Algorithm Design

This application is created using five classes:-

1. AI.java: This is the class which contains the algorithm and logic which helps the computer choose its move against the user. This is type of technology is called Artificial Intelligence.

Basically it gives the computer the info to make good defensive move against the user by checking where the user has played his move.

1. ClickHandler.java: This is the class which controls all the mouse events performed by the user. It tells the program what to do when the mouse is clicked and the released. It gives the user the power to click the grid he wants play his next move.
2. Holder.java: In this class two moves that is ‘X’ and ‘O’ are created. They are given their respective colour.
3. TicTacToe.java: This is the only class which is executable. This is the most important class which decides the winner. It contains a Double Dimensional Array (DDA) which is used to calculate the next move for the computer by checking each row and column. It contains three algorithms for checking the winner and display the result also display the loser. It has logic for checking for a draw also. The results are displayed in the small window.
4. Tile.java: This class is the base or tile of the game on which the move is played by the user and computer. It sets the height and width of the grid.
5. TilePainter.java: This class colours the ‘X’ and ‘O’ move. This class is responsible for the colour represent in tile.

METHODS USED IN THE CLASSES:

1. AI.java:

AI(TicTacToe game) method contains the game.

randomMove() creates tiles for the game and places the first random move.

aiMove() This method implements artificial intelligence. It checks where the user has played the first move and decides the best defensive move to play. It gives the computer a brain to decide a good move against the user by checking each row and column using Double Dimensional Array.

1. ClickHandler.java:

ClickHandler(TicTacToe game) method contains the game.

mouseReleased(MouseEvent e) method contains the mouse event when the mouse is released.

mouseClicked(MouseEvent e) method contains the mouse event when the mouse is clicked.

mousePressed(MouseEvent e) method contains the mouse event when the mouse is pressed.

mouseEntered(MouseEvent e) method contains the mouse event when the mouse is entered.

mouseExited(MouseEvent e) method contains the mouse event when the mouse is exited.

1. Holder.java:

getText() creates ‘X’ and ‘O’ moves for the user and computer.

getOpposite() creates the opposites moves against the user and computer.

getColor() gives colour for ‘X’ and ‘O’ moves.

getTextColor() gives colour to the text created.

1. TicTacToe.java:

Init() contains the game state.

allFull() contains the tiles for the game.

hasWon() this method contains the logic for checking the winner and checks who first completes three consecutive moves.

toWin() this method contains the condition for winning the game and checks whether the player has fulfilled the condition for winning the game.

getWin() this method claims the victory after verifying the winning algorithm.

endGame() this method is responsible for ending the game.

getFontSize() this method gets the font size set earlier in the program.

TicTacToe(boolean ai) this method builds the frame and loads the tiles.

loadTiles() this method loads the tiles onto the frame of the game.

nextTurn() this returns the next move for the user and computer has soon as the move is played by the user or the computer.

isAiTurn() this mehod returns the computer’s turn.

buildFrame() this method builds the frame for the game to run.

sendWin(Holder winner) this method pops the victory message and displays the score.

sendDraw() this method pops the draw message and displays the score.

resetTiles() this method resets the tiles after each round is done.

newGame() this method is responsible for choosing the person who starts the first move after the end of each round.

getGameFrame() returns the Game Frame for displaying on the screen.

1. Tile.java:

Tile(int x, int y, int width, int height, TicTacToe game) this method sets the x and y axis of the tile. It also sets width and height of the game.

paint(Graphics g) this method is responsible for the graphics game.

1. TilePainter.java

TilePainter(TicTacToe game) contains the game state.

paint(Graphics g) this method is responsible for the graphics game and which is established in the TilePainter class.