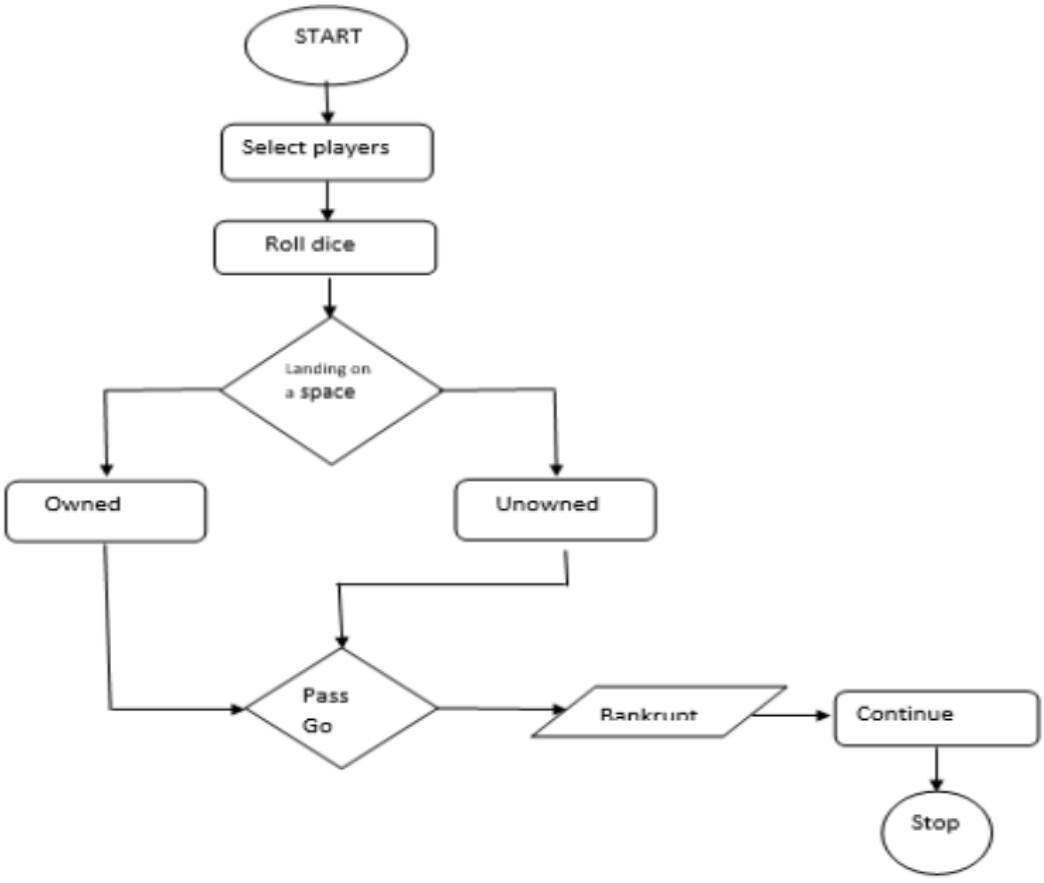

Figure 1: System Flowchart

4. Results and Discussion

The Developed game, a monopoly game using Yoruba Language, allows user to interact with the system through a user-friendly interface, where selected numbers of players and the colors of each player will be represented. Some of the Yorùbá terminologies used are Olujide kinnni (first player) the number of players will determine how it will be pronounced in Yorùbá; the number range from ikinni titi de ikejo (that is 1-8), Ewon (jail), Oja (market), Koja (go), awo omi osan (colour yellow), awo omi aro (colour blue), Ilaji (resort), Mu olujide (select player) etc.

The system allows larger number of Yoruba speaking users to have access to the game because it developed using Yoruba Language generated from Yoruba language to play the game with each other, trade property, bid and auction property. It also earns more money when land on free parking and some other features on the board.

This system can enable the user to trade property and also bid a property when run out of funds allocated to the user. The input and output generated are shown in Figure 2- 5

Figure 2 explains the welcome screen, where the players read instruction and select the number of players and also the color to be represented with. These instructions are on the welcome screen also.

Figure 3 shows the game board and the amount assigned to each player. It also includes an option to randomly determine who plays first, though being selected first does not guarantee the first dice roll.

Figure 2: Welcome Screen (selecting the number of players and instruction)

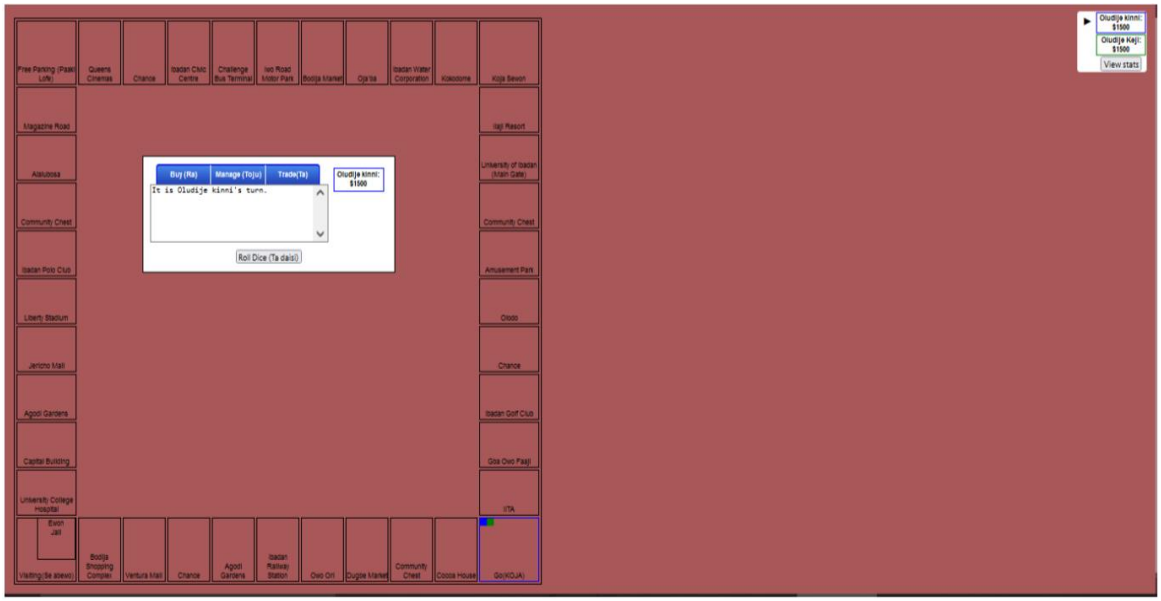

Figure 3: Game Board

Figure 4 illustrates the game mechanics where the first player rolls the dice, lands on a property, purchases it, and has the amount deducted before the turn ends, while Figure 5 illustrates the rule that when a player lands on another player's property, they must pay a fine based on the property's value.

5. Conclusion

In comparison with other existing Monopoly game developments, this research work stands out as the first to integrate the use of a local language, specifically Yoruba, in the design and implementation of the system. This unique approach not only localizes the gameplay but also promotes the preservation and appreciation of indigenous language and culture through digital entertainment. The system evaluation was carried out after the successful development of the game using Yoruba characters, with careful attention given to assessing performance, usability, functionality, and overall effectiveness. This rigorous evaluation ensured that the system met user requirements and operated optimally under different conditions. Beyond technical validation, the feedback obtained from users was highly impressive and encouraging, showing that the game was not only functional but also enjoyable and culturally relevant.

The outcome of this project highlights the importance of incorporating native languages into modern digital applications. It demonstrates that games can serve as both educational and recreational tools, fostering language preservation while providing entertainment. Moreover, the research opens avenues for future developments where other indigenous languages can be integrated into similar systems, thereby broadening inclusivity and accessibility in the gaming world. Ultimately, this work proves that the design and implementation of a Monopoly game in Yoruba language is both feasible and impactful, offering users a sense of cultural identity while maintaining the core educational and entertainment values of the original Monopoly game.

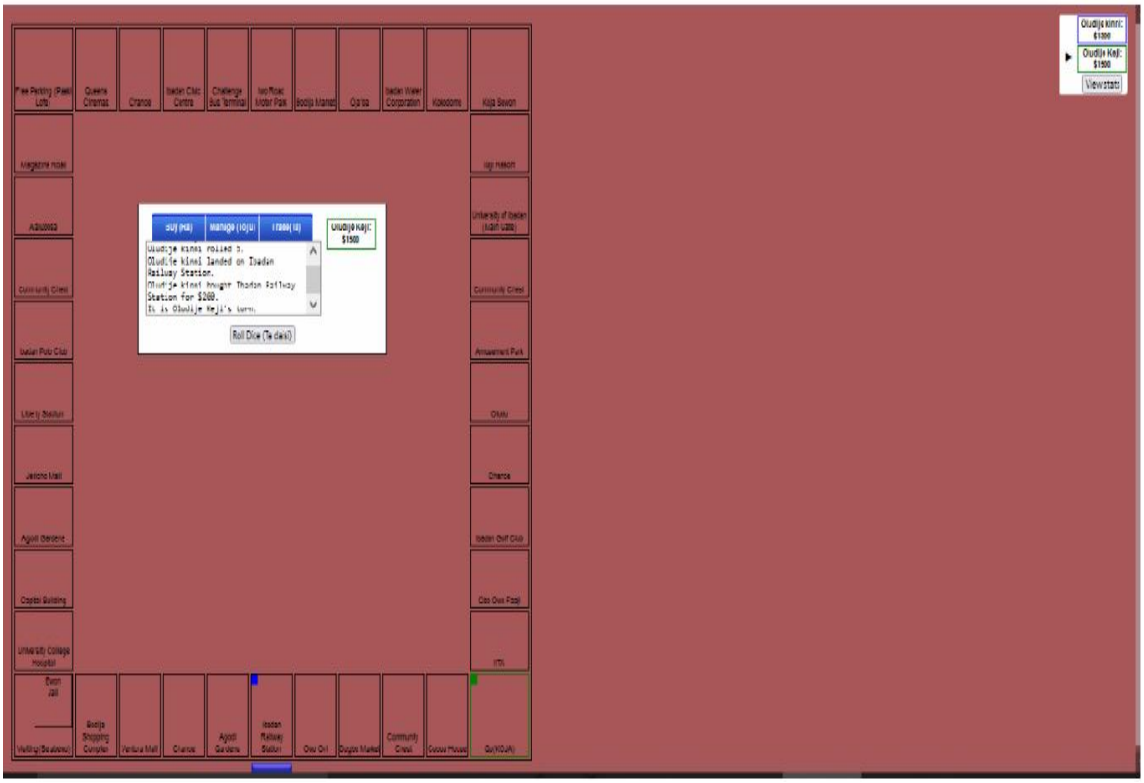

Figure 4: Game mechanics 1

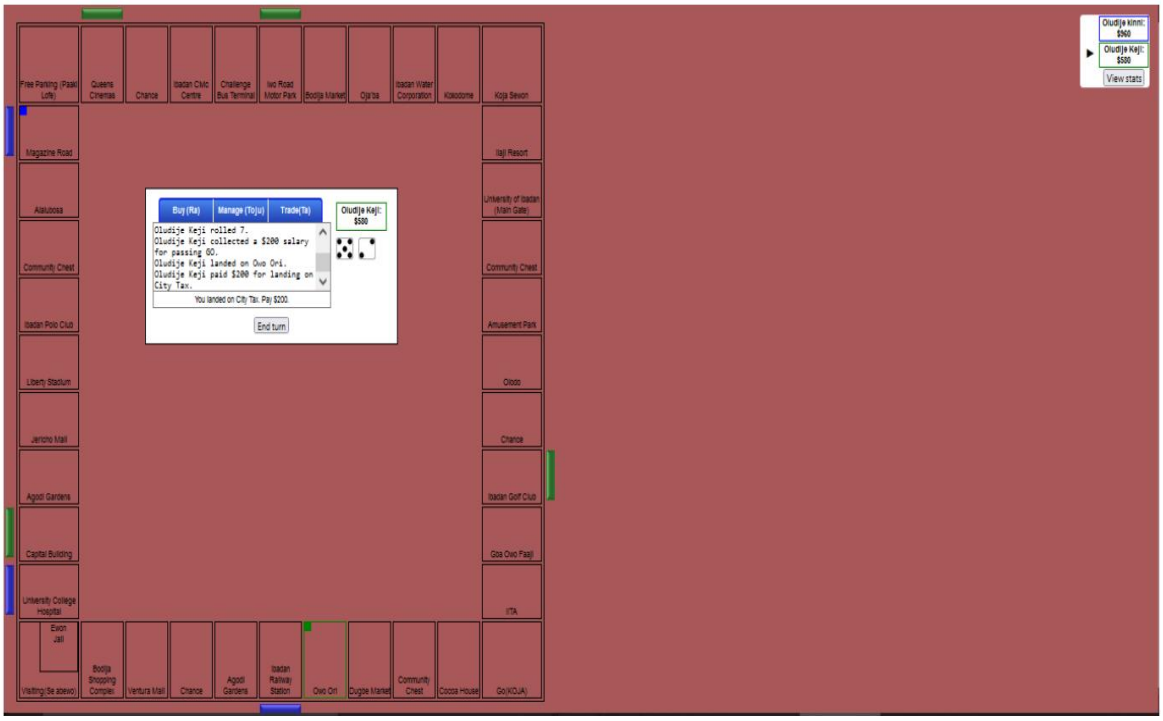

Figure 5: Game mechanics 2

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