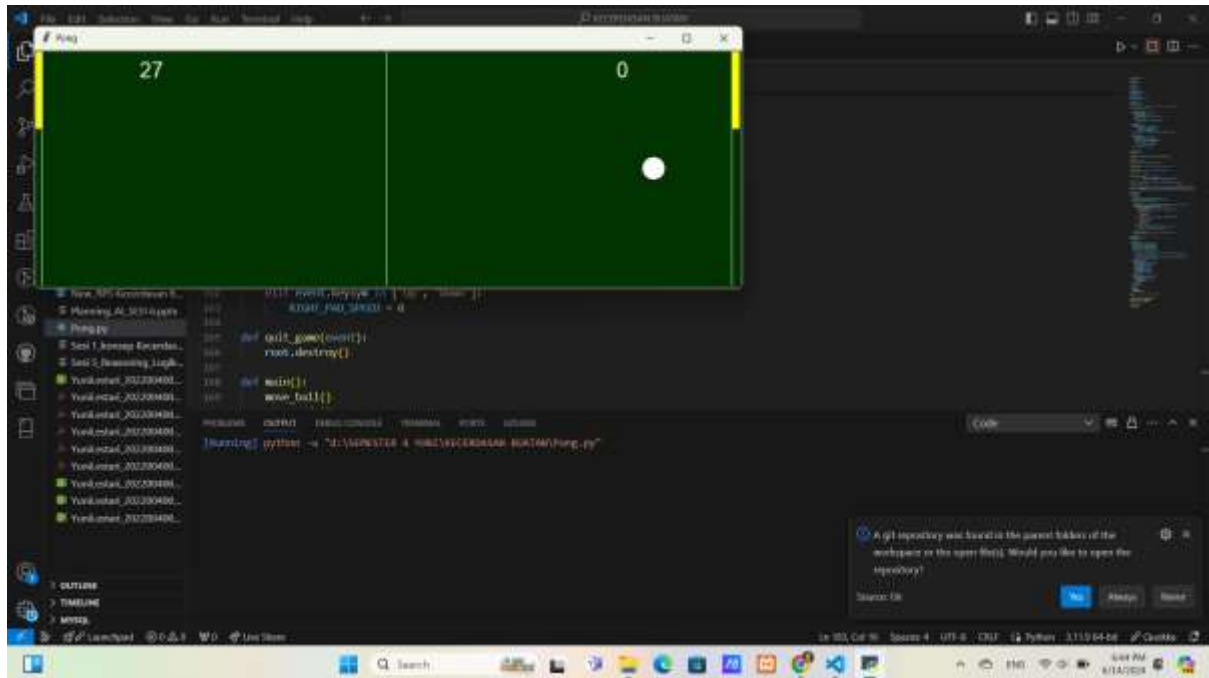


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HASIL VISUALISASI PONG GAME





```
1  from tkinter import *
2  import random
3
4  WIDTH = 900
5  HEIGHT = 300
6
7  # pengaturan raket
8  PAD_W = 10
9  PAD_H = 100
10
11 # pengaturan bola
12 BALL_SPEED_UP = 1.05
13 BALL_MAX_SPEED = 40
14 BALL_RADIUS = 30
15
16 INITIAL_SPEED = 20
17 BALL_X_SPEED = INITIAL_SPEED
18 BALL_Y_SPEED = 0
19
20 # skor awal
21 PLAYER_1_SCORE = 0
22 PLAYER_2_SCORE = 0
23
24 # menambahkan variabel global untuk jarak ke tepi kanan lapangan permainan
25 right_line_distance = WIDTH - PAD_W
26
```

```
1 def update_score(player):
2     global PLAYER_1_SCORE, PLAYER_2_SCORE
3     if player == "right":
4         PLAYER_1_SCORE += 1
5         c.itemconfig(p_1_text, text=PLAYER_1_SCORE)
6     else:
7         PLAYER_2_SCORE += 1
8         c.itemconfig(p_2_text, text=PLAYER_2_SCORE)
9
10
11 def spawn_ball():
12     global BALL_X_SPEED
13     c.coords(BALL, WIDTH / 2 - BALL_RADIUS / 2,
14             HEIGHT / 2 - BALL_RADIUS / 2,
15             WIDTH / 2 + BALL_RADIUS / 2,
16             HEIGHT / 2 + BALL_RADIUS / 2)
17     BALL_X_SPEED = -(BALL_X_SPEED * -INITIAL_SPEED) / abs(BALL_X_SPEED)
18
19
20 def bounce(action):
21     global BALL_X_SPEED, BALL_Y_SPEED
22     if action == "strike":
23         BALL_Y_SPEED = random.randrange(-10, 10)
24         if abs(BALL_X_SPEED) < BALL_MAX_SPEED:
25             BALL_X_SPEED *= -BALL_SPEED_UP
26         else:
27             BALL_X_SPEED = -BALL_X_SPEED
28     else:
29         BALL_Y_SPEED = -BALL_Y_SPEED
30
```

```

1 # memasang jendela
2 root = Tk()
3 root.title("Pong")
4
5 # area animasi
6 c = Canvas(root, width=WIDTH, height=HEIGHT, background="#003366")
7 c.pack()
8
9 # elemen lapangan permainan
10 # garis kiri
11 c.create_line(PAD_W, 0, PAD_W, HEIGHT, fill="white")
12
13 # garis kanan
14 c.create_line(WIDTH - PAD_W, 0, WIDTH - PAD_W, HEIGHT, fill="white")
15
16 # garis tengah
17 c.create_line(WIDTH / 2, 0, WIDTH / 2, HEIGHT, fill="white")
18
19 # pemasangan fasilitas permainan
20
21 # membuat bola
22 BALL = c.create_oval(WIDTH / 2 - BALL_RADIUS / 2,
23                     HEIGHT / 2 - BALL_RADIUS / 2, WIDTH / 2 + BALL_RADIUS / 2,
24                     HEIGHT / 2 + BALL_RADIUS / 2, fill="white")
25
26 # raket kiri
27 LEFT_PAD = c.create_line(PAD_W / 2, 0, PAD_W / 2, PAD_H, width=PAD_W, fill="yellow")
28
29 # raket yang tepat
30 RIGHT_PAD = c.create_line(WIDTH - PAD_W / 2, 0, WIDTH - PAD_W / 2, PAD_H, width=PAD_W, fill="yellow")
31
32 p_1_text = c.create_text(WIDTH - WIDTH / 6, PAD_H / 4, text=PLAYER_1_SCORE, font="Arial 20", fill="white")
33 p_2_text = c.create_text(WIDTH / 6, PAD_H / 4, text=PLAYER_2_SCORE, font="Arial 20", fill="white")
34
35 # diseluruh
36 BALL_X_SPEED = 20
37 BALL_Y_SPEED = 0
38
39 def move_ball():
40     # menentukan koordinat sisi bola dan pusatnya
41     ball_left, ball_top, ball_right, ball_bot = c.coords(BALL)
42     ball_center = (ball_top + ball_bot) / 2
43
44     # pantulan vertikal
45     if ball_right + BALL_X_SPEED < right_line_distance and ball_left + BALL_X_SPEED > PAD_W:
46         c.move(BALL, BALL_X_SPEED, BALL_Y_SPEED)
47     elif ball_right == right_line_distance or ball_left == PAD_W:
48         if ball_right > WIDTH / 2:
49             if c.coords(RIGHT_PAD)[1] < ball_center < c.coords(RIGHT_PAD)[3]:
50                 bounce("strike")
51             else:
52                 update_score("left")
53                 spawn_ball()
54         else:
55             if c.coords(LEFT_PAD)[1] < ball_center < c.coords(LEFT_PAD)[3]:
56                 bounce("strike")
57             else:
58                 update_score("right")
59                 spawn_ball()
60     else:
61         if ball_right > WIDTH / 2:
62             c.move(BALL, right_line_distance - ball_right, BALL_Y_SPEED)
63         else:
64             c.move(BALL, -ball_left + PAD_W, BALL_Y_SPEED)
65
66     # pantulan horizontal
67     if ball_top + BALL_Y_SPEED < 0 or ball_bot + BALL_Y_SPEED > HEIGHT:
68         bounce("ricochet")

```

```

1  # mengatur variabel global untuk kecepatan raket
2  PAD_SPEED = 20
3  RIGHT_PAD_SPEED = 0
4  LEFT_PAD_SPEED = 0
5
6  # mengatur fungsi untuk menggerakkan raket
7  def move_pads():
8      global LEFT_PAD_SPEED, RIGHT_PAD_SPEED
9      LEFT_PAD_TOP = c.coords(LEFT_PAD)[1]
10     LEFT_PAD_BOTTOM = c.coords(LEFT_PAD)[3]
11     RIGHT_PAD_TOP = c.coords(RIGHT_PAD)[1]
12
13     RIGHT_PAD_BOTTOM = c.coords(RIGHT_PAD)[3]
14
15     if LEFT_PAD_TOP + LEFT_PAD_SPEED >= 0 and LEFT_PAD_BOTTOM + LEFT_PAD_SPEED <= HEIGHT:
16         c.move(LEFT_PAD, 0, LEFT_PAD_SPEED)
17
18     if RIGHT_PAD_TOP + RIGHT_PAD_SPEED >= 0 and RIGHT_PAD_BOTTOM + RIGHT_PAD_SPEED <= HEIGHT:
19         c.move(RIGHT_PAD, 0, RIGHT_PAD_SPEED)
20
21 def movement_handler(event):
22     global LEFT_PAD_SPEED, RIGHT_PAD_SPEED
23     if event.keysym == "w":
24         LEFT_PAD_SPEED = -PAD_SPEED
25     elif event.keysym == "s":
26         LEFT_PAD_SPEED = PAD_SPEED
27     elif event.keysym == "Up":
28         RIGHT_PAD_SPEED = -PAD_SPEED
29     elif event.keysym == "Down":
30         RIGHT_PAD_SPEED = PAD_SPEED
31
32 def stop_pad(event):
33     global LEFT_PAD_SPEED, RIGHT_PAD_SPEED
34     if event.keysym in ["w", "s"]:
35         LEFT_PAD_SPEED = 0
36     elif event.keysym in ["Up", "Down"]:
37         RIGHT_PAD_SPEED = 0
38
39 def quit_game(event):
40     root.destroy()
41
42 def main():
43     move_ball()
44     move_pads()
45     root.after(30, main)
46
47 # memanggil fungsi utama untuk memulai permainan
48 main()
49
50 # mengikat fungsi-fungsi ini ke canvas
51 c.bind("<KeyPress>", movement_handler)
52 c.bind("<KeyRelease>", stop_pad)
53 c.bind("<Escape>", quit_game)
54
55 # menjalankan jendela
56 c.focus_set()
57 root.mainloop()

```