Artificial Intelligence

Asssignment 1

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Problem Statement : Tic Tac Toe

Code :

import java.util.\*;  
public class Tic\_Tac\_Toe {  
 static ArrayList<Integer> *playPositions* = new ArrayList<Integer>();  
 static ArrayList<Integer> *cpuPositions* = new ArrayList<Integer>();  
 public static void main(String[] arg){  
 System.*out*.println("Lets Play The Game ...... ");  
 System.*out*.println("X -> Player 1 \nO -> Player 2");  
 char[][] pre\_gameBoard = {{'1','|','2','|','3'},  
 {'-','+','-','+','-'},  
 {'4','|','5','|','6'},  
 {'-','+','-','+','-'},  
 {'7','|','8','|','9'}  
 };  
 *printGameBoard*(pre\_gameBoard);  
 char[][] gameBoard = {{' ','|',' ','|',' '},  
 {'-','+','-','+','-'},  
 {' ','|',' ','|',' '},  
 {'-','+','-','+','-'},  
 {' ','|',' ','|',' '}  
 };  
// printGameBoard(gameBoard);  
 while(true){  
 Scanner sc = new Scanner (System.*in*);  
 System.*out*.println("Enter your placement (1-9) player1: ");  
 int playerPos = sc.nextInt();  
 while(*playPositions*.contains(playerPos)|| *cpuPositions*.contains(*playPositions*)){  
 System.*out*.println("position taken ! Enter a correcct position ");  
 playerPos = sc.nextInt();  
 }  
 *placePiece*(gameBoard,playerPos,"player");  
 String result = *checkWinner*();  
 if(!result.isEmpty()){  
 System.*out*.println(result);  
 *printGameBoard*(gameBoard);  
 break;  
 }  
// Random rand = new Random();  
// int cpuPos = rand.nextInt(9)+1;  
 System.*out*.println("Enter your placement (1-9) player2: ");  
 int cpuPos = sc.nextInt();  
 while(*playPositions*.contains(cpuPos)|| *cpuPositions*.contains(*playPositions*)){  
 System.*out*.println("position taken ! Enter a correct position ");  
 cpuPos = sc.nextInt();  
 }  
 *placePiece*(gameBoard,cpuPos,"cpu");  
 *printGameBoard*(gameBoard);  
 result = *checkWinner*();  
 if(!result.isEmpty()){  
 System.*out*.println(result);  
 *printGameBoard*(gameBoard);  
 break;  
 }  
 }  
 }  
 public static void printGameBoard(char[][] GameBoard){  
 for(char[] row : GameBoard){  
 for(char c : row){  
 System.*out*.print(c);  
 }  
 System.*out*.println();  
 }  
 }  
 public static void placePiece(char[][] gameBoard, int pos,String user){  
 char symbol = ' ';  
 if(user.equals("player")){  
 symbol = 'X';  
 *playPositions*.add(pos);  
 }else{  
 symbol = 'O';  
 *cpuPositions*.add(pos);  
 }  
 switch (pos){  
 case 1:  
 gameBoard[0][0] = symbol;  
 break;  
 case 2:  
 gameBoard[0][2] =symbol;  
 break;  
 case 3:  
 gameBoard[0][4] = symbol;  
 break;  
 case 4:  
 gameBoard[2][0] = symbol;  
 break;  
 case 5:  
 gameBoard[2][2] = symbol;  
 break;  
 case 6:  
 gameBoard[2][4] =symbol;  
 break;  
 case 7:  
 gameBoard[4][0] = symbol;  
 break;  
 case 8:  
 gameBoard[4][2] = symbol;  
 break;  
 case 9:  
 gameBoard[4][4] = symbol;  
 break;  
 default:  
 break;  
 }  
 }  
 public static String checkWinner() {  
 List torRaw = Arrays.*asList*(1,2,3);  
 List midRaw = Arrays.*asList*(4,5,6);  
 List botRaw = Arrays.*asList*(7,8,9);  
 List leftCol = Arrays.*asList*(1,4,7);  
 List midCol = Arrays.*asList*(2,5,8);  
 List rightCol = Arrays.*asList*(3,6,9);  
 List cross1 = Arrays.*asList*(1,5,9);  
 List cross2 = Arrays.*asList*(7,5,3);  
 List<List> winning = new ArrayList<>();  
 winning.add(torRaw);  
 winning.add(botRaw);  
 winning.add(midRaw);  
 winning.add(leftCol);  
 winning.add(midCol);  
 winning.add(rightCol);  
 winning.add(cross1);  
 winning.add(cross2);  
 for(List l: winning){  
 if(*playPositions*.containsAll(l)){  
 return "Congrats player1 won!";  
 }else if(*cpuPositions*.containsAll(l)){  
 return "Congrats player2 won!";  
 }else if(*playPositions*.size() + *cpuPositions*.size() == 9){  
 return "CAT";  
 }  
 }  
 return "";  
 }  
 }  
 }

Output



