PlayPal – A Multi-Game Console in Python

**Project Proposal & Final Report**

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Project Report – PlayPal

## 1. Introduction

PlayPal is a terminal-based Python application that offers four interactive games in one package. It was created to reinforce programming concepts through engaging logic-based game development. The games included range from competitive multiplayer to memory and AI-based single-player modes.

## 2. System Design

### 2.1. Game Menu System

A main menu is displayed when the program starts, allowing users to choose from:  
1. Tic Tac Toe  
2. Memory Matching  
3. Rock Paper Scissors  
4. Number Guessing  
5. Exit

### 2.2. Game Logic Modules

- Tic Tac Toe: 2-player support, Symbol selection (X or O), Win/tie detection  
- Memory Matching Game: 16 shuffled cards, User uncovers two at a time, Match logic and attempt tracking  
- Rock Paper Scissors: Player vs computer, Random computer move, Outcome decided by standard rules  
- Number Guessing Game: Random number between 1–100, User guesses until correct, Feedback: Too high / too low

## 3. Testing

All games were tested for:  
- Valid and invalid input handling  
- Logical correctness of gameplay  
- User interface clarity and responsiveness

## 4. Challenges Faced

- Managing clean input validation across different games  
- Display formatting for clarity in the terminal  
- Avoiding repetitive code through modular design

## 5. Conclusion

PlayPal successfully combines multiple mini-games into a single terminal-based application. It demonstrates effective modular programming, clean user interface design, and interactive user experience. The project can be further extended by adding scoreboards, timers, or new games.

## 6. Future Improvements

- Add graphical interface using Tkinter or Pygame  
- Include a leaderboard system  
- Add more games like Hangman, Snake, or Blackjack  
- Introduce difficulty levels and timed challenges