

Snakes and apples

User input
(Key board)
(WASD)

Counter
(HEX0)

16 x 16
LED Board
(Play field)

Reset
(Reset game)
(Reset playfield)
(Snake hits bounds)

Victory Condition
(Head location
same as apple)
(Extend snake)

Keyboard

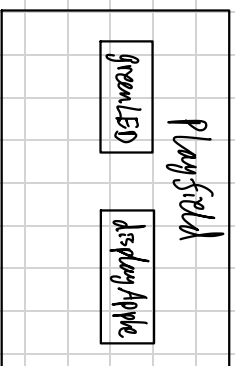


User
input



Snake
head
control

Apple
eaten



CollisionOccurs



Counter



Counter2

User input

W: 1D

A: h1C

S: 1B

D: 23

Valid and makeBreak



Key input is good



Store into snake's direction

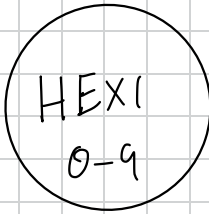
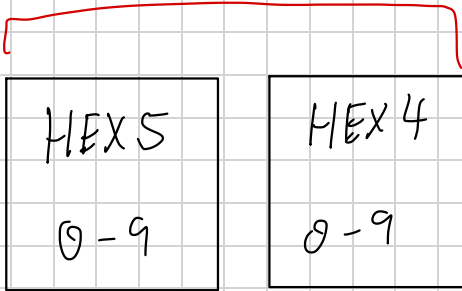


Implement into game

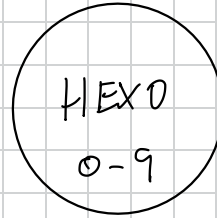
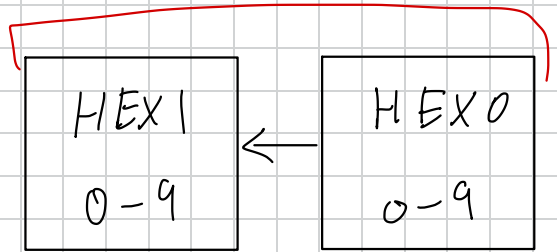
Counter

Maybe implement

Best score



Current score

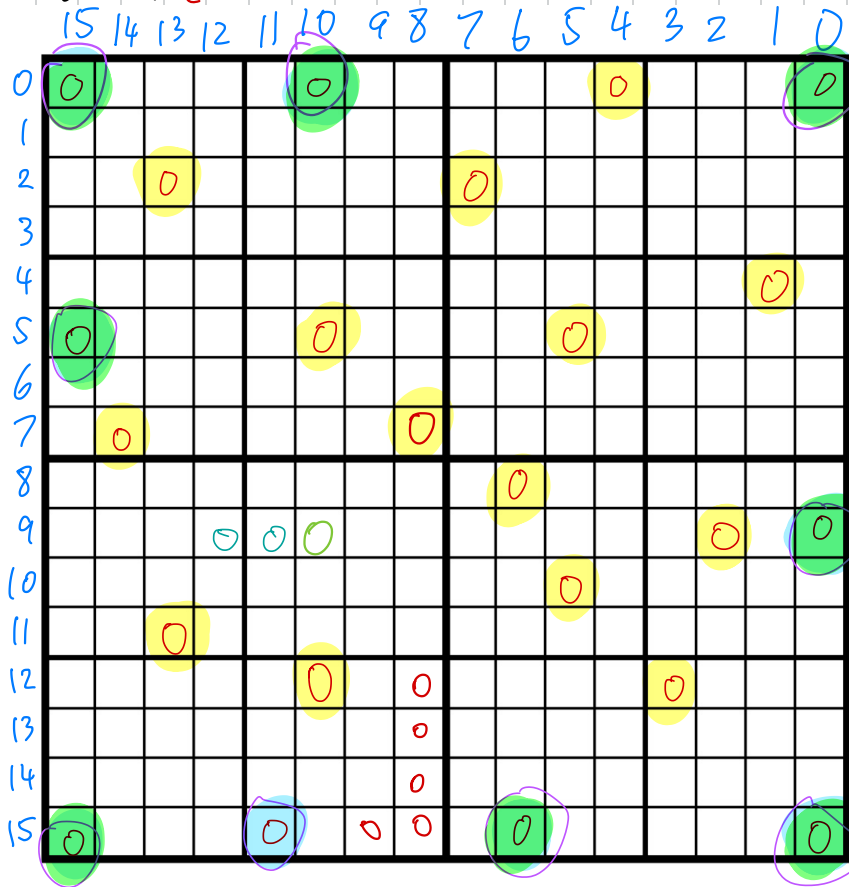


Snake eats apple (victory)

1. Snake head location = location of apple, WIN
2. Send signal to counter to increase score
3. Send signal to playfield to increment the snake length by 1
4. Send signal to generate next apple location

playfield (Do first)

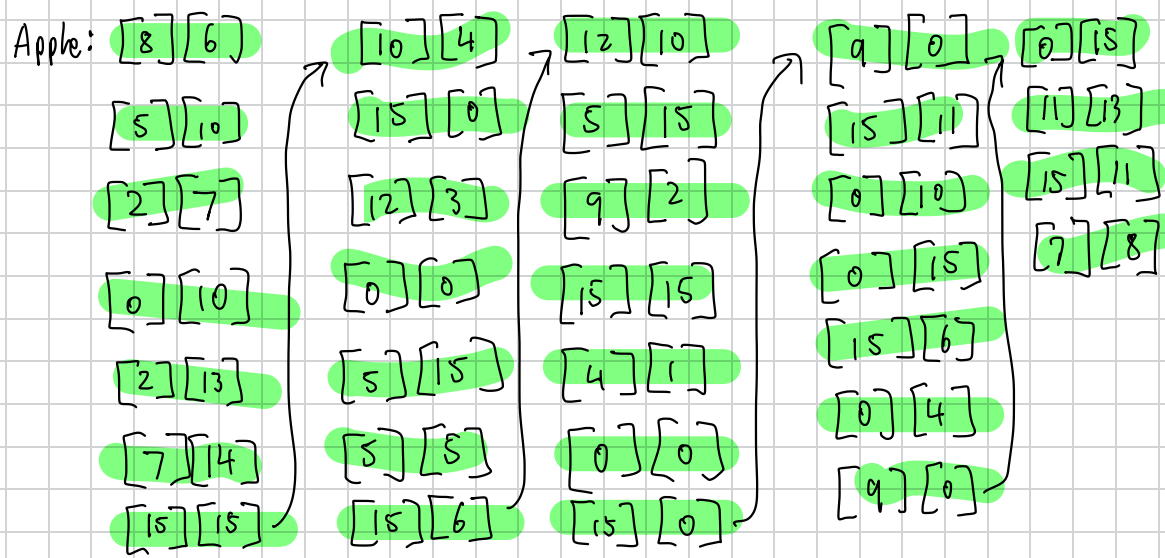
Y



● = 1 more needed
● = Done

Snake start:
 $\begin{bmatrix} 9 \\ 9 \end{bmatrix} \begin{bmatrix} 12 \\ 11 \end{bmatrix}$
 $\begin{bmatrix} 9 \\ 9 \end{bmatrix} \begin{bmatrix} 10 \end{bmatrix}$ Head

15 14 13 12 11 10



1. Light is on
2. Snake head = light location, turn light off
3. Turn next light on

Playfield:

1. Display apples ✓
2. Display snake initially ✓
3. Move snake and continue to display snake
4. Snake's head touches apple = send win signal ✓
5. Increment snake length
6. Key input ✓
7. Snake crashes into body (SnakeHead is same as CornPixels[][] = -1) ✓
8. Snake crashes into boundary ✓

Tug of war: Turn on and then turn off

SnakeHeadX } X, Y for LED
SnakeHeadY } Snake X, Y lights up LED

~~Collision Occurs~~

display Apple

~~User Input~~ green LED

~~snake Head Control~~

~~apple Eaten~~

~~playfield~~

Test bench:

- Counter
- Counter 2
- playfield
- Collision Occurs

The user uses the W, A, S, D keys on the keyboard to move the snake around. Apples will generate as the game goes. Whenever the snake eats an apple, the next apple will generate and the snake's length will increase by 1. If the snake collides with itself or the boundary, the snake dies and game over.