

TIC TAC TOE

END TERM REPORT

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Student Declaration

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BONAFIDE CERTIFICATE

Certified that this project report “TIC TAC TOE” is the bonafide work of SARBAN KUMAR SONAR, YASHVARDHAN, ADITYA GORANA who carried out the project work under my supervision.

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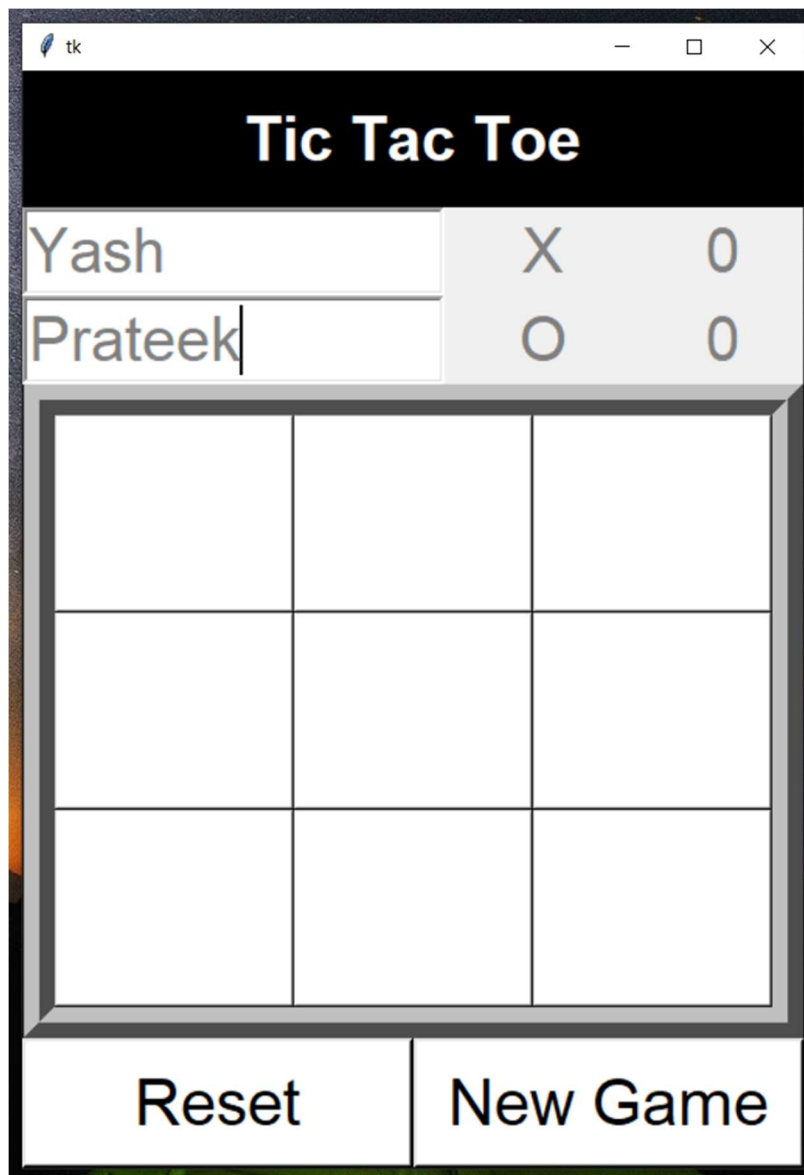
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INTRODUCTION

Tic Tac Toe is one of the most played games and is the best time killer game that you can play anywhere with just a pen and paper. If you don't know how to play this game don't worry let us first understand that.

The game is played by two individuals. First, we draw a board with a 3×3 square grid. The first player chooses 'X' and draws it on any of the square grid, then it's the chance of the second player to draw 'O' on the available spaces. Like this, the players draw 'X' and 'O' alternatively on the empty spaces until a player succeeds in drawing 3 consecutive marks either in the horizontal, vertical or diagonal way. Then the player wins the game otherwise the game draws when all spots are filled.



METHODS AND FUNCTIONS IN PROGRAM

There are several methods used and functions created in the program. They are discussed below as how it helps the program.

Methods:

Tkinter: It is used to create the graphical user interface of the game. Tkinter contains the standard GUI library for python. It provides a powerful object-oriented interface to the Tk GUI toolkit,

Config(): It comes under tkinter and it is used to access the object's attribute (here buttons) after its initialization.

Functions:

There are also some functions created as per our requirements.

Reset(): This function restarts the game while retaining the previous score. It can also be used while we are in game. It resets all the flags to default and starts a new match. It is called by New_Game function.

Disable(): This function disables all the buttons after any player wins the game or when the grid is completed. It activates when the message box of who win pops up.

Checker(): This function checks all the 17 conditions of the game. 8 for Xs, 8 for Os and 1 for draw. It also calls the Disable() function when any of the condition turns out to be true. Score is updated in this function.

b_click(): This function is responsible for the Xs and Os in the game. When the flag is true it gives X as the output otherwise O. It also shows an invalid input message when same button is clicked again. It is called in Reset() function as a command.

New_Game(): It is the heart of the program. It contains the player names and initializes the scorecard. It starts the game with all null values, i.e., with scores being 0 for player X and O.

Other than these, elif operation is used when helps in the decision-making. It is mainly used in the checker function.

GAME STRATEGY

It is a simple gameplay. There are two players, Player X and Player O who play on a 3X3 grid. Each box on the grid is accessed by the player and as the game progresses each player select one box turn wise and mark it with their symbol until one of them forms a straight line with their symbol. If the players fail to do so, it is a draw.

There are 8 conditions for win for each player, i.e., a total of 16 conditions for a win. If none of these conditions is satisfied then it's a draw. Same logic is used in the program, under the Checker() function all these conditions are mentioned (a total of 17 conditions) and as the player presses any button on the grid it checks all those conditions and gives the output accordingly. Other than this it also takes in account the number of clicks.

The game lets the players to keep a count of their score and gives them the functionality of reset or restart the game.

CODE

Below is the code that is used in the game:

```
from tkinter import *
from tkinter import messagebox

root = Tk()
root.config(bg='black')

LblTitle = Label(font=('arial',30,'bold'), text='Tic Tac
Toe',bd=20,fg='white',bg='black',justify=CENTER,width=18).pack(fill=X,side=TO
P)
#upperFrame=Frame(root, bg='red', pady=0, width=456, height=100,
relief=RIDGE).pack(side=TOP)

UpperFrame=Frame(root, bg='blue', pady=0, width=456, height=100,
relief=RIDGE)
UpperFrame.pack(side=TOP)
MiddleFrame=Frame(root, bg='grey', pady=0, width=456, height=500,bd=20,
relief=RIDGE)
MiddleFrame.pack(side=TOP)
LowerFrame=Frame(root, bg='black', pady=0, width=456, height=130,
relief=RIDGE)
LowerFrame.pack(side=TOP)

#Declaration of the variables
PlayerX = IntVar()
PlayerO = IntVar()
click=True
count=0

def Reset():
    global count
    count=0
    global b1,b2,b3,b4,b5,b6,b7,b8,b9
    b1 = Button(MiddleFrame, text=" ", font=('arial', 30, 'bold'), height=2,
width=6, bg='white',command=lambda: b_click(b1))
    b1.grid(row=0, column=0, sticky=S + N + E + W)

    b2 = Button(MiddleFrame, text=" ", font=('arial', 30, 'bold'), height=2,
width=6, bg='white',command=lambda: b_click(b2))
    b2.grid(row=0, column=1, sticky=S + N + E + W)

    b3 = Button(MiddleFrame, text=" ", font=('arial', 30, 'bold'), height=2,
width=6, bg='white',command=lambda: b_click(b3))
    b3.grid(row=0, column=2, sticky=S + N + E + W)

    b4 = Button(MiddleFrame, text=" ", font=('arial', 30, 'bold'), height=2,
width=6, bg='white',command=lambda: b_click(b4))
    b4.grid(row=1, column=0, sticky=S + N + E + W)

    b5 = Button(MiddleFrame, text=" ", font=('arial', 30, 'bold'), height=2,
```



```

width=6, bg='white',command=lambda: b_click(b5))
b5.grid(row=1, column=1, sticky=S + N + E + W)

b6 = Button(MiddleFrame, text=" ", font=('arial', 30, 'bold'), height=2,
width=6, bg='white',command=lambda: b_click(b6))
b6.grid(row=1, column=2, sticky=S + N + E + W)

b7 = Button(MiddleFrame, text=" ", font=('arial', 30, 'bold'), height=2,
width=6, bg='white',command=lambda: b_click(b7))
b7.grid(row=2, column=0, sticky=S + N + E + W)

b8 = Button(MiddleFrame, text=" ", font=('arial', 30, 'bold'), height=2,
width=6, bg='white',command=lambda: b_click(b8))
b8.grid(row=2, column=1, sticky=S + N + E + W)

b9 = Button(MiddleFrame, text=" ", font=('arial', 30, 'bold'), height=2,
width=6, bg='white',command=lambda: b_click(b9))
b9.grid(row=2, column=2, sticky=S + N + E + W)
#Disable function
def Disable():
    b1.config(state=DISABLED)
    b2.config(state=DISABLED)
    b3.config(state=DISABLED)
    b4.config(state=DISABLED)
    b5.config(state=DISABLED)
    b6.config(state=DISABLED)
    b7.config(state=DISABLED)
    b8.config(state=DISABLED)
    b9.config(state=DISABLED)
# Funtion to check if won
def Cheker():
    global winner,PlayerX,PlayerO
    global b1,b2,b3,b4,b5,b6,b7,b8,b9
    winner=False
    if b1['text']=="X" and b2['text']=="X" and b3['text']=="X":
        b1.config(bg="#90ff0a")
        b2.config(bg="#90ff0a")
        b3.config(bg="#90ff0a")
        winner=True
        Disable()
        PlayerX.set(int(PlayerX.get()) + 1)
        messagebox.showinfo("Tic Tac Toe",Xname.get() + " Won!!")
    elif b4['text']=="X" and b5['text']=="X" and b6['text']=="X":
        b4.config(bg="#90ff0a")
        b5.config(bg="#90ff0a")
        b6.config(bg="#90ff0a")
        winner=True
        Disable()
        PlayerX.set(int(PlayerX.get()) + 1)
        messagebox.showinfo("Tic Tac Toe",Xname.get() + " Won!!")
    elif b7['text']=="X" and b8['text']=="X" and b9['text']=="X":
        b7.config(bg="#90ff0a")
        b8.config(bg="#90ff0a")
        b9.config(bg="#90ff0a")
        winner=True
        Disable()
        PlayerX.set(int(PlayerX.get()) + 1)

```

```

        messagebox.showinfo("Tic Tac Toe", Xname.get() + " Won!!")
    elif b1['text']=="X" and b4['text']=="X" and b7['text']=="X":
        b1.config(bg="#90ff0a")
        b4.config(bg="#90ff0a")
        b7.config(bg="#90ff0a")
        winner=True
        Disable()
        PlayerX.set(int(PlayerX.get()) + 1)
        messagebox.showinfo("Tic Tac Toe", Xname.get() + " Won!!")
    elif b8['text']=="X" and b2['text']=="X" and b5['text']=="X":
        b8.config(bg="#90ff0a")
        b2.config(bg="#90ff0a")
        b5.config(bg="#90ff0a")
        winner=True
        Disable()
        PlayerX.set(int(PlayerX.get()) + 1)
        messagebox.showinfo("Tic Tac Toe", Xname.get() + " Won!!")
    elif b9['text']=="X" and b6['text']=="X" and b3['text']=="X":
        b9.config(bg="#90ff0a")
        b6.config(bg="#90ff0a")
        b3.config(bg="#90ff0a")
        winner=True
        Disable()
        PlayerX.set(int(PlayerX.get()) + 1)
        messagebox.showinfo("Tic Tac Toe", Xname.get() + " Won!!")
    elif b1['text']=="X" and b5['text']=="X" and b9['text']=="X":
        b1.config(bg="#90ff0a")
        b5.config(bg="#90ff0a")
        b9.config(bg="#90ff0a")
        winner=True
        Disable()
        PlayerX.set(int(PlayerX.get()) + 1)
        messagebox.showinfo("Tic Tac Toe", Xname.get() + " Won!!")
    elif b7['text']=="X" and b5['text']=="X" and b3['text']=="X":
        b7.config(bg="#90ff0a")
        b5.config(bg="#90ff0a")
        b3.config(bg="#90ff0a")
        winner=True
        Disable()
        PlayerX.set(int(PlayerX.get()) + 1)
        messagebox.showinfo("Tic Tac Toe", Xname.get() + " Won!!")
    elif b1['text']=="O" and b2['text']=="O" and b3['text']=="O":
        b1.config(bg="#90ff0a")
        b2.config(bg="#90ff0a")
        b3.config(bg="#90ff0a")
        winner=True
        Disable()
        PlayerO.set(int(PlayerO.get()) + 1)
        messagebox.showinfo("Tic Tac Toe", Oname.get() + " Won!!")
    elif b4['text']=="O" and b5['text']=="O" and b6['text']=="O":
        b4.config(bg="#90ff0a")
        b5.config(bg="#90ff0a")
        b6.config(bg="#90ff0a")
        winner=True
        Disable()
        PlayerO.set(int(PlayerO.get()) + 1)
        messagebox.showinfo("Tic Tac Toe", Oname.get() + " Won!!")

```

```

elif b7['text']=="O" and b8['text']=="O" and b9['text']=="O":
    b7.config(bg="#90ff0a")
    b8.config(bg="#90ff0a")
    b9.config(bg="#90ff0a")
    winner=True
    Disable()
    Player0.set(int(Player0.get()) + 1)
    messagebox.showinfo("Tic Tac Toe", Oname.get() + " Won!!")
elif b1['text']=="O" and b4['text']=="O" and b7['text']=="O":
    b1.config(bg="#90ff0a")
    b4.config(bg="#90ff0a")
    b7.config(bg="#90ff0a")
    winner=True
    Disable()
    Player0.set(int(Player0.get()) + 1)
    messagebox.showinfo("Tic Tac Toe", Oname.get() + " Won!!")
elif b8['text']=="O" and b2['text']=="O" and b5['text']=="O":
    b8.config(bg="#90ff0a")
    b2.config(bg="#90ff0a")
    b5.config(bg="#90ff0a")
    winner=True
    Disable()
    Player0.set(int(Player0.get()) + 1)
    messagebox.showinfo("Tic Tac Toe", Oname.get() + " Won!!")
elif b9['text']=="O" and b6['text']=="O" and b3['text']=="O":
    b9.config(bg="#90ff0a")
    b6.config(bg="#90ff0a")
    b3.config(bg="#90ff0a")
    winner=True
    Disable()
    Player0.set(int(Player0.get()) + 1)
    messagebox.showinfo("Tic Tac Toe", Oname.get() + " Won!!")
elif b1['text']=="O" and b5['text']=="O" and b9['text']=="O":
    b1.config(bg="#90ff0a")
    b5.config(bg="#90ff0a")
    b9.config(bg="#90ff0a")
    winner=True
    Disable()
    Player0.set(int(Player0.get()) + 1)
    messagebox.showinfo("Tic Tac Toe", Oname.get() + " Won")
elif b7['text']=="O" and b5['text']=="O" and b3['text']=="O":
    b7.config(bg="#90ff0a")
    b5.config(bg="#90ff0a")
    b3.config(bg="#90ff0a")
    winner=True
    Disable()
    Player0.set(int(Player0.get()) + 1)
    messagebox.showinfo("Tic Tac Toe", Oname.get() + " Won!!")
elif winner==False and count==9:
    messagebox.showinfo("Tic Tac Toe", "Its a tie")
    Disable()
# Function to choose the click
def b_click(b):
    global click,count
    if b['text'] == " " and click == True and count<9:
        b['text'] = "X"
        click = False

```

```

        count += 1
        Cheker()
    elif b['text'] == " " and click == False and count<9:
        b['text'] = "O"
        click = True
        count += 1
        Cheker()
    else:
        messagebox.showerror("Tic Tac Toe", "Invalid Input")
#New Game function
def New_Game():
    global Xname,Oname,PlayerX,PlayerO
    PlayerX.set(0)
    PlayerO.set(0)
    Xname= StringVar()
    Oname= StringVar()
    Click = True
    Reset()

    nameO = Entry(UpperFrame, font=('arial', 30), fg='grey', bd=3,
textvariable=Oname, width=12)
    nameX = Entry(UpperFrame, font=('arial', 30), fg='grey', bd=3,
textvariable=Xname, width=12)
    ScoreO = Label(UpperFrame, font=('arial', 30), fg='grey', bd=5,
textvariable=PlayerO, width=4, justify=CENTER)
    ScoreX = Label(UpperFrame, font=('arial', 30), fg='grey', bd=5,
textvariable=PlayerX, width=4, justify=CENTER)
    PlyrO = Label(UpperFrame, font=('arial', 30), fg='grey', bd=5, text='O',
width=5, justify=CENTER)
    PlyrX = Label(UpperFrame, font=('arial', 30), fg='grey', bd=5, text='X',
width=5, justify=CENTER)
    nameO.grid(row=1, column=0, sticky=W + E + S + N)
    nameX.grid(row=0, column=0, sticky=W + E + S + N)
    ScoreO.grid(row=1, column=2, sticky=W + E + S + N)
    ScoreX.grid(row=0, column=2, sticky=W + E + S + N)
    PlyrO.grid(row=1, column=1, sticky=W + E + S + N)
    PlyrX.grid(row=0, column=1, sticky=W + E + S + N)

New_Game()

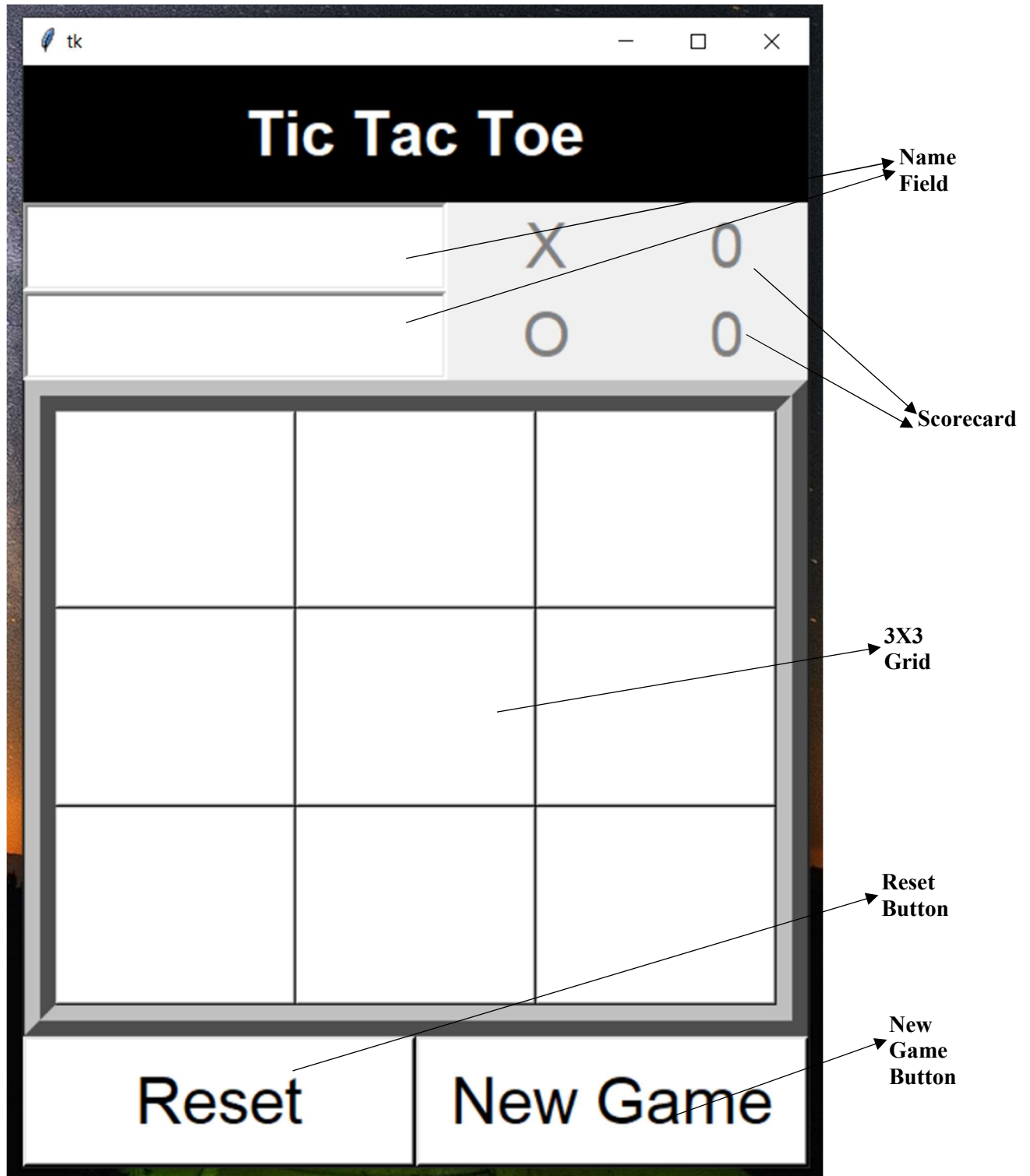
Resetbtn = Button(LowerFrame, text="Reset", font=('arial', 31),bd=3,
width=10, bg='white',command=Reset).grid(row=0,column=0,sticky=W)
Newgamebtn= Button(LowerFrame, text="New Game", font=('arial', 31),bd=3,
width=10, bg='white',command=New_Game).grid(row=0,column=1,sticky=E)

root.mainloop()

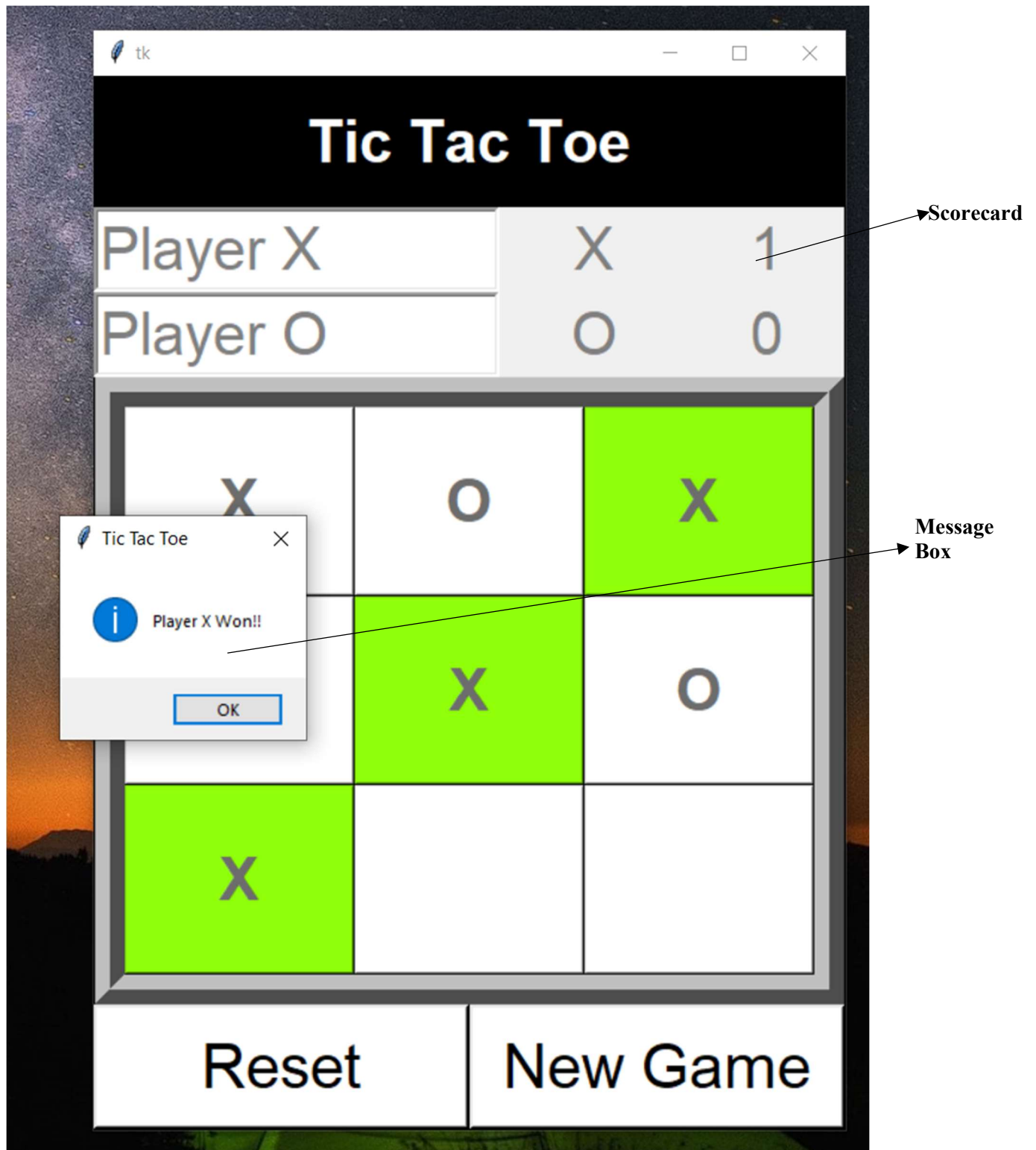
```

OUTPUT

Initial GUI (at the starting of the game):



When Player X wins:



When Player O wins:



When it is a draw:



ROLES AND RESPONSIBILITIES

We all have done this with utmost pleasure and to make our performance quite efficient we have distributed it into parts. Each group member has taken a part of the project in which they are comfortable.

In terms of responsibility, we all have been really transparent to each other, so that we can present our work with grace. A major part of the thought process is provided by Aditya Gorana. Yashvardhan and Sarban Kumar Sonar have provided our insights on the whole.

Below are the roles of each member in brief:

Aditya Gorana:

- Worked on merging GUI with the program logic.
- Planning and implementation of functionality of all the functions and methods used.
- Error correction and proof-reading.

Yashvardhan:

- Worked on GUI.
- Researched on GUI development and basic planning of the presentation.
- Worked on input methods like player name.

Sarban Kumar Sonar:

- Editing of the final project.
- Testing of game.

TECHNOLOGY AND PLATFORM

The game is created on Python 3.8.6 with the help of PyCharm Community Edition 2020.2.1. Python 3.8.6 was released on 23 September 2020 and PyCharm Community Edition 2020.2.1 was released in around second-half of 2020.

Learning Outcomes

It's been a great learning experience for all of us. Even being at distance, it taught us how to maintain coordination and cooperation. It helped us in understanding graphical user interface a bit better. We got the concepts of tkinter, if-else decision-making operations, calling one function in another, and a lot more. Altogether making this project was a great journey.

SWOT Analysis

We did our best in making this game perfect but as it is said, there is always room for improvement. Here is the SWOT analysis from our side:

Strength: GUI is the main strength of this game. It was made user friendly, easy to understand and operate and colour scheme was chosen to make it a bit appealing.

Weakness: Its checking process is bit slow. For every button clicked, it checks all the conditions before giving the output.

Opportunities: It introduced us to the world of game making, although a slightly simpler side of it but it was quite exiting. It gave a platform to try GUI making.

Threats: The main threat was to coordinate. In this pandemic, it was a tad bit difficult to maintain coordination on calls and texts. Other than that, sharing ideas between us partners were a little difficult as there was a lot of connection issues.

CONCLUSION

In last it was an exciting journey. It was tough at first at first but it progressed we found our pace, then we learnt a lot, experienced a new kind of teamwork and got to know each other better. In culmination, it was a fun and educative journey.

REFERENCES

- <https://www.youtube.com/watch?v=-CU3di0HSjY>
- <https://github.com/abhishek305/Tic-Tac-Toe-Game-in-python-3-Tkinter>
- <https://www.youtube.com/watch?v=8e6m2Fm7eHU>