**1. Game Design Document (GDD):**

Concept and Scope:

**Game Title**: "Advance Snake"

* **Genre**: Arcade
* **Setting**: Abstract grid-based environment.

**Objective**: Eat food to grow the snake, avoid collisions, shooting, and winning.

Game Mechanics:

* **Movement**: Arrow keys control snake direction.
* **Shooting**: Space bar to shoot
* **Growth Mechanic**: Snake grows longer after eating food.
* **Collision Mechanic**: Game over if the snake collides with itself, obstacles of levels or the canvas edges.

Game World Design:

* **Grid-based Layout**: Snake moves on a grid.
* **Food Placement**: Randomly placed food on the grid.

Characters:

* **Player Character**: Snake.

Story Arc:

* Story: after his birth the snake faced very serious discrimination because he was very small and colorful, everyone bullied him until one morning he was kick out of the group pack even his family didn’t defend him, he was kicked out because another group pack came and attack this pack and he could not do anything of how small he was. The snake was devastated he was walking through the jungle all alone small and colorful until he saw a statue in the middle of the jungle it was a statue of a huge sunbeam snake made of different colors of rock he saw something in that statue that it made him attracted to it he goes closer when he touched it, when he did, it teleported him to another world where the gods told him if u want your revenge you have to eat has many apple as you can to be as big and take your revenge he without any question started eating the apples to get bigger and get his revenge, but it wasn’t easy because every time he eat it became harder and harder.

**2. Technical Design Document (TDD):**

Software Architecture:

* **Platform**: Web-based using HTML5, and JavaScript.

Data Structures:

* **Snake Data**: Array to store the positions of snake segments.
* **Food Data**: Coordinates of the food position.

APIs and Libraries:

* **None**: Use core web technologies.

Pseudo-code for Core Algorithms:

* **Snake Movement Algorithm**: Update the snake's position based on the direction.
* **Collision Detection Algorithm**: Check for collisions with food, walls, obstacles, or the snake itself.

Security Measures:

* **Input Validation**: Validate user input for direction.

**3. Animation:**

* **Snake Movement Animation**: Smooth transition between grid cells.
* **Snake Appearance**: change color of the snake head all the way to the tail (in the final one)
* **Food Appearance**: Appearing image when placing new food.
* **Gift**: award a coin in the second canvas.

**4. Sounds:**

* **Sound Effects**: Eating food, collision, game over sound, win sound, shoot, and changing direction (arrow up, down, right, and left).

**5. Player Interface (will add it in a second canvas):**

a. Game Menu:

* **How to Play**: Brief instructions on controls and objective in the second canvas
* **Pause**: p to pause the game.
* **Resume**: r to resume the game
* **Mute**: m to mute the sounds.

b. Scoreboard:

* **Current Score**: Display the current score.
* **3 score**: every level has its own score the sum of it is the final score.

c. Win + Lose:

* **Win Message**: Displayed upon completing all 3 levels. Encouragement to play again.
* **Lose Message**: Displayed upon collision. Encouragement to try again.

**6. Messaging System (will add it in a second canvas):**

a. How to Play Instructions:

* **On-screen Instructions**: instructions of how to play and all features in the second canvas.

b. Game Story:

* **Story Element**: will be displayed in the third canvas.

c. Win/Lose Messages:

* **Dynamic Messages**: Display score and encouragement upon losing to play again.

d. Reload/Reset Game Notifications:

* **Confirmation**: Confirm before resetting the game.

**7. Player Stats:**

a. Score Keeping:

* **Points System**: Points awarded for each food eaten.

b. Life Count:

* **No Lives System**: Continuous play until collision or win.

**8. Game Controls:**

a. 'P' for Pause:

* **Pause Feature**: Pause the game by pressing “P”.

b. 'R' to Resume:

* **Resume Feature**: Resume the game by pressing “R”

c. 'M' to Mute:

* **Mute feature**: Mute all sound in the game by pressing “M”.

d. 'Spacebar' to shoot:

* **Shoot feature**: Shoot a bullet in the direction that the snake is going by pressing “spacebar”.

e. Movement:

* **Movement**: arrow keys to move the snake.