# Tic Tac Toe Game using Python & PySide6

## Technologies Used

- Language: Python 3.12.3  
- Framework: PySide6 (Qt for Python)  
- UI Design: Designed using Qt Designer  
- Packaging: Snapcraft (for Linux distribution)

## Project Overview

This project is a desktop version of the classic Tic Tac Toe game built using Python and PySide6. The goal was to create a simple, visually appealing, and cross-platform compatible application. The game supports two-player local gameplay with intuitive UI elements and win/draw detection logic.

## Game Logic – Backend Summary

- Maintains board state internally as a list of 9 cells.  
- Tracks the current player's turn using a toggle flag.  
- After each move, checks for a win via:  
 - All rows  
 - All columns  
 - Both diagonals  
- Declares draw if all 9 cells are filled with no winner.  
  
The game logic is lightweight, efficient, and separated from the UI for easy debugging and potential future upgrades like AI implementation.

Future Updates – AI logic for second player so that user can player with trained AI with multiple modes like easy, medium and hard.

## Key Features

- Interactive 3x3 grid layout using QPushButtons  
- Users can select their indications with cross (X) and zero (O) icons  
- Visual representation of moves using QLabel  
- Highlighted winning condition handling  
- Restart game option after each round

Repo Link - <https://git.pi108.net/risharma/t3>

$ You can find all the details on how I created the Snap app in my repo.

## Problems Faced & Solutions

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| Problem | Solution |
| Using multiple QDialogs (for asking players, declaring winner) created inconsistent behavior on some systems (specifically for ubuntu versions pyside6 dependency problems i have faced) | Replaced all dialogs with a single main UI that handles screen transitions like labels, icons, widgets hide and show based on requirements of current gameplay or i can say toggling visibility of elements |
| QSoundEffect module caused dependency conflicts when packaged with Snapcraft | Removed sound effects for now to maintain stability and cross-device compatibility |
| Snapcraft build errors with KDE content snaps (g\_task\_set\_static\_name missing in libgdk) | Switched from using KDE extension to manually specifying necessary gnome libraries in stage-packages |
| Snap app failed to launch due to missing runtime dependencies | Inspected using unsquashfs, added missing loaders and libraries explicitly in yaml |

## Snapcraft Build Summary

- Base: core22  
- App command: bin/launch (Python entry file)  
- Snap confinement: strict  
- Stage-packages included:  
 - Qt6 libraries  
 - Multimedia and image loader dependencies  
 - Libxcb and related system libraries  
  
The Snap version is currently available as 1.4 Stable (previously unstable 1.4-beta) on the Snap Store under the name Tic Tac Toe (tictactoe-pyqt).

The Tic Tac Toe game can be downloaded from the Snap Store or installed via the terminal on any Linux system that supports Snap.

To install via the Snap Store GUI:

$ Open the Snap Store application > Search for 'tictactoe-pyqt' > Click 'Install'.

To install using the terminal, run:

$ sudo snap install tictactoe-pyqt