

Design and Development of an Interactive Jigsaw Puzzle Game for Enhancing Logical Thinking and Problem-Solving Skills

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Abstract – Jigsaw Puzzle is a portable application which is intended to give a riddle comprehending knowledge to the player. There are numerous riddle amusements created till now which utilize the pictures from the display and on-spot cam caught pictures. In spite of the fact that a percentage of the recreations still utilize their own particular inherent exhibition for separating pictures. There are numerous riddle recreations which utilize system for their working while some can be played logged off. For the most part, every new level begins with the division of the picture into various matrices these networks fluctuated arbitrarily with level change according to the outlined diversion. There are numerous standard focused around which the picture division occurred, some of them incorporate picture determination, shapes like rectangle, square and so forth. The greater part of the amusements likewise gave the first picture see out of sight or showed a minimized perspective of the first picture at any of the corners or some simply did not take after this approach. Java, Android, Symbian, Asha, IOS, and so on are the distinctive stages that have been utilized to outline riddle recreations.

Keywords: Jigsaw, SD, IoS

I. INTRODUCTION

Diversion playing began with the tabletop games which then developed into played in centralized servers and afterward later on Pcs. At the point when played on machines, riddle incorporated the move and customize strategy. With the headway of innovation these recreations were presently played on java telephones. Later this progressed to android telephones with touch screen which facilitated the customary move and customize strategy.

The amusement normally begins with the picture being isolated into various frameworks and matrices can be lines, handles, interlocking, example or any unpredictable shape which are scattered over the screen. The player improves the scattered networks and tries to organize in the same way as the first picture. The player needs to comprehend the level in the base time and in some riddle amusements he can choose the level of its own decision to score the most noteworthy. The pictures in this application can be chosen from the display introduce on the SD card or from the cam caught picture. The most noteworthy score accordingly produced can be redesigned with the player's name. Any novice who has recently started playing the diversion can elude the guidelines and continue the amusement in understanding. The client can haphazardly select any of the tackled levels and resolution it to procure higher score and utilization the slightest time as could be allowed.

There have been a few recreations till date which have included numerous properties like extraction of pictures from the display and cam caught pictures. What makes the jigsaw riddle emerge is the voyage replay gave toward the end. One more in addition to purpose of this application is that it doesn't oblige net @IJCITE-2026, All rights Reserved

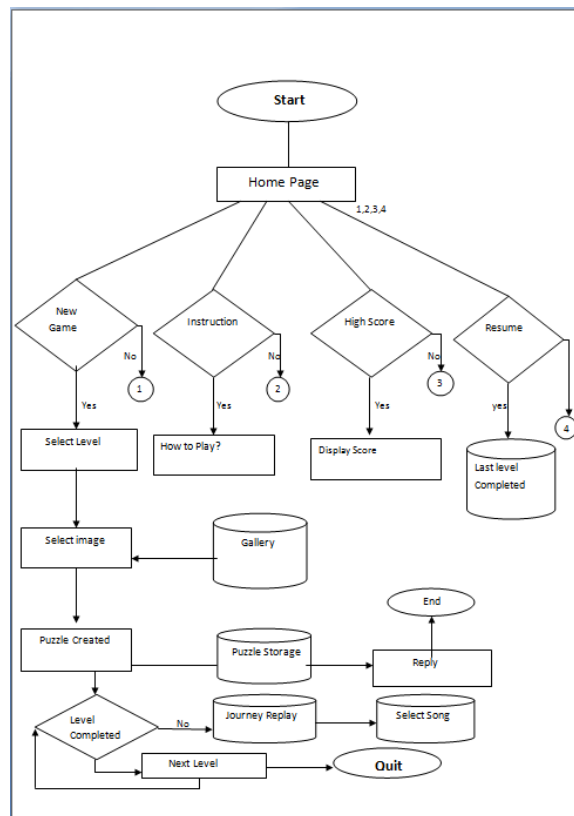
access to capacity and continue further. No different database is made to choose pictures or music records rather they can be specifically chosen from the display and playlist introduce on the SD card.

II. THE EVALUATION

The diversion composed till date has constantly considered time as a vital trait. Keeping this parameter in thought, recreations are ad libbed with each one passing day. The most punctual rendition of riddle diversions didn't force at whatever time boundations on the player- the player can take as much time he needs to, according to his ability. The high score is made by the person who takes restricted time to adjust the pieces and concentrate the first picture. This gives the player adequate time to play yet his fundamental need is to place all the pieces at its legitimate place at all time.

With time, changes were set aside a few minutes constraint was forced on the matrix. A perfect time, remembering the multifaceted nature of the riddle is relegated to each level and as needs be the player needs to settle the riddle in that exact apportioned time. The individual setting aside the slightest time for tackling is incorporated as the most astounding scorer.

III. DATA FLOW DIAGRAM

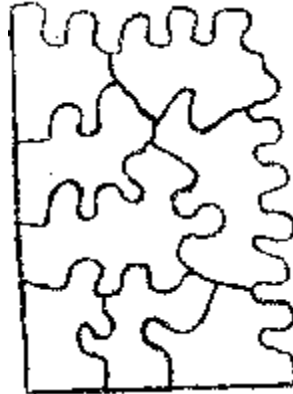


IV. GENERAL ANALYSIS OF CUTTING STYLES

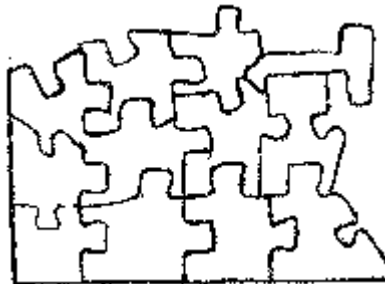
Fundamentally, jigsaw riddle is examined from five viewpoints: the interlocking nature of the riddle, the state of the handles, the shape of the lines between handles, the general example made, and unique systems.

- **Interlocking.** A riddle is interlocking when a large portion of it can be pulled along the table by a corner; it is semi-interlocking when just littler areas slide together along the table; and non-interlocking when just the pieces touched will move.

1. Round



2. Square



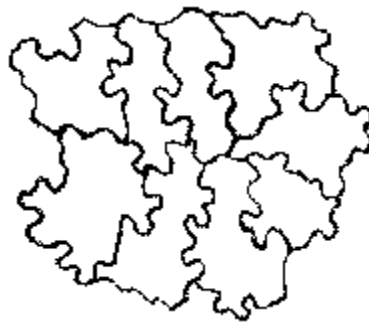
3. Bend



4. Curl



5. *Earlet (classic)*



6. *Foot*



- **Round:** The round puzzle style consists of curved and circular edges that provide a smooth and visually appealing appearance. Unlike traditional straight-edged puzzle pieces, round-shaped cuts increase the complexity of piece matching and improve the overall gaming experience by requiring greater attention to shape alignment and positioning.
- **Square:** The square puzzle style is the most common and traditional form used in jigsaw puzzle games. In this format, the puzzle pieces are generated with straight edges and angular corners, making the arrangement process simpler and more structured. Square pieces help beginners easily identify matching sections and improve puzzle-solving efficiency.

- **Bend:** The bend puzzle pattern includes irregular curved connections and twisted edge formations between puzzle pieces. This design introduces additional difficulty and enhances user interaction by requiring players to carefully analyze the contours and alignment of each piece before placement.
 - **Curl:** The curl puzzle style is designed with spiral-like or curled edges that create a more artistic and challenging puzzle structure. These uniquely shaped connections increase visual complexity and provide an engaging gameplay experience by demanding higher concentration and pattern recognition skills from the player.
 - **Earlet (Classic):** The Earlet or classic puzzle design represents the conventional interlocking jigsaw structure commonly seen in traditional physical puzzles. Each piece contains protruding and indented sections that fit together precisely, offering a familiar and user-friendly puzzle-solving environment suitable for all age groups.
 - **Foot:** The foot-style puzzle pattern is characterized by extended edge formations resembling foot-like projections. This design variation introduces unique locking mechanisms between pieces, making the puzzle more interactive and visually distinctive while enhancing the overall challenge level of the game.
- knobs the state of handles (otherwise called tabs, bolts, or keys) comes in about boundless varieties, contingent on the creative energy and aptitude of the cutter. For characterization purposes, I characterize the real shapes as round, square, bend.

V. CONCLUSION

Like many puzzle games developed to date and based on the observations derived from various research papers and gaming applications, this game also incorporates the functionality of extracting and selecting images directly from the gallery available on the SD card or device storage. This feature enables users to personalize their gaming experience by choosing their own images as puzzle templates, thereby increasing user engagement, creativity, and entertainment value. The use of custom images allows players to interact with familiar photographs, making the gameplay more attractive and emotionally connected compared to conventional fixed-image puzzle games. The distinguishing factor that makes this game unique from existing puzzle applications is the inclusion of a **journey replay mechanism** provided at the completion of each level. This feature records and visually reproduces the sequence of steps taken by the player while solving the puzzle. At the end of the game, users can review the entire solving process, including piece movements, arrangement patterns, and completion stages. The replay functionality not only enhances the entertainment aspect of the game but also helps players analyze their problem-solving strategies, improve cognitive skills, and understand their gameplay efficiency. Furthermore, the journey replay system creates a more interactive and memorable user experience by allowing players to revisit and share their puzzle-solving achievements.

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