AI-Based Interactive Guessing Game
Project Proposal

1. Project Overview

This project proposes the development of an AI-based interactive guessing game designed for entertainment purposes. The system simulates logical guessing by asking a sequence of binary (yes/no) questions to identify an object the user is thinking of within a limited number of attempts. The project follows a rule-based decision-tree approach to ensure predictable and explainable behavior suitable for academic evaluation.

2. Objectives

• Design an interactive AI system capable of logical elimination
• Implement decision-tree–based reasoning using yes/no questions
• Guess user-selected objects within defined constraints
• Demonstrate AI concepts such as rule-based systems and knowledge representation

3. System Functionality

Core Features
• User thinks of an object without initial input
• AI asks structured yes/no questions
• Each answer reduces the possible object set
• AI attempts to guess within a fixed number of questions
• Clear success and failure handling

Constraints
• Yes/No answers only
• Limited number of questions (e.g., 15)
• Fixed categories such as Food, Animals, and Objects

4. Technical Approach

The system uses a predefined knowledge base containing objects and their attributes. A decision-tree logic engine selects the next best question based on remaining possibilities. Optional enhancement includes a learning mode where new objects can be added if the AI fails to guess correctly.

5. Technology Stack

Frontend: React / React Native
Backend: Node.js with Express
Data Storage: JSON files or MongoDB
AI Method: Rule-based decision-tree logic (no external AI APIs)

6. Project Deliverables

• Fully functional guessing game application
• Structured knowledge base
• AI logic module
• Interactive user interface
• Source code and documentation

• Demo-ready system

7. Limitations

• The AI is rule-based and not a neural learning system
• The system operates within predefined categories
• Accuracy depends on the completeness of the knowledge base

8. Conclusion

This project demonstrates practical AI concepts through an engaging guessing game while maintaining technical clarity and academic reliability. The rule-based approach ensures smooth demonstrations and clear explanation during evaluations.