Game

+ main (args: List<String>)

1

1

GameStartMenu

- title: String
- width: int
- height: int
- background: BufferedImage
- EASY_GAME_START: String
- GAME_EXIT: String

+ GameStartMenu ()
- setButton ()
- setBackground (background: BufferedImage)
+ actionPerformed (e: ActionEvent)

KeyListener

+ keyTyped (e: KeyEvent)
+ keyPressed (e: KeyEvent)
+ keyReleased (e: KeyEvent)

Extends

JFrame

Extends

GameGraphics

- gameMap: GameMap
- icons: IconLibrary
- map: List<List<Pixel>>
- width: Integer
- height: Integer
- pixelSize: Integer

+ GameGraphics (title: String, gameMap: GameMap)
- init ()
+ update (o: Observable, arg: Object)
- animation (movement: Integer, pixel: Pixel)

1

1

1

GameEngine

- map: GameMap
- mapFileName: String
- graphics: GameGraphics
- total_move: Integer

+ GameEngine (mapFileName: String)
- moveValidation2 (direction: int, dx: int, dy: int)
- newGame ()
- gameEnd ()
+ keyTyped (e: KeyEvent)
+ keyPressed (e: KeyEvent)
+ keyReleased (e: KeyEvent)

1

1

Extends

1

IconLibrary

- icon: HashMap<Integer, Image>

+ IconLibrary ()
+ getIcon (type: int): Image

1

GameMap

- map: List<List<Integer>>
- x: int
- y: int
- goal: int
- playerPosition: List<Integer>

+ GameMap (autoGenerate: boolean)
- writeMap (map: ArrayList<ArrayList<Integer>>): void
- addWhitespace (origin: Coordinates, map: ArrayList<ArrayList<Integer>>): void
- noNeighbours(row: int, col: int): boolean
- bfs (start: Coordinates, end: Coordinates): ArrayList<Coordinates>
- getPath(start: Coordinates, end: Coordinates, came_from: HashMap<Coordinates, Coordinates>): ArrayList<Coordinates>
- findNeighbours (origin: Coordinates, map: ArrayList<ArrayList<Integer>>): ArrayList<Coordinates>
- getCustomMap (filename: String): void
- playerDirectionConvert (d: int): Integer
+ getMap (): List<List<Integer>>
+ setPlayerPosition (x: int, y: int)
+ isPlayerOnGoal (): boolean
+ updatePlayerDirection (direction: int)
+ getGoal (): int
+ doneGoal ()

Pixel

- icon: Image
- width: int
- height: int

+ Pixel (icon: Image, width: int, height: int)
+ updateIcon (icon: Image)
+ paintComponent (g: Graphics)

1..*

Extends

1

1..*

Coordinates

- sprite: int
- col : int
- row: int

+ hashCode(): int
+ equals(Object): boolean
+ toString(): String

```
                          JPanel
          ┌─────────────────────────────────────┐
          │                                       │
          ├─────────────────────────────────────┤
          │                                       │
          └─────────────────────────────────────┘
```

```
+ doneGoal ()
+ undoGoal ()
+ getX (): int
+ getY (): int
+ getXY (x: int, Y: int): int
+ setXY (direction: int, x: int, y: int, type:
int)
+ getPlayerPosition (): List<Integer>
+ notifyObservers (arg: Object)
+ wallDestroy ()
```

GameStartMenu

- title: String
- width: int
- height: int
- background: BufferedImage
- EASY_GAME_START: String
- GAME_EXIT: String

+ ResultMenu ()
- setButton ()
- setBackground (background:
BufferedImage)
+ actionPerformed (e: ActionEvent)

Extends

Observable

+ notifyObservers (arg: Object)

<<Interface>>
Constants

+ INVALID: Integer
+ PLAYER : Integer
+ BOX   : Integer
+ ROAD   : Integer
+ GOAL   : Integer
+ WALL   : Integer
+ GOAL_REACHED: Integer
+ PLAYER_ON_GOAL: Integer
+ PLAYER_FACE_UP : Integer
+ PLAYER_FACE_DOWN : Integer
+ PLAYER_FACE_LEFT : Integer
+ PLAYER_FACE_RIGHT : Integer;
+ PLAYER_FACE_UP_ON_GOAL : Integer
+ PLAYER_FACE_DOWN_ON_GOAL : Integer
+ PLAYER_FACE_LEFT_ON_GOAL : Integer
+ PLAYER_FACE_RIGHT_ON_GOAL : Integer

+ X: Integer
+ Y: Integer
+ TYPE: Integer

+ UP   : Integer
+ DOWN   : Integer
+ LEFT   : Integer
+ RIGHT : Integer

+ RESET : Integer
+ EXIT   : Integer