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| Model |
| |  | | --- | | **SHAPE** | | - xCoord = int  - yCoord = int  - intialY = int  - lastXCoord = int  - lastYCoord = int  - vSpeed = int  - hSpeed = int  - width = int  - height = int | | + Shape( int newX, int newY, int newWidth, int newHeight)  + getX/YCoord () : int  + getLastX/YCoord() : int  + getInitialY(): int  + setX/YCoord(int newX/Y)  + getH/VSpeed(): int  + getHeight/Width(): int  + resetY() |  |  | | --- | | **Drawable** | | + draw(Graphics g) |  |  | | --- | | **PlayerShip** | | + playerShip( int screenLength, int newY, int size, int newSpeed)  + inBounds(int boardWidth)  + move(String direction)  + draw(Graphics g)  + toString(): String |  |  | | --- | | **Alien** | | - isAlive = boolean | | + Alien(int hSpeed, int vSpeed, int newSize)  + isAlive(): boolean  + destroyAlien()  + reachedEnd(int boardHeight): Boolean  + moveRight()  + moveDown()  + moveLeft()  + draw(Graphics g) |  |  | | --- | | **AlienArray** | | - numAliens = int  - rowsAliens = int  - moveRight = boolean  - aliens = Alien[][]  - leftBoundary = int  - rightBoundary = int | | + AlienArrary(String version)  + getAliens(): Alien[][]  + getNumAliens():int  + getRowsAliens():int  + createAlienArray()  + setAliens()  + checkBoundary()  + aliensMovement(int width)  + drawAlienArray(Graphics g)  + setGUIaliens() |  |  | | --- | | **Shot** | | - shotFired= boolean | | + Shot( int startingRow, int newSpeed)  + Shot( int startingRow, int newSpeed, int newWitdh, int newLength)  + shotFired (Boolean shotStatus)  + getShotFired(): boolean  + tryShot(int ShipLocation)  + newAlienShot(int newX, int newY)  + moveShot()  + checkHit( int targetX, int targetY, int targetDiameters): boolean  + checkGUIBarrierHit( Barrier barrier, int boardWidth,int boardHeight ) : boolean  + checkTextHit(int targetRow, int targetCOl, int lastCol): boolean  + alienShotShip( int shipXCoord, int shipYcoord): boolearn  + inBounds( int height)  + checkBarrierHit(Barrier barrier, int boardWidth, int boardHeight): boolean  + draw(Graphics g) |  |  | | --- | | **Barrier** | | - barrier1HP = int  - barrier2HP = int  - barrier3HP = int  - location = int  - barrier1 = Color  - lastBarrier1 = Color | | + Barrier(screenWidth: int, screenHeight: int)  + getBarrier1HP()/2HP()/3HP(): int  + updateBarrier1/2/3()  + getLocation(): int  + setLocation(newLocation: int)  + draw(Graphics g) |  |  | | --- | | **InvadersGameLogic** | | - screenHeight = int  - screenWidth = int  - alienShot= Shot  - playerShot = Shot  - alienInvaders = AlienArray  - ship = playerShip  - barrier = Barrier  - gameStatus = String  - gameVersion = String | | + InvadersGameLogic(String version)  + getGameStatus() : String  + getArray() : AlienArray  + getShip(): playerShip  + getShot(): playerShot  + getAlienShot(): alienShot  + getBarrier(): barrier  + getScreenWidth() / Height(): int  + moveAliens()  + checkStatus()  + shipMovement()  + moveAlienShot()  + checkAlienHit()  + checkShipHit()  + handleShotInteraction()  + shotAttempt()  + randInt(int min, int max)  + shotGeneration() | |

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| View |
| |  | | --- | | **InvadersGameText** | | - boardHeight = int  - boardWidth = int  - board = char[][] | | + createBoard()  + validLocation(int x,int y):boolean  + printBoard()  + createBarriers(int rightBarrier, int leftBarrier, int traversePoint)  + emptyBarriers(int rightBarrier, int leftBarrier, int traversePoint)  + drawBarriers(Barrier barrier)  + drawShip(PlayerShip ship)  + drawShot(Shot shot)  + drawAliens( AlienArray array)  + drawAlienShot( Shot shot, Barrier barrier, PlayerShip ship)  + drawCurrentState(PlayerShip ship, Shot shot, Shot alienShot, AlienArray array) |  |  | | --- | | **InvadersGameGUI** | | * windowWidth = int * windowHeight = int * gameStatus = String * toDraw = Object[] | | + InvadersGameGUI(InvadersGameLogic newLogic)  + updateScreen() | | **Canvas extends JComponent** | | + paintComponent(Graphics g) | |

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| Control |
| |  | | --- | | **TimerListener** | |  |  |  | | --- | | **InvadersGameController** | | - keyboard = Scanner  - logic = InvadersGameLogic  - gui = InvadersGameGUI  - text = InvadersGameText | | + InvadersGameController()  + playGui()  + playText() |  |  | | --- | | **KeyboardListener** | | + keyPressed(KeyEvent e)  + keyReleased(KeyEvent e)  + keyTyped(KeyEvent e) |  |  | | --- | | **RunMe** | | + main(String[] args) | |