

C

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import turtle
import random
import time

# =====
# CẤU HÌNH CỬA SỔ
# =====
WIDTH = HEIGHT = 500

window = turtle.Screen()
window.setup(WIDTH, HEIGHT)
window.bgcolor("sky blue")
window.title("Happy Holidays")

window.tracer(0) # tăng hiệu năng

# =====
# TUYẾT
# =====
snowball_rate = (1, 3) # tần suất tuyết
snowball_size = (5, 15) # kích thước
wind_change = (1, 5)
max_wind = 3

snowballs = []

def make_circle(t, x, y, size, color):
    t.color(color)
    t.penup()
    t.goto(x, y)
    t.dot(size)

def make_snowball():
    s = turtle.Turtle(visible=False)
    s.penup()
    s.color("white")
    s.size = random.randint(*snowball_size)
    s.goto(
        random.randint(-WIDTH // 2, WIDTH // 2),
        HEIGHT // 2
    )
    snowballs.append(s)

def move_snowball(s, speed=1, wind=0):
    s.clear()
    s.sety(s.ycor() - speed)
    s.setx(s.xcor() + wind)
    s.dot(s.size)

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# =====
# NGƯỜI TUYẾT
# =====
snowman = turtle.Turtle(visible=False)
snowman.penup()

x_pos = 0
y_pos = (75, 0, -100)
size = 75

# Thân
for y in y_pos:
    make_circle(snowman, x_pos, y, size, "white")
    size *= 1.5

# Nút áo
for y in (y_pos[1] - 25, y_pos[1], y_pos[1] + 25):
    make_circle(snowman, x_pos, y, 10, "black")

# Mắt
for x in (x_pos - 15, x_pos + 15):
    make_circle(snowman, x, y_pos[0] + 10, 20, "green")
    make_circle(snowman, x, y_pos[0] + 10, 10, "black")
# Mũi cà rốt (PHẢI showturtle)
snowman.showturtle()
snowman.goto(x_pos - 10, y_pos[0] - 10)
snowman.shape("triangle")
snowman.color("orange")
snowman.setheading(200)
snowman.shapesize(0.5, 2.5)

# =====
# MẶT ĐẤT
# =====
grass = turtle.Turtle(visible=False)
grass.penup()
grass.goto(-WIDTH / 2, -HEIGHT / 2)
grass.fillcolor("forest green")
grass.begin_fill()
for _ in range(2):
    grass.forward(WIDTH)
    grass.left(90)
    grass.forward(70)
    grass.left(90)
grass.end_fill()

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ground = turtle.Turtle(visible=False)
for x in range(-WIDTH // 2, WIDTH // 2, WIDTH // 200):
    make_circle(ground, x, -180, random.randint(5, 20), "white")

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# =====
# CHỮ (CHỈ GIỮ "Happy Holidays")
# =====
text = turtle.Turtle(visible=False)
text.penup()
text.color("red")
text.goto(0, 170)
text.write(
    "Happy Holidays",
    align="center",
    font=("Arial", 30, "bold")
)

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# =====
# VÒNG LẶP CHÍNH
# =====
start_time = time.time()
time_delay = 0
wind = 0
wind_step = 0.1
wind_timer = time.time()
wind_delay = 5

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while True:
    now = time.time()

    # Tạo tuyết mới
    if now - start_time > time_delay:
        make_snowball()
        start_time = now
        time_delay = random.randint(*snowball_rate) / 10

```

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# Di chuyển tuyết
for s in snowballs[:]:
    move_snowball(s, wind=wind)
    if s.ycor() < -HEIGHT / 2:
        s.clear()
        snowballs.remove(s)

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# Gió
if now - wind_timer > wind_delay:
    wind += wind_step
    if wind >= max_wind or wind <= 0:
        wind_step = -wind_step

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wind_timer = now  
wind_delay = random.randint(*wind_change) / 10
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window.update()
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turtle.done()
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