

# BRIDGES PUZZLE GAME APP

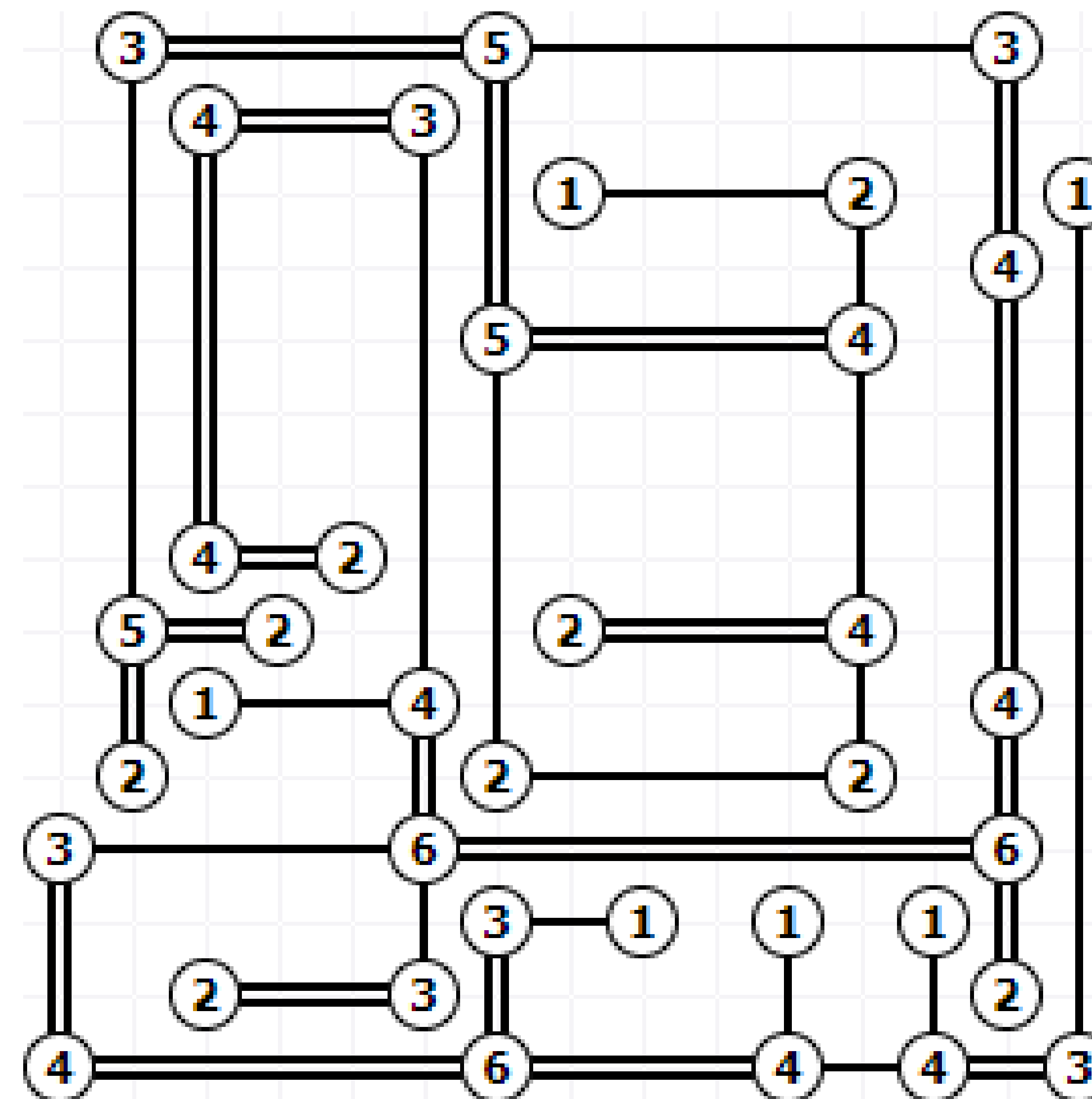
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## INTRODUCTION

The Bridges Puzzle Game, also known as Hashiwakakero, is a complex logic-based game that offers an opportunity for research. This study aims to explore the relationship between puzzle complexity and player engagement, as well as cognitive skill development in a gaming application.

**RULE:** This game is played on a numbered grid of islands to be connected by bridges. The number indicates the count of bridges. Bridges are horizontal or vertical, can't cross each other or islands, and only two can connect the same islands. All islands must be interconnected.



## OVERVIEW

### • Game Design & Implementation:

Elementary OS ensures consistent UI/UX and native speeds for the Bridge Puzzle Game. It offers varying difficulty levels and real-time multiplayer features for enhanced community interactivity while maintaining privacy protection.

### • Data Collection:

Player interactions and scores are securely stored in the cloud for online comparisons. Analytics gather anonymous usage statistics and adhere to the elementary OS privacy model by tying score data to player profiles only with explicit consent.

### • Analysis Framework:

Data analysis correlates puzzle difficulty, player engagement, and cognitive skill development through statistical analysis, visualization tools, and algorithm auditing.

### • UI/UX Goals:

UI/UX design prioritizes playability, simplicity, and varying difficulty levels. User stress testing guides improvements for usability and accessibility across different age groups.

### • Open Dataset Plans:

External researchers may analyze aggregated, anonymous data snapshots and provide feedback to ensure transparency and community engagement.

### • Research Roadmap:

Research includes exploring cursed level generation algorithms, studying player retention across demographics, and proposing data-driven cognitive skill development models to improve gameplay dynamics and skill development.

## TOOLS INTEGRATION

### Development Environment

elementary OS

### Programming Language



Vala Language

### Documentation



### Database



## CONCLUSION

The Bridge Puzzle Game App combines entertainment and education, promoting cognitive development and problem-solving skills. It is suitable for formal and informal educational settings and engages users in meaningful cognitive tasks. Ongoing research can explore its impact and potential for education, cognitive training, and game design.

## BIBLIOGRAPHY

- Nonaka, J. (2016). Hashiwokakero: Solving the Puzzle of Hashiwokakero
- Diakopoulos, N. (2019). The Gameful World: Approaches, Issues, Applications. The MIT Press.