

# Game Design Document (GDD)

**Game Title:** “SAGA-The Snake”

**Genre:** Arcade / Puzzle

**Perspective:** Top-Down (2D)

**Setting:** Stylized digital grid environment

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## 1. Game Overview

“SAGA- The Snake” is a modern 3D reimaging of the classic Snake game developed in Unreal Engine 5. The player controls a growing snake in a stylized, neon-lit arena, consuming food to increase their length while avoiding collisions with walls and their own body. The challenge increases as the snake gets longer, testing the player’s reflexes and planning.

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## 2. Story & Narrative

### Backstory

While traditional Snake games don’t follow a narrative, this version adopts a light futuristic theme: the player controls a digital serpent inside a simulation grid. It was created as a test of reflex and survival, where the snake must grow endlessly without self-destruction.

### Main Objective

- Consume food pellets to grow.
- Survive as long as possible.

- Avoid collisions with the arena boundaries or your own body.
- Aim for the highest score.

## **Tone & Themes**

- Minimalist: Clean, simple grid layout
  - Reflex and focus : The dark background and clear contrast between snake, grid, and food help the player stay concentrated on the gameplay.
  - Classic arcade spirit in a modern engine
  - Digital/Grid World: The structured grid and neon-colored “food” suggest a virtual or computer-world setting—like something happening inside a machine or digital environment.
  - Survival + Growth: The core mechanic (score increases, snake grows) gives a theme of expansion, survival, and progression.
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## **3. Gameplay Mechanics**

### **Core Gameplay Loop**

1. Player starts with a single block snake.
2. Navigate the grid using arrow or WASD keys.
3. Consume food that appears randomly.
4. Each food item increases snake length and score.
5. Avoid collision with the environment and self.
6. Game ends on collision; restart option appears.

## Snake Controls

- Directional input only (WASD or arrow keys)
- Movement is grid-based or smooth (depending on implementation)

## Progression

- Snake grows longer with each food item.
- Speed may gradually increase.
- Dynamic difficulty curve via length and speed.

## Scoring System

- +1 point per food consumed
- How could it be improved:
  - Normal food (pink): +1
  - Rare food (e.g., golden or glowing): +3 to +5
  - Timed bonus food: +2, but disappears after a few seconds.

### Bonus Ideas

- Survival Bonus: Every 30 seconds survived without dying = +5 points.
- Mission-based: E.g., "Eat 3 foods in 10 seconds" = bonus 10 points.
- Negative scoring (for challenge mode): Hitting a wall or tail = -5 or resets score.

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## 4. Art & Visual Style

### Visual Style

- Neon digital aesthetic (glowing elements, clean grid)

- Snake is a 2D moving visual
- Bright food pickups (cubes)
- Smooth camera movement with top-down.

## **Environment**

- Bounded green square arena with grid lines
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## **5. Characters**

### **Player Entity: The Snake**

- Digital serpent
- Changes color or glow intensity as it captures the food or hits the boundary.

### **Enemies / Obstacles**

- The snake's own body
  - The arena boundary
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## **6. Sound & Music**

### **Sound Effects (SFX)**

- Bite/consume sound for food
- Collision/death sound -GAME OVER
- Background music to keep the player engaged

- Sound Source: <https://pixabay.com/music/search/genre/video%20games/>
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## 7. User Interface

- Score counter at the top-left corner
  - Game over screen with restart option
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## 8. Platform & Engine

- **Target Platform:** PC
  - **Engine:** Unreal Engine 5
  - **Blueprints:** Entire game developed using UE5's Blueprint system
  - **Performance:** The game should run smoothly at 60 FPS with instant input response, low memory use, and no lag even as the snake grows.
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## 9. Development Team

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