## **1. Overview**

Snow-Boarder is a 2D snowboarding game where players navigate through three levels of increasing difficulty. The game includes a scoring system, collectible items, and points system based on performance. Players earn points by collecting snowflakes, performing aerial tricks, and finishing the level within a set time limit while maintaining as many hearts as possible.

## **2. Game Elements**

### **2.1. Player Character (Snowboarder)**

**Description:**

* The player controls a snowboarder navigating down a snowy slope.
* Can perform jumps and tricks to earn extra points.

**Functionality:**

* Moves left and right using arrow keys to control the snowboard's tilt.
* Moves up and down using arrow keys to increase or decrease speed.
* Jumps using the spacebar.
* Performs aerial tricks by rotating while in the air.
* Uses shield power-up with the **Z** key (if collected).

### **2.2. Levels**

* The game consists of **three levels** with increasing difficulty.
* Each level features different terrains, obstacles.

### **2.3. Health System (Hearts)**

* The player starts with **three hearts**.
* Colliding with obstacles reduces hearts.
* Running out of hearts results in game over.

### **2.4. Score & Star Rating System**

* Score is determined based on:
  + **Remaining hearts** at the finish line.
  + **Time taken** to complete the level.
  + **Collected snowflakes, gold, and diamonds.**
  + **Aerial tricks performed.**
* **Star Rating:**
  + **3 Stars:** Time under 30s and 3 hearts remaining.
  + **2 Stars:** Time under 40s and 2 hearts remaining.
  + **1 Star:** Any other condition.

### **2.5. Collectibles**

#### **Snowflakes**

* Grants additional points when collected.

#### **Gold & Diamonds**

* Used as currency in the in-game store.
* Can be used to purchase new snowboards.

### **2.6. Power-Ups**

#### **Shield**

* If collected, it can be activated with the **Z** key.
* Grants **5 seconds of invincibility**.

## **3. Game Flow**

### **3.1. Main Menu Scene**

* **"Play" Button:** Starts the game.
* **"Store" Button:** Opens the shop to buy snowboards.
* **"Instructions" Button:** Displays game controls and mechanics.
* **"Quit" Button:** Exits the game.

### **3.2. Gameplay Scene**

* Player controls the snowboarder to avoid obstacles and collect items.
* Score updates in real-time.
* Stars, gold, and diamonds are scattered throughout the level.
* Players can perform tricks for bonus points.
* Using the shield makes the player invulnerable for a short time.

### **3.3. End Game Scene**

* Displays the **final score** and **star rating**.
* Options to:
  + **Retry the level**.(if game over)
  + **Return to the main menu**.
  + **Proceed to the next level** (if completed).

## **4. Implementation Details**

### **4.1. Player Controls**

* **Movement:** Left/Right Arrow keys.
* **Jump:** Spacebar.
* **Aerial Tricks:** Rotate in mid-air using directional keys.
* **Activate Shield:** Press **Z** (if collected).

### **4.2. Collision Logic & Scoring**

* **Obstacle collision:** Reduces health.
* **Collecting snowflakes:** Adds points.
* **Performing tricks:** Points = Trick multiplier \* Number of rotations.
* **Gold & Diamonds:** Saved as currency.
* **Using a shield:** Grants temporary invincibility.

### **4.3. Scene Transitions**

* Smooth transitions between main menu, gameplay, and end game scenes.
* Level progression unlocks the next stage after completing the current one.

## **5. Store System**

* Players can spend **gold and diamonds** to purchase different **snowboards**.
* Only **one snowboard** can be equipped at a time.
* Each snowboard offers unique designs but does not affect gameplay mechanics.