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| **Modified Component-Responsibility-Collaborator (CRC) CARD** | | | |
| **Your Name: Carl Foreman, Austin Gray**, **Cliford Rojas** | | | |
| **Component Name: ITile** | | | |
|  | **List properties (Instance Variables)** | **List responsibilities (Methods)** | **Collaborators (what other** *components* **does this component interact with?)** |
| **1** | Abstract int: getXPos() | This is an interface used by later classes. | Is used by  BlankTile,  InputTile, and ControlTile. |
| **2** | Abstract int: getYPos() |  |
| **3** | Abstract String saveString() |  |
| **4** | Abstract Void destroy() |  |
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| **Modified Component-Responsibility-Collaborator (CRC) CARD** | | | |
| **Your Name: Carl Foreman, Austin Gray**, **Cliford Rojas** | | | |
| **Component Name: InputTile** | | | |
|  | **List properties (Instance Variables)** | **List responsibilities (Methods)** | **Collaborators (what other** *components* **does this component interact with?)** |
| **1** | Int Xpos | Result:  Takes a value for “None” “Equal” “Greater” “Less” “Duplicate” and enum-s them together under the term “Result”. | Extends:  JButton  Implements:  ITile  Interacts with:  Board,  Puzzle |
| **2** | Int Ypos | Constructor:  InputTile--  Takes an X and Y integer parameter, optionally takes another integer for value.  Sets the given X and Y to the Xpos and Ypos instance variables.  Sets the this.value instance variable to zero if no value is given. If a value is given will set this.value to that integer.  Triggers the “Setup” command. |
| **3** | Int value | Void resetTile():  Sets the value to zero and triggers the updateTile() and updateText() methods. |
| **4** | ControlTile - rowTile | Int getValue():  Returns this.value |
| **5** | ControlTile – colTile | @Override  Int getXPos():  Returns this.xPos |
| **6** | JPopupMenu - popupSelection | @Override  Int getYPos():  Returns this.yPos |
| **7** | Result – colResult | Void setColTile(tile) :  Sets the colTile instance variable to the given tile parameter. |
| **8** | Result - rowResult | Void setRowTile(tile) :  Sets the rowTile instance variable to the given tile parameter. |
| **9** | Static long –  serialVersionUID | Void colCorrect(result):  Sets the colResult instance variable to the given result parameter. |
| **10** |  | Void rowCorrect(result):  Sets the rowResult instance variable to the given result parameter. |
|  |  | Void UpdateCorrect():  Tests the colResult instance variable and sets the digit’s color accordingly: |
|  |  | Void setup():  Sets up the tile by setting the Menu and activates a mouse listener, and a keyboard listener. |
|  |  | Void updateTile():  Triggers updateTile() for colTile and rowTile |
|  |  | Boolean tryParseInt(String):  Returns true if the given string can be parsed to an integer value. False if otherwise. |
|  |  | Void setValue(int):  Sets the value instance variable to the integer parameter.  Also triggers the updateText() and updateTile() methods. |
|  |  | Void flip():  Swaps the colTile instance variable and the rowTile instance variable. |
|  |  | Void updateText():  Triggers this object’s setText() variable with the current value instance variable. |  |
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| **Modified Component-Responsibility-Collaborator (CRC) CARD** | | | |
| **Your Name: Carl Foreman, Austin Gray**, **Cliford Rojas** | | | |
| **Component Name: ControlTile** | | | |
|  | **List properties (Instance Variables)** | **List responsibilities (Methods)** | **Collaborators (what other** *components* **does this component interact with?)** |
| **1** | Int xPos | ControlTile(int x, int y, int colVal, int rowVal):  Sets the xPos, the yPos, colVal, and rowVal.  Initializes colTiles and rowTiles. | Extends:  JComponent  Implements:  ITile, ColorChangeListener  Interacts with:  Board,  Puzzle |
| **2** | Int yPos | Int getXPos():  Returns xPos. |
| **3** | Int rowVal | Int getYPos():  Returns yPos. |
| **4** | Int colVal | Void onColorChange(color):  Repaints the object |
| **5** | ArrayList<inputTile> colTiles | Int getRowVal():  Returns rowVal |
| **6** | ArrayList<inputTile>  rowTiles | Int getColVal():  Returns colVal |
| **7** | Boolean isCorrect | Void updateTile():  updates both the Col Tiles and the Row Tiles |
| **8** |  | Boolean isThisCorrect():  Returns isCorrect; |
| **9** |  | Void addRowInputTile(InputTile):  Adds the given tile parameter to the rowTiles arrayList instance variable. |
| **10** |  | Void addColInputTile(InputTile):  Adds the given tile parameter to the colTiles arrayList instance variable. |
|  |  | String toString():  Returns colToString() + “\\” + rowToString(); |
|  |  | Void paintComponent(Graphics):  Draws the important digits for a control tile. |
|  |  | Color ContrastColor(Color):  Changes the text color if the background color of a control tile becomes too dark or light. |
|  |  | ArrayList<Integer> getPossibleMaxCol(InputTile):  Returns the numbers needed to fill a column and all it’s segments. |
|  |  | ArrayList<Integer> getPossibleMaxRow(InputTile):  Returns the numbers needed to fill a row and all it’s segments. |
|  |  | Void flip():  Swaps rowVal and colVal as well as rowTiles and colTiles. |

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| **Modified Component-Responsibility-Collaborator (CRC) CARD** | | | |
| **Your Name: Carl Foreman, Austin Gray**, **Cliford Rojas** | | | |
| **Component Name: BlankTile** | | | |
|  | **List properties (Instance Variables)** | **List responsibilities (Methods)** | **Collaborators (what other** *components* **does this component interact with?)** |
| **1** | Private static long:  serialVersionUID = 1L | Int getXPos():  Return xPos | Extends:  JPanel  Implements:  ITile, ColorChangeListener  Interacts with:  Board,  Puzzle |
| **2** | Private int: xPos | Int getYPos():  Return yPos |
| **3** | Private int: yPos | Void destroy():  Removes a blanktile |
| **4** |  | String saveString():  Return “e0000” |
| **5** |  | Void onColorChange(Color):  Sets the background to the given color. |
| **6** |  | BlankTile(int x, int y):  Sets the xPos and yPos |

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| **Modified Component-Responsibility-Collaborator (CRC) CARD** | | | |
| **Your Name: Carl Foreman, Austin Gray**, **Cliford Rojas** | | | |
| **Component Name: Puzzle** | | | |
|  | **List properties (Instance Variables)** | **List responsibilities (Methods)** | **Collaborators (what other** *components* **does this component interact with?)** |
| **1** | Private File: file | Puzzle(File, ITile[][]):  Sets the file and tiles instance variable. | Extends:  JPanel  Implements:  ITile, ColorChangeListener  Interacts with:  Board,  InputTile,  ITile,  ControlTile,  BlankTile,  Menu |
| **2** | Private ITile[][] : tiles | ITile[][] getTiles():  Returns tiles. |
| **3** |  | Int getRows():  Return tiles.length |
| **4** |  | Int getCols():  Return tiles[0].length |
| **5** |  | String puzzleToString():  Turns the puzzle into string form for storage |
| **6** |  | String getName():  Returns file.getName() |
|  |  | Void flip():  Triggers all the commands needed to flip the entire puzzle onto it’s side. |  |

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| **Modified Component-Responsibility-Collaborator (CRC) CARD** | | | |
| **Your Name: Carl Foreman, Austin Gray**, **Cliford Rojas** | | | |
| **Component Name: BackgroundClip** | | | |
|  | **List properties (Instance Variables)** | **List responsibilities (Methods)** | **Collaborators (what other** *components* **does this component interact with?)** |
| **1** | Private Clip: clip | Constructor:  BackgroundClip(Clip):  Sets this.clip as the given clip | Implements: VolumeChangeListener  Interacts with:  Menu |
| **2** |  | Clip getClip()  Returns clip |
| **3** |  | Void stop():  Stops the clip. |
| **4** |  | Void start():  Starts the clip |
| **5** |  | Void onVolumeChange(int):  Changes the volume of the given clip |
| **6** |  | Void setVolume(int):  Gains control of the clip for volume change. |

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| **Modified Component-Responsibility-Collaborator (CRC) CARD** | | | |
| **Your Name: Carl Foreman, Austin Gray**, **Cliford Rojas** | | | |
| **Component Name: TimedBoard** | | | |
|  | **List properties (Instance Variables)** | **List responsibilities (Methods)** | **Collaborators (what other** *components* **does this component interact with?)** |
| **1** | Private int: maxTimer | TimedBoard(Puzzle)  Starts the puzzle on a timer and adds a label to the menu. | Extends:  Board  Interacts with:  Puzzle |
| **2** | Protected int: timer | Void destroy():  Destroys the timer and removes the menu timer item. |
| **3** | Private java-timer: currentTimer | Void onGameOver():  Triggers the game over sequence and stops the timer. |
| **4** | Protected JLabel: countdownLabel | Protected Void callTimer():  Command used to constantly check if the timer has hit zero, and gives the current time left. |
| **5** |  | Protected Void onRunInterval(int lastTime):  Sets the time, and plays an irritating noise constantly (as the time has to be updated for each second) |
| **6** |  | Protected String getTime():  Turns the timer into a string and returns it. |
|  |  | Void resetPuzzle():  Resets the timer and puzzle. |  |

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| **Modified Component-Responsibility-Collaborator (CRC) CARD** | | | |
| **Your Name: Carl Foreman, Austin Gray**, **Cliford Rojas** | | | |
| **Component Name: Menu** | | | |
|  | **List properties (Instance Variables)** | **List responsibilities (Methods)** | **Collaborators (what other** *components* **does this component interact with?)** |
| **1** | Private static Menu:  menu | Constructor:  Menu(JMenuBar menuBar):  Initiates the menu bar with the given menuBar parameter.  Sets title to “Kakuro Puzzle”, the size to (800, 800), and sets the visibility to true. | Extends: JFrame  Interacts with:  Board  Timed Board  Cruel Board |
| **2** | Private Board: current | Static Void addMenuItem(JComponent):  Adds a JComponent to the menuBar. |
| **3** | Private JMenuBar: menuBar | Static Void removeMenuItem(JComponent):  removes the given JComponent from the menuBar and repaints the menuBar |
| **4** |  | Static Void setBoard(Board):  Sets up the menu for the current board. |
| **5** |  | Static void main(String[] args):  Runs the start-up for when the game is generated and what happens when each button is used and the protocol for each type of game. |
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| **Modified Component-Responsibility-Collaborator (CRC) CARD** | | | |
| **Your Name: Carl Foreman, Austin Gray**, **Cliford Rojas** | | | |
| **Component Name: CruelBoard** | | | |
|  | **List properties (Instance Variables)** | **List responsibilities (Methods)** | **Collaborators (what other** *components* **does this component interact with?)** |
| **1** |  | CruelBoard(Puzzle):  Runs puzzle from Cruelboard | Extends: TimedBoard  Interacts with:  Timed Board  Puzzle |
| **2** |  | Void onRunInterval(int lastTime):  Adds additional sounds and occasionally flips the puzzle. |
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| **Modified Component-Responsibility-Collaborator (CRC) CARD** | | | |
| **Your Name: Carl Foreman, Austin Gray**, **Cliford Rojas** | | | |
| **Component Name: Board** | | | |
|  | **List properties (Instance Variables)** | **List responsibilities (Methods)** | **Collaborators (what other** *components* **does this component interact with?)** |
| **1** | Protected Puzzle: puzzle | Constructor:  Board(Puzzle):  Sets this.puzzle to the given puzzle parameter.  Sets up each row and column of Tile Objects.  Sets up the Controls arraylist and the inputs arraylist. | Extends: JPanel  Interacts with:  Timed Board  Puzzle  ControlTile  InputTile  BlankTile |
| **2** | Protected ArrayList<ControlTile>: controls | Void updatePuzzle():  Updates all the tiles in the controls arraylist |
| **3** | Protected ArrayList<inputTile>: inputs | Void resetPuzzle():  Resets all the tiles in the input arraylist. |
| **4** |  | Void savePuzzle():  Saves the puzzle to a file. |
| **5** |  | Void flipPuzzle():  Clears the puzzle, and runs all the items needed to flip the puzzle. |
| **6** |  | Void checkForGameOver():  If triggered, disables all inputTiles in inputs. |
|  |  | Void destroy():  Destroys all the tiles in the puzzle. |  |
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| **Modified Component-Responsibility-Collaborator (CRC) CARD** | | | |
| **Your Name: Carl Foreman, Austin Gray**, **Cliford Rojas** | | | |
| **Component Name: Handlers** | | | |
|  | **List properties (Instance Variables)** | **List responsibilities (Methods)** | **Collaborators (what other** *components* **does this component interact with?)** |
| **1** | SubClass: FileManager | This class is composed of three sub-classes: FileManager, OptionsManager, and SoundManager | Extends: JPanel  Interacts with:  Timed Board  Puzzle  ControlTile  InputTile  BlankTile |
| **2** | SubClass: OptionsManager | FileManager is used to give users ease of access when selecting files, such as puzzles, to import into the game. |
| **3** | SubClass: SoundManager | OptionsManager is used to adjust aspects of the game such as volume and color. |
| **4** |  | SoundManager allows one to alter the sound files and options easily. |
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