COMP 2911 15s1 Final Project
Connect 4 - UML Class Diagram

Connect4
<<Runnable>>

- mainFrame : JFrame
- menuPanel : MenuPanel
- simulationPanel : GameBoardPanel
- gameEngine : GameEngine
- homeGlassPane : JPanel
- threadGE : Thread
- threadGUI : Thread
- isMuted : boolean

+ main(String[]) : void
+ display() : void
+ setVisity() : boolean
+ suspendGame() : void
+ isMuted() : boolean
+ setIsMuted(boolean) : void
+ changeGlassPane(int) : void
+ run() : void

LogoPanel <JPanel>

+ paint(Graphics) : void

HowToPlay <JPanel>

+ paint(Graphics) : void

ResizeImage

+ changeImage
(oldImageIcon: ImageIcon,
width:int, height: int):
ImageIcon

ButtonSound

- clip:AudioClip
- url: URL

+ music(String songName)

Credits <JPanel>

+ paint(Graphics) : void

GameState

- board : Player[][]
- currPlayer : Player
- nextPlayer : Player
- winner : Player
- turn : int
- winDiscs : ArrayList<Integer>

+ runNextMove(int) : int
+ checkGameEnd() : boolean
+ getWinDiscs() : ArrayList<Integer>
+ getLocation(int,int) : Player
+ getBoard : Player[][]
+ getAvailableRow(int) : int
+ getWinner() : Player
+ incTurn() : void
+ isValidMove(int) : boolean

GameEngine
<<Runnable>>

- currState : GameState
- gameBoardPanel : GameBoardPanel
- isInGame : boolean
- totalGame : int

+ startNewGame(Player,Player,GameBoardPanel) : void
+ run() : void
+ sleep(int) : void
+ getCurrState() : GameState
+ getCurrPlayer() : Player
+ getOtherPlayer() : Player
+ isValidMove(int) : boolean
+ isInGame() : boolean
+ suspendGame() : void
+ getCurrPlayerIndex() : int

GameBoardPanel <JPanel>
<<ActionListener>>

- gameWindow : GameWindow
- mainGame : Connect4
- gameEngine : GameEngine
- finishPanel : JPanel
- player1 : Player
- player2 : Player
- gameMode : int
- buttons : ArrayList<JButton>

+ displayDisc(int,int,int) : void
+ updateStatisticsPanel() : void
+ displayEndGame(Player, ArrayList<Integer>) : void
+ restartNewGame() : void
+ startNewGame() : void
+ startSimulationGame() : void
+ initSinglePlayerGame(String, int) : void
+ initDoublePlayersGame(String,String) : void

<JFrame>

GUI Main Frame Holder

MenuPanel <JPanel>

- mainGame : Connect4;
- muteButton : JButton
- muteActionListener : ActionListener

+ mute() : void
+ unmute() : void
+ closeJOptionPanel() : void

BackgroundMusic

- clip:AudioClip
- url: URL

+ music(String songName)
+ stopMusic()

Player
<<Interface>>

+ getName(): String
+ decideMove(GameState currState): int

AI

- name: String
- hALgo: AlphaBetaHeuristic
- mode: int
- depth: int
- nextMove: int

User

- name: String
- nextMove: int
- isReady: boolean

SinglePlayerMenu <JPanel>

- mainGame: Connect4
- AIMode: int
- group: ButtonGroup
- AIButton0: JRadioButton
- AIButton1: JRadioButton
- AIButton2: JRadioButton

DoublePlayersMenu

- mainGame : Connect4

AlphaBetaHeuristic
<<Interface>>

+ h(GameState state) : int

H0

H1

H2

GameWindow <JFrame>

- gameBoardPanel: GameBoardPanel
- gameStatisticsPanel: GameStatisticsPanel
- mainGame: Connect4

+ startSinglePlayerGame(String, int):void
+ startDoublePlayersGame(String, String): void

GameStatisticsPanel

- gameWindow: GameWindow
- mainGame: Connect4
- gameEngine: GameEngine
- player1: JLabel
- player2: JLabel

+ setPlayerNames(Player, Player): void
+ setAvatorIcon(): void
+ setWhosTurn(): void
+ displayEndGame(): void

GameMenuBar

- mainGame : Connect4
- gameWindow : GameWindow
- muteIcon : ImageIcon
- title : String