

Report on the Pyramid Game Code

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Introduction

The Pyramid Game is a simple console-based tic-tac-toe variant where two players (or a player against a computer) compete on a pyramid-shaped board. The game allows players to choose between playing against another player or a computer. The game board is a 3x5 grid, and the goal is to align symbols ("X" or "O") either horizontally, vertically, or diagonally to win the game.

Overview of the Code Structure

The code is structured into several classes and functions, each responsible for specific tasks.

Player Class : This class represents a player in the game. It contains the player's name and symbol (either "X" or "O"). The `SetSymp`` method ensures that the symbol is valid, and the constructor initializes the player's name and symbol.

RandomPlayer Class: Inherits from the `Player`` class and is used for the computer player. The `get_move`` method randomly selects a valid cell on the board for the computer's move.

Game Board Initialization: The `InitBoard`` function sets up the pyramid-shaped game board. Some cells are ("[" "]") blocked and marked with "-", while others are marked as empty.

Validation Functions:

ValidCell: Checks if a selected cell is within bounds and empty.

IsWinner: Determines if a player has won by checking specific rows, columns, and diagonals for matching symbols.

IsDraw: Checks if the game has ended in a draw by verifying that all cells are filled.

Game Mechanics:

PrintBoard: Displays the current state of the game board.

PutInCell: Handles the player's move by prompting them to select a row and column.

GameMaster: Manages the game loop, alternating turns between players until there's a winner or a draw.

PrintWinner: Displays the winner at the end of the game .

Game Modes

With2Players: Handles the game mode where two human players compete.

WithComp: Handles the game mode where a human player competes against the computer.

Main Functionality

ThePyramidGame: This is the main function that initializes the game and prompts the player to choose between playing against a friend or the computer.

How the Code Works?

Game Initialization

The game starts by calling the `ThePyramidGame`` function

Players are asked to choose between two game modes: playing with a friend or against the computer.

Board Setup

The ``InitBoard`` function creates the pyramid-shaped board with some blocked cells and empty cells for gameplay.

Player Interaction:

In both game modes, players are prompted to enter their names and symbols. If playing against the computer, the human player selects their symbol, and the computer automatically uses the opposite symbol.

Gameplay Loop:

The game alternates turn between players. For the human player, they input the row and column for their move. The computer player uses the ``get_move`` method to randomly select a valid move.

After each move, the game checks if there's a winner or if the game has ended in a draw.

End of Game:

Once a player wins or the game ends in a draw, the game displays the final board state and announces the result.

Conclusion

The Pyramid Game is a straightforward implementation of a tic-tac-toe variant, offering two modes of play. The code effectively uses object-oriented programming principles to structure the game's logic, making it easy to understand and extend. The game's primary features include player-vs-player and player-vs-computer modes, with robust validation and game state checking to ensure a fair and enjoyable experience.