

PROGRAM

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import tkinter as tk

from tkinter import messagebox

import sqlite3

from datetime import datetime


conn = sqlite3.connect("tic_tac_toe.db")

cursor = conn.cursor()


cursor.execute("DROP TABLE IF EXISTS game_results")

cursor.execute("""

    CREATE TABLE IF NOT EXISTS game_results (

        id INTEGER PRIMARY KEY AUTOINCREMENT,

        result TEXT NOT NULL,

        start_time TEXT NOT NULL,

        end_time TEXT NOT NULL,

        duration TEXT NOT NULL

    )

""")

conn.commit()


game_start_time = None


def save_result(result):

    end_time = datetime.now()

    duration = end_time - game_start_time

    cursor.execute("""
```

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INSERT INTO game_results (result, start_time, end_time, duration)
VALUES (?, ?, ?, ?)
""" , (
    result,
    game_start_time.strftime("%Y-%m-%d %H:%M:%S"),
    end_time.strftime("%Y-%m-%d %H:%M:%S"),
    str(duration)
))
conn.commit()

```

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def check_winner():
    for i in range(3):
        if buttons[i][0]['text'] == buttons[i][1]['text'] == buttons[i][2]['text'] != "":
            return buttons[i][0]['text']

        if buttons[0][i]['text'] == buttons[1][i]['text'] == buttons[2][i]['text'] != "":
            return buttons[0][i]['text']

    if buttons[0][0]['text'] == buttons[1][1]['text'] == buttons[2][2]['text'] != "":
        return buttons[0][0]['text']

    if buttons[0][2]['text'] == buttons[1][1]['text'] == buttons[2][0]['text'] != "":
        return buttons[0][2]['text']

    return None

```

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def on_click(i, j):
    global current_player, game_over

    if buttons[i][j]["text"] == "" and not game_over:
        buttons[i][j]["text"] = current_player

        winner = check_winner()

        if winner:

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game_over = True

messagebox.showinfo("Game Over", f"Player {winner} wins!")

save_result(f"Player {winner} wins")

elif all(button["text"] != "" for row in buttons for button in row):

    game_over = True

    messagebox.showinfo("Game Over", "It's a draw!")

    save_result("Draw")

else:

    current_player = "O" if current_player == "X" else "X"

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def reset_game():

    global current_player, game_over, game_start_time

    current_player = "X"

    game_over = False

    game_start_time = datetime.now()

    for row in buttons:

        for button in row:

            button.config(text="")

```

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def view_results():

    cursor.execute("SELECT * FROM game_results ORDER BY id DESC LIMIT 10")

    results = cursor.fetchall()

    if results:

        result_text = "\n\n".join([

            f"Result: {row[1]}\nStart: {row[2]}\nEnd: {row[3]}\nDuration: {row[4]}"

            if len(row) >= 5 else "Corrupted row data"

            for row in results

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    ])

else:

    result_text = "No games played yet."

messagebox.showinfo("Game History", result_text)

def on_closing():
    conn.close()
    root.destroy()

root = tk.Tk()
root.title("Tic Tac Toe")
root.geometry("400x500")
root.minsize(300, 400)

buttons = [[None for _ in range(3)] for _ in range(3)]
current_player = "X"
game_over = False

for i in range(3):
    for j in range(3):
        buttons[i][j] = tk.Button(root, text="", font=("Arial", 20), bg="white",
                                   width=6, height=2, command=lambda i=i, j=j: on_click(i, j))
        buttons[i][j].grid(row=i, column=j, sticky="nsew", padx=2, pady=2)

for i in range(3):
    root.grid_rowconfigure(i, weight=1)
    root.grid_columnconfigure(i, weight=1)

```

```
reset_button = tk.Button(root, text="Restart", font=("Arial", 15), command=reset_game)
reset_button.grid(row=3, column=0, columnspan=3, sticky="ew", pady=(10, 5), padx=10)
```

```
view_button = tk.Button(root, text="View History", font=("Arial", 15),
command=view_results)
view_button.grid(row=4, column=0, columnspan=3, sticky="ew", pady=(0, 10), padx=10)
```

```
root.grid_rowconfigure(3, weight=0)
root.grid_rowconfigure(4, weight=0)
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```
reset_game()
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```
root.protocol("WM_DELETE_WINDOW", on_closing)
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root.mainloop()
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