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COSC 2430.001

Project # 3

Due: March 4, 2015

Tic-Tac-Toe game. Two human players; player one is X.

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import java.util.Scanner;

public class TicTacToe

{

private char[][] board = new char[3][3];

private char player = 'X';

private int freeSpaces = 9;

private char answer;

Scanner input = new Scanner(System.in);

public static void main(String[] args)

{

TicTacToe game = new TicTacToe();

game.newGame();

}

public void newGame()

{

clearBoard(board);

do

{

printBoard(board);

System.out.println("Player: " + player);

System.out.print("Enter a row (1-3) and a column (1-3): ");

int row = input.nextInt() - 1;

int col = input.nextInt() - 1;

System.out.println();

if (board[row][col] != ' ')

{

System.out.println("Illegal move. Try again.");

}

else

{

board[row][col] = player;

char isWinner = checkWinner(board);

freeSpaces--;

if (isWinner != ' ')

{

printBoard(board);

System.out.println("We have a winner! " + isWinner);

System.out.println();

clearBoard(board);

System.out.println("Would you like you play again? (y/n)");

answer = input.next().charAt(0);

if (answer != 'y' && answer != 'Y')

{

System.exit(0);

}

}

else if (freeSpaces == 0)

{

System.out.println("It is a tie.");

System.out.println();

clearBoard(board);

System.out.println("Would you like you play again? (y/n)");

answer = input.next().charAt(0);

if (answer != 'y' && answer != 'Y')

{

System.exit(0);

}

}

else

{

if (player == 'X')

{

player = 'O';

}

else

{

player = 'X';

}

}

}

}while(true);

}

private static char checkWinner(char[][] checkBoard)

{

for (int row = 0; row < checkBoard.length; row++)

{

if (checkBoard[row][0] == checkBoard[row][1] && checkBoard[row][1] == checkBoard[row][2])

{

return checkBoard[row][0];

}

}

for (int col = 0; col < checkBoard.length; col++)

{

if (checkBoard[0][col] == checkBoard[1][col] && checkBoard[1][col] == checkBoard[2][col])

{

return checkBoard[0][col];

}

}

if (checkBoard[0][0] == checkBoard[1][1] && checkBoard[1][1] == checkBoard[2][2])

{

return checkBoard[0][0];

}

if (checkBoard[0][2] == checkBoard[1][1] && checkBoard[1][1] == checkBoard[2][0])

{

return checkBoard[0][2];

}

return ' ';

}

private void clearBoard(char[][] board)

{

for (int r = 0; r < 3; r++)

{

for (int c = 0; c < 3; c++)

{

board[r][c] = ' ';

}

}

}

private static void printBoard(char[][] board)

{

System.out.println("---------------");

System.out.println(" | 1 | 2 | 3 |");

System.out.println("---------------");

System.out.println("|1| " + board[0][0] + " | " + board[0][1] + " | " + board[0][2] + " | ");

System.out.println("---------------");

System.out.println("|2| " + board[1][0] + " | " + board[1][1] + " | " + board[1][2] + " | ");

System.out.println("---------------");

System.out.println("|3| " + board[2][0] + " | " + board[2][1] + " | " + board[2][2] + " | ");

System.out.println("---------------");

}

}