Design for Idea 2: Snake Game:

```
┌─────────────────┐
│ Game loads into Start │
│      screen     │
└─────────────────┘
         │
         ▼
    ╱─────────────╲
    │ User starts game │
    ╲─────────────╱
         │
         ▼
┌─────────────────┐
│  Game and board │
│  initialized. User │
│ Controls granted │
│      start()    │
│   userControls() │
└─────────────────┘
```

Main Gameplay Loop
Frequency of loop iteration depends upon current snake speed

```
┌─────────────────┐         ┌─────────────────┐
│   Check snake   │◄────────│ Spawn more food if │
│ direction and update │    │    necessary    │
│    position     │         │    spawnFood()  │
│  updatePosition() │       └─────────────────┘
│  updateDisplay()  │                ▲
└─────────────────┘         ┌─────────────────┐
         ▲                  │ Snake grows and/or │
   No collision             │  speeds up based on │
         │                  │      score      │
         ▼                  │   updateSpeed()  │
      ◇─────◇               └─────────────────┘
     ╱       ╲                       ▲
    ◇ Collision ◇  Food collected  ┌─────────────────┐
    ╲checkCollision()╱─────────────►│ Snake adds food to │
     ◇───────◇                     │ self, increasing score │
         │                         │   updateScore()  │
  Crash (hit wall or               └─────────────────┘
  tail of snake)
         │
         ▼
┌─────────────────┐
│ End screen, display │
│      score      │
│     endGame()   │
└─────────────────┘
```
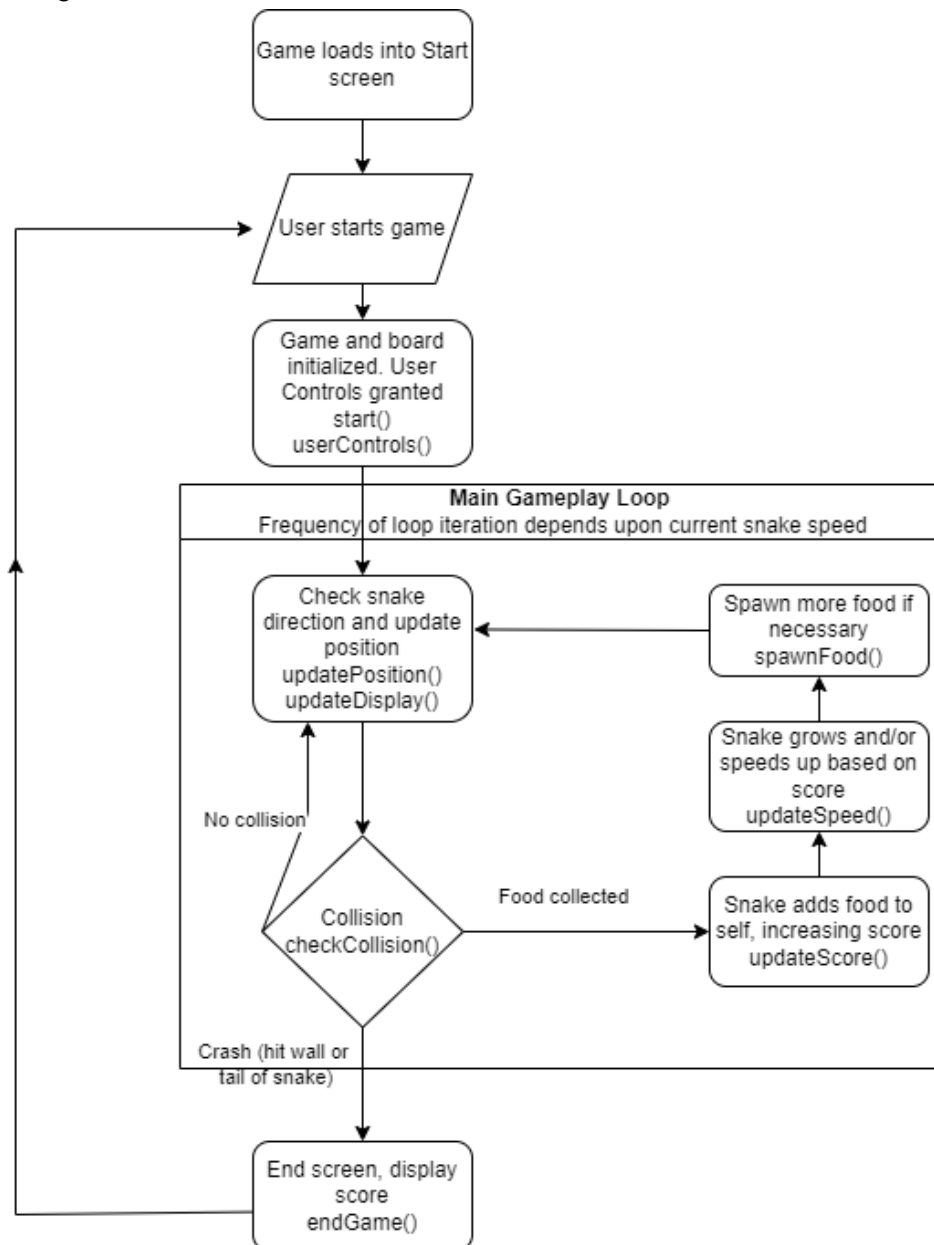
Classes:
Class gameBoard: Models game board and provides functionality
Class snake: Models the user controlled snake
Class food: Models the food on the game board

Class gameBoard:

Variables:

Variable name	Type	Scope	Description

score	integer	Private to class: gameBoard	Current user score
board	2-DInteger array. nXn	Private to class: gameBoard	Models the game board
snake	Class: snake	Private to class: gameBoard	Models the user controlled snake
food	Class: food	Private to class: gameBoard	Models food the user is tasked to eat
speed	integer	Private to class: gameBoard	Determines the frequency the snake position is updated

Functions:

Function	Scope	Description
start()	Public	Initiates new game, creates necessary environment including setting variables
userControls()	Public	On user input, informs snake class of direction change
updatePosition()	Private to class: gameBoard	Updates current snake position on game board
checkCollision()	Private to class: gameBoard	Checks if snake has collided with an object of interest
updateScore()	Private to class: gameBoard	Updates game score
updateSpeed()	Private to class: gameBoard	Calibrates frequency of snake movement.
endGame()	Private to class: gameBoard	Indicates end of game, changes interface to display score and option to replay
updateDisplay()	Private to class gameBoard	Updates user view. Displaying game progression or menu as needed.

Class snake

Variables:

Variable name	Type	Scope	Description
body	mX2 array of integer	Private to class: snake	Array of coordinates the snake is currently occupying. Represented by x and y coordinates
size	integer	Private to class: snake	Current snake size

Functions:

Function	Scope	Description
updateSize()	Public. Accessible to gameBoard	Updates snake size
updateSnake()	Public. Accessible to gameBoard	Updates snake position
getSnake()	Public. Accessible to gameBoard	Returns array with snake position

Class Food:

Variables:

Variable name	Type	Scope	Description
amount	integer	Private to class: food	Indicates the amount of food on the map at once. (Currently planned at 1)
foodLoc	mX2 array of integer	Private to class: food	Array of coordinates where food is currently located. Represented by x and y coordinates

Functions:

Function	Scope	Description
updateAmount()	Public. Accessible to gameBoard	Updates amount of food to spawn
eatFood()	Public. Accessible to gameBoard	Updates foodLoc that food was eaten
spawnFood()	Public. Accessible to gameBoard	Generates food on the map for the snake to eat
getFood()	Public. Accessible to gameBoard	Returns array with food location