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| **Application/ Program name:** | TicTacToe |
| **Written by:** | Zachary Muerle |

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| **Purpose or problem definition:** |
| “Create a Tic-Tac-Toe game. In this game, two players alternate placing Xs and Os into a grid until one player has three matching symbols in a row, either horizontally, vertically, or diagonally. Create a game in which the user is presented with a three-by-three grid containing the digits 1 through 9. When the user chooses a position by typing a number, place an X in the appropriate spot. Generate a random number for the position where the computer will place an O. Do not allow the player or the computer to place a symbol where one has already been placed. Figure 9-30 shows the first four windows in a typical game. When either the player or computer has three symbols in a row, declare a winner; if all positions have been exhausted and no one has three symbols in a row, declare a tie.”  And  “Improve the TicTacToe game so that when the computer has two Os in any row, column, or diagonal, it selects the winning position for its next move rather than selecting a position randomly.” |
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| **Program Procedures:** |
| tell the user if it’s their turn, display the board, and let them input a value for where to play, if it’s valid, play there, check if anybody has won, and if not, transfer the turn and go back to the beginning. If it’s the computer’s turn: it tries to find a place where it already has 2 in a row, and play in the final space, if there are no such moves, play a random spot. Caveat: using the original AI (switching randomAI to true) causes the AI to always be random. |
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| **Algorithm/Processing/Conditions:** |
| **Inputs: integer** |
| **Where the player wants to play** |
| **Processes: main,** dispBoard, getCoords, isInt, checkWinner, comp\*Play, isValid |
| **(see source code- it has comments. Most of these do exactly what they sound like)** |
| **Outputs: Messages** |
| Display the board, prompt the user, and declare a winner |
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| **Notes & Restriction:** |
| None, I focused on making this as dynamic as possible. You can even play a 101x101 tic-tac-toe game (I would recommend NOT doing this, ever) |
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| **Comments:** |
| This was originally built to have 2 human players, so it can be easily modified (remove ~3-5 lines of code) to be a player vs player game |