Examen 2020 juin - Corrigé

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import pygame, sys
from pygame.locals import *
from math import sqrt
from random import randint
pygame.init()
width, height = 600, 400
screen = pygame.display.set_mode((width, height))
pygame.display.set_caption("Snake - LXY_CB1_13")
screen.fill(Color("white"))
FPS = 15
clock = pygame.time.Clock()
class Element:
          _init__(self, x, y, border_color, fill_color):
    def
        self.x = x
        self.y = y
        self.border_color = border_color
        self.fill_color = fill_color
    def draw(self):
        pygame.draw.circle(screen, self.fill_color, (self.x, self.y), 7, 0)
        pygame.draw.circle(screen, self.border_color, (self.x, self.y), 7, 1)
    def move(self, dx, dy):
        self_x += dx
        self.y += dy
    def has_touched(self, other):
    if sqrt((self.x - other.x) ** 2 + (self.y - other.y) ** 2) < 10:</pre>
             return True
        return False
class Snake:
          _init___(self, x, y):
         self.head = Element(x, y, Color("purple4"), Color("purple1"))
        self.body = []
        for i in range(1, 6):
             self.body.append(Element(x + i * 10, y, Color("gold4"),
Color("gold1")))
        self.energy = 200
        self.direction = (-1, 0)
    def move(self):
        self.body.insert(0, Element(self.head.x, self.head.y, Color("gold4"),
Color("gold1")))
        del self.body[-1]
        self.head.move(10 * self.direction[0], 10 * self.direction[1])
        self.energy -= 1
    def draw(self):
        pygame.draw.rect(screen, Color("blue"), (5, 5, 200, 5), 0)
        pygame.draw.rect(screen, Color("yellow"), (5, 5, self.energy, 5), 0)
         for element in self.body:
             element.draw()
        self.head.draw()
    def grow(self):
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element = self.body.pop()
        for i in range(10):
            self.body.append(element)
    def has_hit_wall(self, max_x, max_y):
    if self.head.y < 7 or self.head.y > max_y - 7 or self.head.x < 7 or</pre>
self.head.x > \max_{x} - 7:
            return True
        return False
    def has_touched(self, elements_list):
        for element in elements_list:
            if self.head.has_touched(element):
                 return True
        return False
is_running = False
game_color = None
pushed = KMOD_NONE
done = False
food = []
poison = []
snake = Snake(randint(10, 50) * 10, randint(10, 30) * 10)
while not done:
    for event in pygame.event.get():
        if event.type == QUIT:
            done = True
        if event.type == KEYDOWN:
            pushed = event.key
            if event.key == K_n:
                 food = []
                      _ in range(8):
                 for
                     food.append(Element(randint(2, 58) * 10, randint(2, 38) * 10,
Color("orange4"), Color("orange1")))
                 poison = []
                 for _ in range(20):
                     poison.append(Element(randint(2, 58) * 10, randint(2, 38) * 10,
Color("cyan4"), Color("cyan1")))
                 snake = Snake(randint(10, 50) * 10, randint(10, 30) * 10)
                 is running = True
                 game_color = Color("white")
        if event.type == KEYUP:
            pushed = KMOD_NONE
    if is_running:
        if pushed == K_UP:
            snake.direction = (0, -1)
            snake.move()
        if pushed == K_DOWN:
            snake.direction = (0, 1)
            snake.move()
        if pushed == K_RIGHT:
            snake.direction = (1, 0)
            snake.move()
        if pushed == K LEFT:
            snake.direction = (-1, 0)
            snake.move()
        if len(food) > 0:
            if snake.head.has_touched(food[0]):
                 del food[0]
                 snake.grow()
                 if snake.energy + 20 <= 200:
                     snake.energy += 20
                 else:
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snake.energy = 200
elif len(food) == 0:
    is_running = False
    game_color = Color("khaki")

if snake.has_touched(poison) or snake.has_touched(snake.body) or
snake.has_hit_wall(width, height) or snake.energy == 0:
    is_running = False
    game_color = Color("magenta")

screen.fill(game_color)
for p in poison:
    p.draw()
if len(food) > 0:
    food[0].draw()
snake.draw()
pygame.display.update()
clock.tick(FPS)

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