

## Design Overview for Mario (for now)

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### Summary of Program

My custom program will be an adventure game, mostly based on Super Mario and Red ball games. The idea behind the game is to have a player (main character) who will go through a series of three levels to finish the game. Each of the levels will have a different superpower that's given to the player at the start of the level. There aren't any other characters in the game, only obstacles which will try and stop the player from finishing the level. Like Red ball, some of the blocks will have spikes in them leading to the failure of the level (the player - fails to jump over). The player will need to pass the obstacles and collect the **key** to open the door to the next level. *The key will most likely be at a high place that the player needs to get to.* (The game initial sketch is attached at the end of this document)

As mentioned earlier, in each of the levels, there will be a different main superpower that the player will have. For instance, level one, the player will have high jumping power which will allow him to jump over obstacles that a normal jump cannot achieve. Since the superpowers are customised to each level, the levels are also customized so that the superpower is used.

Level	Superpower	Description	Key to use	Obstacles
1	High jump	The player can jump with double the magnitude of the normal jump	Enter	Higher blocks
2	Magnetic suit	Attracts the player to the magnetic blocks (some will be moving)	Enter (hold Enter)	Water/fire pools to cross
4	Opera (singing power)	Breaks glass obstacles with voice	Hold Enter	Glass doors along the way that break when the player sings

*These superpowers are inspired from a game called It Takes Two*

## Required Roles

The required roles include:

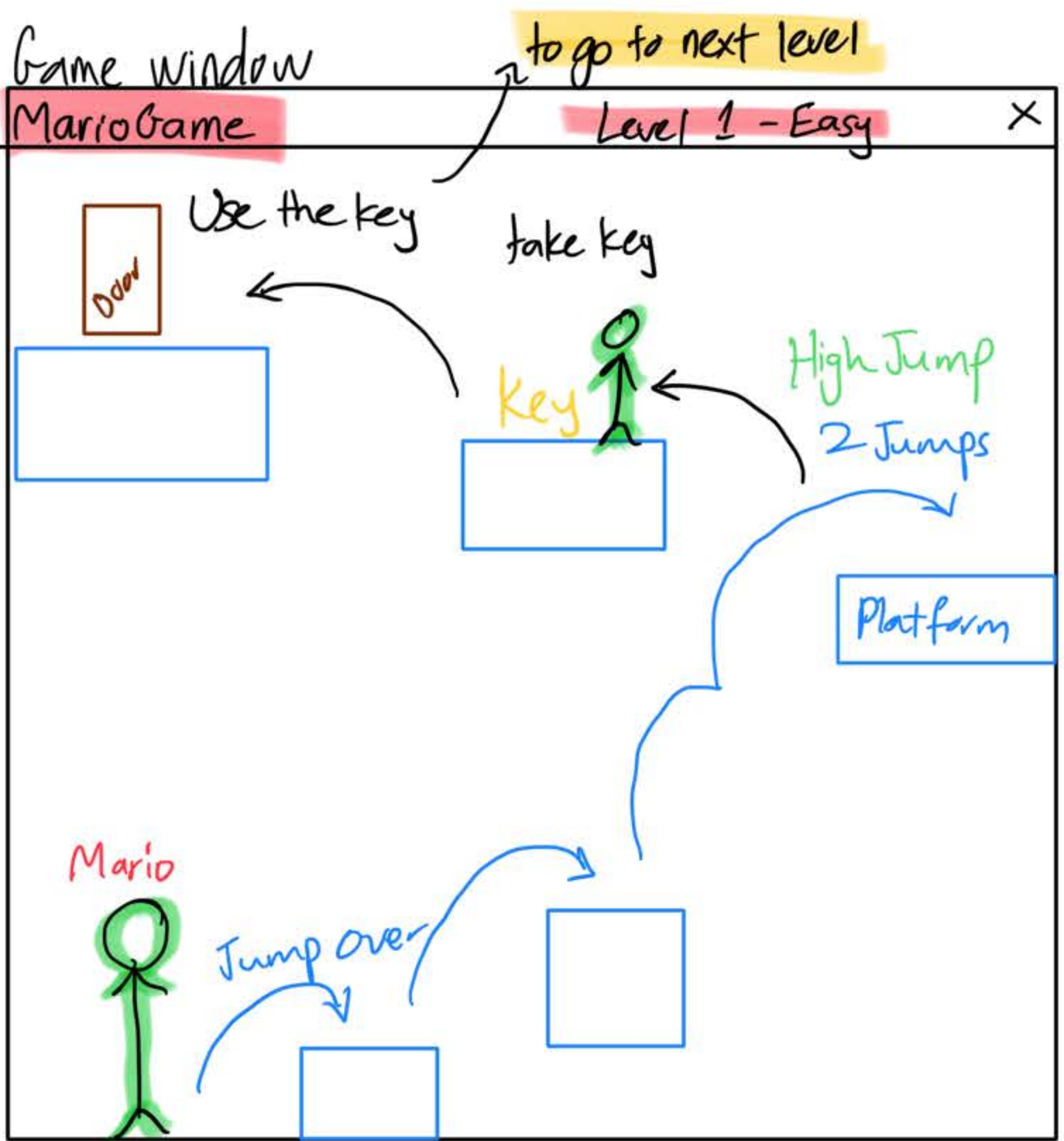
- GameObject (abstract)
  - o Holds properties and methods that are used in many other classes (such as draw, width, length and coordinates (x and y))
- Player
- Move (moves the player in either left, right or up (jump)) directions which will be specified in the identifiers of the Move Class.
- Block (different types of blocks) – the type of the block is specified in the constructor call
  - o Normal blocks
  - o Spiked blocks
- Supersuit (will provide the player with the superpower for the level)
  - o HighJumpSuit
  - o MagneticSuit
  - o OperaSuit
    - All of the three classes will inherit from the Supersuit class (still incomplete in the UML diagram)
- Bag (the bag of the player + bag of the location)
- Key (item that the player needs to collect and use to open the door to the next level)
- Door (separate between the levels)
  - o Open only when the player has the key.
- Level (three levels initially)
  - o Level 1 uses blocks
  - o Level 2 uses blocks
  - o Level 3 uses blocks
- Size – abstract class will allow to change the size of the bitmap of the player to fit in smaller/larger places
  - o Shrink
  - o Enlarge
- Specific Obstacles:
  - o GlassBorder
  - o MagneticBlock

Table 1: Game details

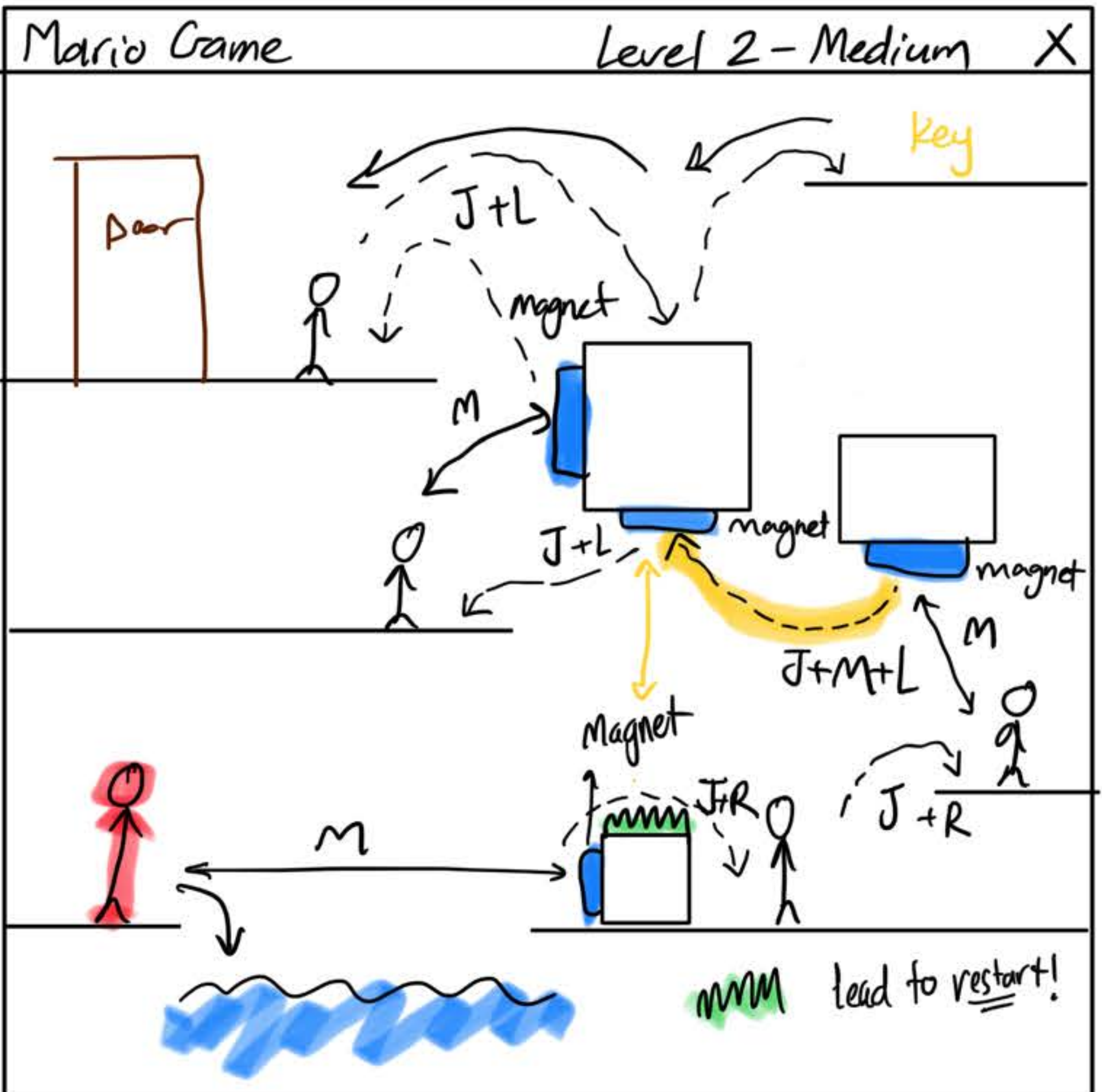
Responsibility	Type Details	Notes
<b>Player</b>	<code>_lastX, _lastY: double</code> <code>_supersuit: Supersuit</code> <code>_level: Level</code> <code>_nextLevel: Level</code> <code>_bag: Bag</code> <code>_playerBitmap: Bitmap</code>	Move around the 2D game and finish the levels The player needs to be able to move in 2D (left and right) right to go forward and left to go backwards. And also be able to Jump. Based on the level, the player will be able to use the superpower by

		<p>combining the letter S with the key responsible for the move. For example, high jump can be S and Space keys held together.</p> <p>The player then needs to collect a key when he is at the coordinates of the key, then use the key to pass the level.</p>
<b>Move</b>	<p><u>_x, _y</u>: double (2-D movement)</p> <p><i>Move left, right and up</i></p>	<p>Hold the new coordinates of the player location</p> <p>The player jumps if the Boolean Jump in the Move constructor call is true, otherwise, will only move left or right</p>
<b>Size</b>	Two size changes	The player can shrink or enlarge back to default
<b>Supersuit</b>	<u>_suit</u> : Suit (where the superpower will come from)	Puts the suit on the player (changes the bitmap of the player for visual purposes)
<b>SuitType</b>	Three suits in the game	Determines the suit type based on the level the player is in
<b>Level</b>	Three levels in the game	Start easy, then medium then hard.
<b>Obstacles</b>	Glass Border, MagneticBlock and High NormalBlock	<p>Each level the player will be introduced to a new obstacle.</p> <p>First level – high normal blocks</p> <p>Second level – Magnetic blocks where the player can use their magnetic suit to be attracted to the magnet</p> <p>Last level – Glass border, the player needs to break the glass using their opera voice that comes with the suit for this level</p>





High jump is Mario's superpower for this level

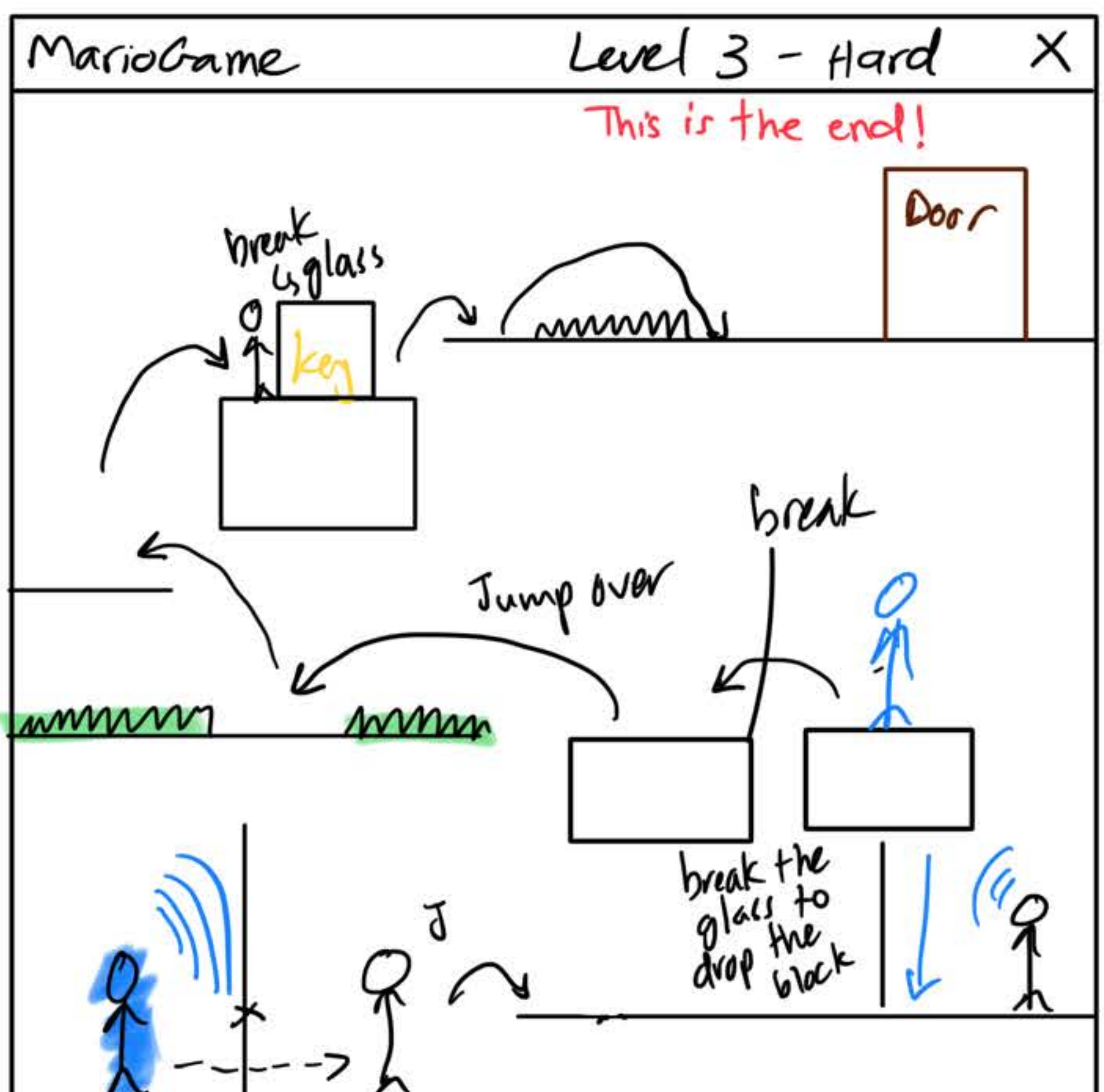


J - Jump (same x-coordinate)

J+R - Jump and move right

J+L - Jump and move left

J+M - Jump and use the suit and set the direction of the magnet



opera singing voice

class door - scream at it to break (disappear)

may add sound effects