# Collisions and bullets

import pygame

import random

WIDTH = 480

HEIGHT = 600

FPS = 60

# define colors

WHITE = (255, 255, 255)

BLACK = (0, 0, 0)

RED = (255, 0, 0)

GREEN = (0, 255, 0)

BLUE = (0, 0, 255)

YELLOW = (255, 255, 0)

# initialize pygame and create window

pygame.init()

pygame.mixer.init()

screen = pygame.display.set\_mode((WIDTH, HEIGHT))

pygame.display.set\_caption("Shmup!")

clock = pygame.time.Clock()

class Player(pygame.sprite.Sprite):

def \_\_init\_\_(self):

pygame.sprite.Sprite.\_\_init\_\_(self)

self.image = pygame.Surface((50, 40))

self.image.fill(GREEN)

self.rect = self.image.get\_rect()

self.rect.centerx = WIDTH / 2

self.rect.bottom = HEIGHT - 10

self.speedx = 0

def update(self):

self.speedx = 0

keystate = pygame.key.get\_pressed()

if keystate[pygame.K\_LEFT]:

self.speedx = -8

if keystate[pygame.K\_RIGHT]:

self.speedx = 8

self.rect.x += self.speedx

if self.rect.right > WIDTH:

self.rect.right = WIDTH

if self.rect.left < 0:

self.rect.left = 0

def shoot(self):

bullet = Bullet(self.rect.centerx, self.rect.top)

all\_sprites.add(bullet)

bullets.add(bullet)

class Mob(pygame.sprite.Sprite):

def \_\_init\_\_(self):

pygame.sprite.Sprite.\_\_init\_\_(self)

self.image = pygame.Surface((30, 40))

self.image.fill(RED)

self.rect = self.image.get\_rect()

self.rect.x = random.randrange(WIDTH - self.rect.width)

self.rect.y = random.randrange(-100, -40)

self.speedy = random.randrange(1, 8)

self.speedx = random.randrange(-3, 3)

def update(self):

self.rect.x += self.speedx

self.rect.y += self.speedy

if self.rect.top > HEIGHT + 10 or self.rect.left < -25 or self.rect.right > WIDTH + 20:

self.rect.x = random.randrange(WIDTH - self.rect.width)

self.rect.y = random.randrange(-100, -40)

self.speedy = random.randrange(1, 8)

class Bullet(pygame.sprite.Sprite):

def \_\_init\_\_(self, x, y):

pygame.sprite.Sprite.\_\_init\_\_(self)

self.image = pygame.Surface((10, 20))

self.image.fill(YELLOW)

self.rect = self.image.get\_rect()

self.rect.bottom = y

self.rect.centerx = x

self.speedy = -10

def update(self):

self.rect.y += self.speedy

# kill if it moves off the top of the screen

if self.rect.bottom < 0:

self.kill()

all\_sprites = pygame.sprite.Group()

mobs = pygame.sprite.Group()

bullets = pygame.sprite.Group()

player = Player()

all\_sprites.add(player)

for i in range(8):

m = Mob()

all\_sprites.add(m)

mobs.add(m)

# Game loop

running = True

while running:

# keep loop running at the right speed

clock.tick(FPS)

# Process input (events)

for event in pygame.event.get():

# check for closing window

if event.type == pygame.QUIT:

running = False

elif event.type == pygame.KEYDOWN:

if event.key == pygame.K\_SPACE:

player.shoot()

# Update

all\_sprites.update()

# check to see if a bullet hit a mob

hits = pygame.sprite.groupcollide(mobs, bullets, True, True)

for hit in hits:

m = Mob()

all\_sprites.add(m)

mobs.add(m)

# check to see if a mob hit the player

hits = pygame.sprite.spritecollide(player, mobs, False)

if hits:

running = False

# Draw / render

screen.fill(BLACK)

all\_sprites.draw(screen)

# \*after\* drawing everything, flip the display

pygame.display.flip()

pygame.quit()