Class: GameOfNim (Startup)

This class is the first class to be executed when this program runs.

Method(s):

main()

- Creates an instance of NimGame and NimGUI (passes NimGame into NimGUI)
- Instantiates a JFrame and alters the following properties
    o Size
    o Location
    o Default close operation
    o Content pane
    o Visibility

Class RemovesController (Controller)

- This class acts on both the model and view components.

- Controls the flow of information to the model object and updates the view whenever the state is changed.

- This class implements the ActionListener interface.

- This class has 2 instance variables

- NimGame game
- JTextField textField

Constructor(s):

RemovesController(NimGame, aGame, JTextField aTextField)

- Initializes instance variables

Method(s):

void actionPerformed(ActionEvent e)

- Removes a token(s) from the pile when a valid integer value is entered in the JTextField

Class NimGame **(Model)**

- This class is responsible for modeling the current problem to the user

  - Updates the state of the program

- This class extends the Object Superclass

- This class has 5 instance variables

  - NimGUI gameView
  - int MAX_REMOVE
  - int pileSize
  - String playerTurn
  - String winner

Constructor(s):

NumGame()

  - Invokes the super() method
  - Initializes the pileSize and playerTurn variables

Method(s):

int getPileSize()

  - Returns the number of tokens in the pile

String getPlayerTurn()

  - Returns the player who has the turn

String getWinner()

  - Returns the winning player

boolean gameOver()

  - Determines if the game is over

void removeTokens(int howMany)

  - Removes a user specified number of tokens

boolean isLegalMove(int howMany)

  - Determines if the move is legal (between 1-3 tokens if there are enough tokens left)

String otherPlayer(String currentPlayer)

  - Determines who the next player is

void updateView()

  - Updates the game view (updates the state)

Class NimGUI **(View)**

This class is responsible for showing the program to the user

- Shows relevant information to the user in a user-friendly way

- This class extends the JPanel Superclass

- This class has 6 instance variables

- NimGame game
- JTextField redRemoves
- JLabel redWins
- JTextField blackRemoves
- JLabel blackWins
- JLabel pileSize

Constructor(s):

NimGUI(NimGame newGame)

- Invoke the super() method
- Initialize game instance variable
- Invoke internal methods (layoutView, registerControllers, update)

Method(s):

void layoutView()

- Draws the initial layout for the game board

void registerController()

- Assigns the controllers to the remove tokens in the JTextFields

void update()

- Redraws the game board according to the current state of the program