Project Report: 2048

**Specifications:**

* **Objective:**

My objective is to recreate the Video Game called “2048” on Windows using the Java language.

* **Description:**

The Game 2048 is a puzzle game where the player needs to merge the tiles together with the same number. Each time the player merges a number it will increase the value of the tiles. The game is over if the player couldn’t move the tiles or there no more tiles can be merges.

* **Files Involved:**

1. Main.java.
2. Game.java.
3. Keyboard.java.
4. Sprite.java.
5. Renderer.java.
6. GameObject.java.

* **Modules used:**
* **Java.awt:**
  + - Canvas
    - Dimension
    - Graphics 2D
    - Font
    - Color
    - RenderingHints
* **Java.awt.event:**
  + - KeyEvent
    - KeyListener
* **Java.awt.image:**
  + - BufferStrategy
    - BufferedImaged
    - DataBufferInt
* **Java.util:**
  + - ArrayList
    - List
    - Random
* **Javax:**
  + - JFrame

**Packages:**

**Com.finalproject.main2048**

Main.java

Text

Description automatically generated

Main.java is a class file package inside com.finalproject.main2048, The purpose of Main.java is where the program start executing from the main method.

Text

Description automatically generated

The start method is a method that will start a thread or a game loop.

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Description automatically generated

While the stop method is to stop the thread.

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Description automatically generated

The Run method is method that calls for an update 60 times per second

And render as many frames as possible, it depends on how strong the player computer is.

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Description automatically generated

The update method is a method that updates the game when a key bind is pressed by the player.

A screenshot of a computer

Description automatically generated

The Render method is a method purpose is that renders the background and numbers inside the window.

A screenshot of a computer

Description automatically generated with medium confidence

The Main method is the entry point of the game, where java will start executing the program from.

**Com.finalproject.main2048.game:**

Game.java:

Text

Description automatically generated

The game.java class file is package inside the com.finalproject.main2048.game, its purpose is for setting the game input and etc.

Text

Description automatically generated

The init() method is a method use to initialize an object after its created.

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Description automatically generated

The update() method is use to update the game if the players wanted to reset the game, because the game doesn’t automatically restart if the game is already over.

Text

Description automatically generated

The checkForValueIncrease() method is a method that check if two objects are merge together that has the same value will merge and double the value.

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Description automatically generated

The spawn() method is a method that will spawn an object with a value of 2 or 4 randomly using the random utility.

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Description automatically generated

The movingLogic() method is a method that determines how the tile is moving examples are if a player are at a side and try to move more it won’t move or letting the tiles move to empty tile. The key bind is set to A to move left, D to move to the right, W to move up, And S to move down.

A screenshot of a computer

Description automatically generated with medium confidence

The render() method is a method that is use to render the background of the game.

A screenshot of a computer

Description automatically generated with medium confidence

The renderText() method is a method use to set the color, font and size of the rendered text inside the objects.

**Com.finalproject.main2048.input**

Keyboard.java

Text

Description automatically generated

The keyboard.java class file is package inside the com.finalproject.main2048.input, it’s purpose is for setting how an input will work.



The KeyDown() method is a method that will input a key stroke when the key bind is started to get pressed.

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Description automatically generated

After the player input a button the system will keep inputing after the button is pressed using the key() method

Text

Description automatically generated

After the player release the key it will input the KeyUp() method.

Text

Description automatically generated

KeyTyped() is a listener method is called when a character is typed.

Text

Description automatically generated with medium confidence

KeyPressed() is also a method is called when a character is pressed example, KeyPressed for pressing W key.

Graphical user interface

Description automatically generated with low confidence

KeyReleased() is a method is called when a character is released example, KeyReleased for releasing the A key.

**Com.finalproject.main.2048.graphics**

Renderer.java

Text

Description automatically generated

The Renderer.java is class file package inside com.finalproject.main2048.graphics, it’s purpose is for setting the size and color of the background and background tiles.

A screenshot of a computer

Description automatically generated with medium confidence

The renderBackground() method sets the color and size of the background with in this and background tiles.

Text

Description automatically generated

Renders the object color to a bright color and match it the Sprite() method color to make it transparent . That is the use of the renderSprite() method.

Sprite.java

Text

Description automatically generated

The sprite.java is a class file package in com.finalproject.main2048.graphics it is use to set the color, width of an object.

**Com.finalprojects.main2048.object**

GameObject.javaText

Description automatically generated

The GameObject.java is a class file package inside com.finalproject.main2048.object. it is use to set the rules of the object the color of each object value.

Graphical user interface, text

Description automatically generated

The GameObject() method is method that sets the objects to spawn with the value of 2 or 4 at different spots.

Graphical user interface, application

Description automatically generated

The createSprite() method is a method that set the sprite width and height and sets the color of each value differently.

A screenshot of a computer

Description automatically generated with medium confidence

The canMove() method is a method that determines if the object can move or not. An object can move or not depends if there’s another object with different value or the object is already in a corner.

A screenshot of a computer

Description automatically generated with medium confidence

The update() method is a method that updates if an object could move or not.

Text

Description automatically generated

The Render() method is a method that renders the sprites.

**Demo pictures:**

**A picture containing text, crossword puzzle, tiled

Description automatically generated**

A picture containing text, crossword puzzle

Description automatically generatedA screenshot of a game

Description automatically generated with low confidence