BINARY CLASH: A MOBILE CARD GAME USING LINKED LIST DATA STRUCTURE AND RANDOMIZED ALGORITHM

Thesis

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ABSTRACT

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The study, conducted from August 2021 to July 2022, aimed to develop an educational and entertaining mobile card game inspired by UNO cards that implements binary numbers using linked list data structure and randomized algorithm. Specifically, it aimed to: 1. apply artificial intelligence; 2. create functional modules for single player and multiplayer modes; and 3. create a strategic gameplay.

The Agile software methodology was used as the study's software development process. While, C#, Visual Studio 2019 and Unity 3D were used to develop the mobile game application. The researchers also used Photon Unity Networking (PUN) for the multiplayer, Microsoft word for documentation and Google Forms for the evaluation data. The International Organization for Standardization (ISO) 9126 software quality model was used as the basis for the assessment of the project components and functionalities.

The study was evaluated by 53 non-technical and 12 technical respondents and resulted with an average mean of 4.75 for non-technical and 4.66 for technical. The "Excellent" remarks and positive results imply that the study is an ideal card game model for people in the fields of information technology and computer science.

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INTRODUCTION

Project Context

Card game is a popular type of game entertainment that can be played by anyone from young people to adults as long as they have knowledge and understanding of the rules. One of those card games is Uno card game. Played by many, it has introduced a different kind of strategic gameplay. However, it requires multiple players and an actual card deck, and due to popularity of mobile devices, and different games being developed, most players have already switched to mobile games.

The Binary Clash is a 2D mobile card game that can be played by one or more players and against an artificial intelligence (AI) opponent on the gameplay of Uno, wherein the player must complete the random binary pattern with corresponding points by placing the right card into its designated section on each round, and the player with the highest points wins the game. For additional twist, and to make the game more exciting, special cards can also be drawn from the deck. These includes reset number