My idea – Joe Place

Use this to summarize your idea, plan it using sketches, notes and pseudocode as needed

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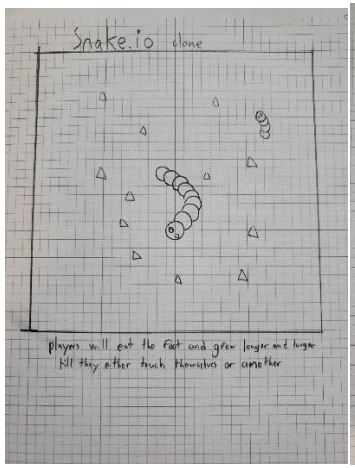
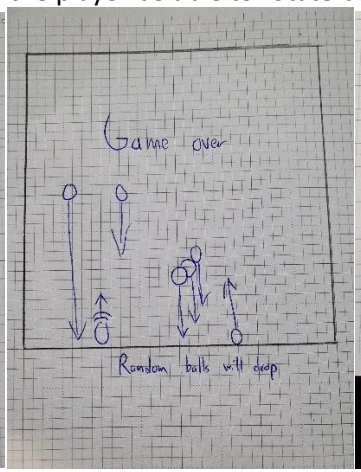
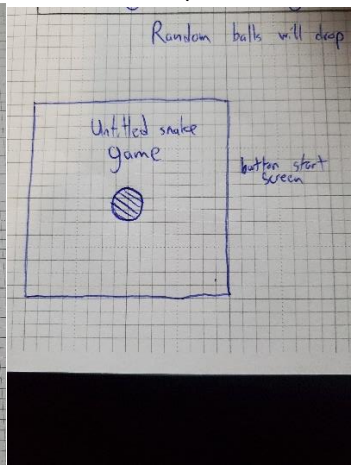
Create a game inspired by slither.io where snakes grow eating food in a two player environment. Players will increase in size after eating food and can eliminate the other player or themselves by contacting the other players' body. The game is survival based with the food spawning through the use of a timer with the players score being monitored by how much food they have eaten.

Player will eat food depending if the snake head is intersecting any piece of food
To check the intersections the distance between the two objects center point will be compared to their radius or half the width and if the value is within the limit then the food will be eaten or player will loose
The snake will be a separate entity where circles are drawn in the main head's last known position using an array.
Eatig food will increase the amount of segments in the body
Using classes the food and snake will be separated to allow for easy modifications and randomization of attributes (color, eye color)
The end screne will spawn circles that can bounce to simulate physics and the start screen will have a button that will start the game
The end screen displays the length score of how long each player was
The starting state will be saved to allow for easy replay ability
**the menu screen will have the player be able to rotate between colors (this will be an array)







Where will the inventory skills be demonstrated? List every one to be sure you've included them.

Shapes
1.line, elipse, rect, triangle, quad, arc, curve -- ellipse,rect have been used to draw the snake and food icons
2.fill,stroke,strokeWeight,noFill,noStroke,color -- Fill,noStroke and color have been used for the snake and food grapgics
3.Modes: Corner,Corners,Center,Radius -- center was used for the snake and foods spawn and position for the graphics

System:
4. setup(), draw() -- both used to make the system start and draw graphics
5. background(), random(), noise() -- random() is used for the position of the food once intitalized as well as its color
6. constrain(), dist() - Constrain() is used to limit snake.size to the bodylimit and dist() is used to check the collision of the snake to the food or other snakes
7. keyPressed(), keyReleased(), keyPressed, mousePressed(), -- Keypressed(), keyReleased() are used for the direction of the snakes movement
8. increment operators: ++, +=, --, -=, *=, = -- used with bodylimit++ to increase the visible length of the snake
9. declare and use a local variable -- used throughout with the snake and food objects like size or color
10. declare and use a global variable -- the arraylists for the snake and food objects are global as well as Bodylimit, frequency,bodylimit and the booleans for direction

Debugging
11. println(),stop() -- used to tell the player the overall controls for the program and the introduction

Control flow
12. conditional statements: if, else if, else -- if statements are used for the timer to spawn new food, if is used to check if the direction is correct with booleans within snake
13. Boolean expressions: ==, >=, <=, >, <, != -- < is used in for loops to chekc if the loop still runs Ex. the Snake.display() where a for loop is dependant on i< snakelist.size()
14. Logical operators: &&, || -- used for multiple instances of multiple button inputs
15. switch statement -- used for the movement keys and the seperate cases for the directions depening on the key pressed

Loops
16. for loop, while loop -- for loop used with displaying multiple objects like the food as well as all of the segments on the snake
17. A nested loop -- used on the start screen as the background graphic of balls
18. break -- used in the switch case movement code to only count the single movement
19. What's the difference between a for loop and a while loop? - a for loop will loop based on a condition with an incrementing parameter (often i) that is declared and modified after each loop. A while loop will go forever if the conditional state is true and not run if it is false.

so, for loops can be set to loop a specific amount of times where as a while loop will operate until the condition in not met.

Functions

20. Declare & call a function with no parameters and no return type -- Snake and food each have a display with snake having a move. each has no return type and expect no parameters. they are called during the draw function to update the position and draw their respective shapes
21. Declare & call a function with a return type -- boolean functions are used in the snake intersections and the timer to see if it is finished
22. What's the difference between parameters and arguments? -- Parameters are variables defined when the function is created, while arguments are values declared or passed when a function is called. So parameters are a functions variables that can be altered while arguments are values passed that are then used in the functions process
23. Pass by copy (value): declare and use a function that takes int, -- snake recieves its identity as an int, timer recieves frequency, snake direction recieves keyCode as an int as well as snake stop
float, char, etc as an argument
24. Pass by reference (objects): declare and use a function that -- the snake intersections recieve the object of the snake and food to compare boththe food object and a vector object in the function

Classes/objects

25. What's the difference between a class and an object? -- A class is the logical information that can be referenced as an object where as an object is the physical entity of a class.
26. What is a constructor function? What does it do and when? --a constructor function creates the entity of a class. It sets the properties of the new object when the class is initialized
27. Why should each class have its own tab in Processing? -- having their own tab allows for easier modifications and isolations for debugging to create an easy method of understanding and identification of classes.
28. Write a class with a constructor function -- each of the classes; Food,Snake & timer, each have their own constructor functions
29. Use the keyword new to instantiate an object -- new is used for new food,timer,snake and PVectors used throughout the program
30. Write a constructor function with parameters -- snake and food ahve their parameters intitialized in their respective constructor functions

Lists

31. What's the difference between an array and an ArrayList? -- Arrays are a data structure initialized with a fixed length where arraylist is a variable length structure .Array lists are able to be modified in program while it is operating while an array is limited to its initial length.
32. Why would you want to go through a list backwards, -- When you want to remove the final items in a list or delete the objects at the end. decrementing the index?
33. Initialize and populate an array -- an array is used for the colors that each player can select
34. Initialize and populate an ArrayList -- ArrayList is used for the Food and Snake each numbering the numerous objects in the program; for food it is the number of objects, for Snake it is the length of body segments
35. Manage a set of objects with an array or ArrayList -- Foodlist manages the object of Food and each of their respective objects
36. Use an ArrayList method: size(), get(), remove(), contains() -- size() is used for conditional statement to draw the amount of body segments, Get() is used to retireve the snakes previous positions and remove() is used to ensure their is only a set limit of remebered positions as well as to remove food after it was eaten

Vectors

37. When should you use PVector instead of float variables? -- PVectors can be used for more complex equations and functions in processing like log() and can contain numerous values that are called through dot syntax of the vector
38. Use the PVector class -- PVector is used as both the position of the food and the position of the snake
39. Do some basic physics: use position, velocity, and acceleration -- position and velocity are used to alter the position of the snake as well the end screen contains balls that are succeptable to physics like gravity and they bounce
(due to gravity) vectors
40. Find the direction and distance between two points -- used in the intersection checker where it compares the distance between the snakes head position and the foods within the limit of the two "radius's"
41. Create a random 2D vector -- random 2d vector was used inthe bouncing balls to =randomize their position
42. What is a normalized vector, why is it useful? -- normalizing a vector constrains the value to 1. An intance where this is useful wouyld be when calculating diagnal 2d movement normalizing the distance moved will keep the speed as 1 making the speed uniform in all directions
43. Using the Processing documentation look up a method in the -- have used both normalize,mult and random2d()
PVector class that's new to you and use it in your code.

Nice to Know (optional)
44. Use a timer -- there is a timer for the food spawn rate
45. Switch between "game states" (eg groundedjumping) using -- the game has states of gameplay,start and end state
conditional statements
49. Use collision detection between object -- collision detection for the snakes and the snake to food

Milestone 1	Milestone 2	Milestone 3	Milestone 4
What will I deliver? The snakes will be able to increase and move The food will be able to randomly spawn	link the snake increase to the amount of food eaten Add a menu screen and end screen	You are strongly encouraged to deliver your finished game to Milestone 3. Add 2 player functionality and hopefully joystick compatibility	Have a score system, general polish with the ability to deduce who won in the game and the ability to quickly restart
Which inventory skills will this demonstrate? List them.			
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conditional statements: if, else if, else 13. Boolean expressions: ==, >=, <=, >, <, != 14. Logical operators: &&, ||	32. Why would you want to go through a list backwards, decrementing the index 33. Initialize and populate an array 34. Initialize and populate an ArrayList	42. What is a normalized vector, why is it useful?	

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25. What's the difference between a class and an object 26. What is a constructor function? What does it do and when? 27. Why should each class have its own tab in Processing? 28. Write a class with a constructor function 29. Use the keyword new to instantiate an object 30. Write a constructor function with parameters	20. Declare & call a function with no parameters and no return type 21. Declare & call a function with a return type 22. What's the difference between parameters and arguments 23. Pass by copy (value): declare and use a function that takes int, float, char, etc as an argument 24. Pass by reference (objects): declare and use a function that takes and an object as an argument	16. for loop, while loop 18. break() 19. What's the difference between a for loop and a while loop? 15. switch statement 39. Do some basic physics: use position, velocity, and acceleration (due to gravity) vectors	
You should deliver approx. 10 skills at this milestone	You should deliver approx. 10 skills at this milestone	**You must deliver 30 inventory skills by this milestone.**	