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Fruit Ninja Games — Code

① Basic fruit ninja game

Our starting version of the game consists of an apple that appears at random positions on the screen and the computer prints out "Good shot!" and draws a new apple when you click on the apple, otherwise prints "You missed!" and ends the game.

fruit_ninja_basic

```
from random import randint

apple = Actor("apple")


def draw():
    screen.clear()
    apple.draw()


def place_apple():
    apple.x = randint(10, 800)
    apple.y = randint(10, 600)


def on_mouse_down(pos):
    if apple.collidepoint(pos):
        print("Good shot!")
        place_apple()
    else:
        print("You missed!")
        quit()


place_apple()
```

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② Code review

The *Coding Games with Python* is very good, but it does do a few things that we can improve on. So before we move on we are going to look at our code and see if we can improve it.

fruit_ninja_refactored

```
from random import randint

WIDTH, HEIGHT = 600, 600

fruit = Actor("apple")


def draw():
    screen.clear()
    fruit.draw()


def place_fruit():
    fruit.x = randint(20, WIDTH - 20)
    fruit.y = randint(20, HEIGHT - 20)


def on_mouse_down(pos):
    if fruit.collidepoint(pos):
        print("Good shot!")
        place_fruit()
    else:
        print("You missed!")
        quit()


place_fruit()
```

③ Adding sounds

One of the reasons we switched over from turtle graphics to **Pygame Zero** is to simplify generating sounds — both short terms sound effects and long term background music.

fruit_ninja_sounds

```
from random import randint

WIDTH, HEIGHT = 600, 600

fruit = Actor("apple")


def draw():
    screen.clear()
    fruit.draw()


def place_fruit():
    fruit.x = randint(20, WIDTH - 20)
    fruit.y = randint(20, HEIGHT - 20)


def on_mouse_down(pos):
    if fruit.collidepoint(pos):
        print("Good shot!")
        if randint(1,10)==1:
            sounds.shoot_and_cheer.play()
        else:
            sounds.shoot.play()
        place_fruit()
    else:
        print("You missed!")
        quit()

music.set_volume(0.5)
music.play("the_french_lovers_song")
place_fruit()
```

④ Keeping score

Currently the game just prints out a different message whenever you miss or hit a fruit. It would be nicer to keep score so that you can show off your shooting skills. To do this we will create a new variable called `score`. Also we will add a heads up display (HUD) to show the score and game title.

fruit_ninja_score

```
from random import randint

WIDTH, HEIGHT = 600, 600

fruit = Actor("apple")
fruit.score = 0
fruit.lives = 3


def draw():
    screen.clear()
    fruit.draw()
    screen.draw.text("Score %s" % fruit.score,
        topleft=(0, 0))
    screen.draw.text("Fruit Ninja",
        midtop=(WIDTH // 2, 0), color="orange", fontsize=60)
    screen.draw.text("Lives %s" % fruit.lives,
        topright=(WIDTH, 0))


def place_fruit():
    fruit.x = randint(20, WIDTH - 20)
    fruit.y = randint(20, HEIGHT - 20)


def on_mouse_down(pos):
    if fruit.collidepoint(pos):
        fruit.score = fruit.score + 1
        sounds.shoot.play()
        place_fruit()
    else:
        fruit.lives = fruit.lives - 1
        if fruit.lives == 0:
            quit()
        else:
            place_fruit()


place_fruit()
```

⑤ Moving targets

Hitting a stationary object is easy ... what happens if they are moving?

So we are going to change our fixed position fruit to fruit that is thrown upwards from below the screen and then fall back down due to gravity — now we will need some physics!

fruit_ninja_physics

```
from random import randint

from pygame.math import Vector2 as Vector

WIDTH, HEIGHT = 600, 600

fruit = Actor("apple")
fruit.score = 0
fruit.lives = 3


def draw():
    screen.clear()
    fruit.draw()
    screen.draw.text("Score %s" % fruit.score, topleft=(0, 0))
    screen.draw.text("Fruit Ninja", midtop=(WIDTH // 2, 0), color="ora
    screen.draw.text("Lives %s" % fruit.lives, topright=(WIDTH, 0))


def place_fruit():

    # random position (just below the screen)
    x = randint(20, WIDTH - 20)
    y = HEIGHT + 20
    fruit.pos = Vector(x, y)

    # random velocity - fruit thrown towards the centre
    dy = -randint(20, 25)
    dx = randint(0, 5)
    if fruit.x > WIDTH / 2:
        dx = -dx
    fruit.velocity = Vector(dx, dy)

    # acceleration due to gravity
    fruit.acceleration = Vector(0, 0.5)
```

fruit_ninja_physics

```
38
39 def update():
40     # apply physics
41     fruit.velocity = fruit.velocity + fruit.acceleration
42     fruit.pos = fruit.pos + fruit.velocity
43
44     # fell below screen so get new fruit
45     if fruit.y > HEIGHT + 30:
46         place_fruit()
47
48
49 def on_mouse_down(pos):
50     if fruit.collidepoint(pos):
51         print("Good shot!")
52         fruit.score = fruit.score + 1
53         if randint(1, 10) == 1:
54             sounds.shoot_and_cheer.play()
55         else:
56             sounds.shoot.play()
57         place_fruit()
58     else:
59         print("You missed!")
60         fruit.lives = fruit.lives - 1
61         if fruit.lives == 0:
62             quit()
63         else:
64             place_fruit()
65
66
67 music.set_volume(0.25)
68 music.play("the_french_lovers_song")
69 place_fruit()
```

⑥ Varying targets

We don't just want apples! Lets add other fruit also, after all this is 'fruit ninja' not 'apple ninja'.

fruit_ninja_final

```
from random import randint, choice

from pygame.math import Vector2 as Vector

WIDTH, HEIGHT = 600, 600

fruits = ['apple', 'banana', 'cherries', 'grapes', 'lemon', 'pear', 'p
nonfruits = ['burger', 'fries', 'pizza', 'soda']

fruit = Actor("apple")
fruit.score = 0
fruit.lives = 3


def draw():
    screen.clear()
    screen.fill((255,255,255))
    fruit.draw()
    screen.draw.text("Score %s" % fruit.score, topleft=(0, 0))
    screen.draw.text("Fruit Ninja", midtop=(WIDTH // 2, 0), color="ora
    screen.draw.text("Lives %s" % fruit.lives, topright=(WIDTH, 0))


def place_fruit():

    # random fruit or non-fruit
    if randint(1, 10) == 1:
        fruit.image = choice(nonfruits)
    else:
        fruit.image = choice(fruits)

    # random position below the screen
    x = randint(20, WIDTH - 20)
    y = HEIGHT - 20
    fruit.pos = Vector(x, y)

    # random velocity - fruit thrown towards the centre
    dy = -randint(20, 25)
    dx = randint(0, 10)
    if fruit.x > WIDTH / 2:
        dx = -dx
    fruit.velocity = Vector(dx, dy)

    # acceleration due to gravity
    fruit.acceleration = Vector(0, 0.5)
```

fruit_ninja_final

```
47
48  def update():
49      fruit.velocity += fruit.acceleration
50      fruit.pos += fruit.velocity
51      if fruit.y > HEIGHT + 30:
52          place_fruit()
53
54
55  def on_mouse_down(pos):
56      if fruit.collidepoint(pos):
57          if fruit.image in fruits:
58              print("Good shot!")
59              fruit.score = fruit.score + 1
60          else:
61              print("Eat healthy :-)")
62              fruit.lives = fruit.lives - 1
63              if randint(1, 10) == 1:
64                  sounds.shoot_and_cheer.play()
65              else:
66                  sounds.shoot.play()
67          place_fruit()
68      else:
69          print("You missed!")
70          fruit.lives = fruit.lives - 1
71          if fruit.lives == 0:
72              quit()
73          else:
74              place_fruit()
75
76
77  music.set_volume(0.25)
78  music.play("the_french_lovers_song")
79  place_fruit()
```