



# Girls' Programming Network

*Tic Tac Toe!*

***Tutors Only***

**This project was created by GPN Australia for GPN sites all around Australia!**

**This workbook and related materials were created by tutors at:**

Sydney, Canberra and Perth



Girls' Programming Network

***If you see any of the following tutors don't forget to thank them!!***

**Writers**

Amanda Hogan  
Isabella Hogan  
Renee Noble

**A massive thanks to our sponsors for supporting us!**



# Part 1: Welcome to Tic Tac Toe!

## 1.4: Printing the Board

```
# Copy your previous code here...
print("Welcome to Tic-Tac-Toe!")
square_1 = " "
square_2 = " "
square_3 = " "
square_4 = " "
square_5 = " "
square_6 = " "
square_7 = " "
square_8 = " "
square_9 = " "
print("-----")
print("| " + square_1 + " | " + square_2 + " | " + square_3 + " |")
print("-----")
print("| " + square_4 + " | " + square_5 + " | " + square_6 + " |")
print("-----")
print("| " + square_7 + " | " + square_8 + " | " + square_9 + " |")
print("-----")
```

# Part 2: Asking Questions

## 2.3: Check what happened!

```
# Copy your previous code here...
print("Welcome to Tic-Tac-Toe!")
square_1 = " "
square_2 = " "
square_3 = " "
square_4 = " "
square_5 = " "
square_6 = " "
square_7 = " "
square_8 = " "
square_9 = " "
print("-----")
print("| " + square_1 + " | " + square_2 + " | " + square_3 + " |")
print("-----")
print("| " + square_4 + " | " + square_5 + " | " + square_6 + " |")
print("-----")
print("| " + square_7 + " | " + square_8 + " | " + square_9 + " |")
print("-----")
```

```
symbol = input("Which symbol's turn is it now? ")
square = input("What square do you want to play in? ")

print("symbol:", symbol, "square:", square)
```

## Bonus 2.4: Hello, Who is playing?

```
# Copy your previous code here...
p1_name = input("What is player 1's name? ")
p2_name = input("What is player 2's name? ")
print("Welcome to Tic-Tac-Toe " + p1_name + " and " + p2_name + "!")
square_1 = " "
square_2 = " "
square_3 = " "
square_4 = " "
square_5 = " "
square_6 = " "
square_7 = " "
square_8 = " "
square_9 = " "
print("-----")
print("| " + square_1 + " | " + square_2 + " | " + square_3 + " |")
print("-----")
print("| " + square_4 + " | " + square_5 + " | " + square_6 + " |")
print("-----")
print("| " + square_7 + " | " + square_8 + " | " + square_9 + " |")
print("-----")

symbol = input("Which symbol's turn is it now? ")
square = input("What square do you want to play in? ")

print("symbol:", symbol, "square:", square)
```

## Part 3: Marking the board

### 3.4: Let's print the board again

```
# Copy your previous code here...
p1_name = input("What is player 1's name? ")
p2_name = input("What is player 2's name? ")
print("Welcome to Tic-Tac-Toe " + p1_name + " and " + p2_name + "!")
square_1 = " "
square_2 = " "
square_3 = " "
square_4 = " "
square_5 = " "
square_6 = " "
square_7 = " "
square_8 = " "
square_9 = " "
print("-----")
print("| " + square_1 + " | " + square_2 + " | " + square_3 + " |")
print("-----")
print("| " + square_4 + " | " + square_5 + " | " + square_6 + " |")
print("-----")
print("| " + square_7 + " | " + square_8 + " | " + square_9 + " |")
print("-----")

symbol = input("Which symbol's turn is it now? ")
square = input("What square do you want to play in? ")
if square == "1":
    square_1 = symbol
elif square == "2":
    square_2 = symbol
elif square == "3":
    square_3 = symbol
elif square == "4":
    square_4 = symbol
elif square == "5":
    square_5 = symbol
elif square == "6":
    square_6 = symbol
elif square == "7":
    square_7 = symbol
elif square == "8":
    square_8 = symbol
elif square == "9":
    square_9 = symbol
print("-----")
print("| " + square_1 + " | " + square_2 + " | " + square_3 + " |")
print("-----")
print("| " + square_4 + " | " + square_5 + " | " + square_6 + " |")
```

```
print("-----")
print("| " + square_7 + " | " + square_8 + " | " + square_9 + " |")
print("-----")
```

### Bonus 3.5 What about square 10?

```
# Copy your previous code here...
p1_name = input("What is player 1's name? ")
p2_name = input("What is player 2's name? ")
print("Welcome to Tic-Tac-Toe " + p1_name + " and " + p2_name + "!")
square_1 = " "
square_2 = " "
square_3 = " "
square_4 = " "
square_5 = " "
square_6 = " "
square_7 = " "
square_8 = " "
square_9 = " "
print("-----")
print("| " + square_1 + " | " + square_2 + " | " + square_3 + " |")
print("-----")
print("| " + square_4 + " | " + square_5 + " | " + square_6 + " |")
print("-----")
print("| " + square_7 + " | " + square_8 + " | " + square_9 + " |")
print("-----")

symbol = input("Which symbol's turn is it now? ")
square = input("What square do you want to play in? ")
if square == "1":
    square_1 = symbol
elif square == "2":
    square_2 = symbol
elif square == "3":
    square_3 = symbol
elif square == "4":
    square_4 = symbol
elif square == "5":
    square_5 = symbol
elif square == "6":
    square_6 = symbol
elif square == "7":
    square_7 = symbol
elif square == "8":
    square_8 = symbol
elif square == "9":
    square_9 = symbol
else:
    print("You can't go there")
```

```
print("-----")
print("| " + square_1 + " | " + square_2 + " | " + square_3 + " |")
print("-----")
print("| " + square_4 + " | " + square_5 + " | " + square_6 + " |")
print("-----")
print("| " + square_7 + " | " + square_8 + " | " + square_9 + " |")
print("-----")
```

# Part 4 : Let's Play!

## 4.3 Run your code!

```
print("Welcome to Tic-Tac-Toe!")

square_1 = " "
square_2 = " "
square_3 = " "
square_4 = " "
square_5 = " "
square_6 = " "
square_7 = " "
square_8 = " "
square_9 = " "

print("-----")
print ("| " + square_1 + " | " + square_2 + " | " + square_3 + " |")
print("-----")
print ("| " + square_4 + " | " + square_5 + " | " + square_6 + " |")
print("-----")
print ("| " + square_7 + " | " + square_8 + " | " + square_9 + " |")
print("-----")

# Part 4
while True:
    # Part 2
    symbol = input("What symbol are you using? ")
    square = input("Which square do you want to place your symbol on? ")

    # Part 3
    if square == "1":
        square_1 = symbol
    elif square == "2":
        square_2 = symbol
    elif square == "3":
        square_3 = symbol
    elif square == "4":
        square_4 = symbol
    elif square == "5":
        square_5 = symbol
    elif square == "6":
        square_6 = symbol
    elif square == "7":
        square_7 = symbol
    elif square == "8":
        square_8 = symbol
    elif square == "9":
        square_9 = symbol
```



```
print("-----")
print ("| " + square_1 + " | " + square_2 + " | " + square_3 + " |")
print("-----")
print ("| " + square_4 + " | " + square_5 + " | " + square_6 + " |")
print("-----")
print ("| " + square_7 + " | " + square_8 + " | " + square_9 + " |")
```

# Part 5 : Picking the winner

## 5.4 Code for all winning scenarios

```
print("Welcome to Tic-Tac-Toe!")

square_1 = " "
square_2 = " "
square_3 = " "
square_4 = " "
square_5 = " "
square_6 = " "
square_7 = " "
square_8 = " "
square_9 = " "

print("-----")
print ("| " + square_1 + " | " + square_2 + " | " + square_3 + " |")
print("-----")
print ("| " + square_4 + " | " + square_5 + " | " + square_6 + " |")
print("-----")
print ("| " + square_7 + " | " + square_8 + " | " + square_9 + " |")
print("-----")

# Part 4
while True:
    # Part 2
    symbol = input("What symbol are you using? ")
    square = input("Which square do you want to place your symbol on? ")

    # Part 3
    if square == "1":
        square_1 = symbol
    elif square == "2":
        square_2 = symbol
    elif square == "3":
        square_3 = symbol
    elif square == "4":
        square_4 = symbol
    elif square == "5":
        square_5 = symbol
    elif square == "6":
        square_6 = symbol
    elif square == "7":
        square_7 = symbol
    elif square == "8":
        square_8 = symbol
    elif square == "9":
```

```

square_9 = symbol

print("-----")
print ("| " + square_1 + " | " + square_2 + " | " + square_3 + " |")
print("-----")
print ("| " + square_4 + " | " + square_5 + " | " + square_6 + " |")
print("-----")
print ("| " + square_7 + " | " + square_8 + " | " + square_9 + " |")
print("-----")

# Part 5
if square_1 == square_2 and square_1 == square_3 and square_1 != " ":
    print(symbol + " wins!")
    break
elif square_1 == square_4 and square_1 == square_7 and square_1 != " ":
    print(symbol + " wins!")
    break
elif square_4 == square_5 and square_4 == square_6 and square_4 != " ":
    print(symbol + " wins!")
    break
elif square_7 == square_8 and square_7 == square_9 and square_7 != " ":
    print(symbol + " wins!")
    break
elif square_2 == square_5 and square_2 == square_8 and square_2 != " ":
    print(symbol + " wins!")
    break
elif square_3 == square_6 and square_3 == square_9 and square_3 != " ":
    print(symbol + " wins!")
    break
elif square_1 == square_5 and square_1 == square_9 and square_1 != " ":
    print(symbol + " wins!")
    break
elif square_3 == square_5 and square_3 == square_7 and square_3 != " ":
    print(symbol + " wins!")
    break

```

# Extensions

## All extensions commented with which

```
# Extensions 9 & 11
```

```
import random
```

```
# Bonus 2.4
```

```
p1_name = input("What is the first player's name? ")
```

```
p2_name = input("What is the second player's name? ")
```

```
print("Welcome to Tic-Tac-Toe " + p1_name + " and " + p2_name + "!")
```

```
# Part 1
```

```
square_1 = " "
```

```
square_2 = " "
```

```
square_3 = " "
```

```
square_4 = " "
```

```
square_5 = " "
```

```
square_6 = " "
```

```
square_7 = " "
```

```
square_8 = " "
```

```
square_9 = " "
```

```
print("-----")
```

```
print ("| " + square_1 + " | " + square_2 + " | " + square_3 + " |")
```

```
print("-----")
```

```
print ("| " + square_4 + " | " + square_5 + " | " + square_6 + " |")
```

```
print("-----")
```

```
print ("| " + square_7 + " | " + square_8 + " | " + square_9 + " |")
```

```
print("-----")
```

```
# Extension 7
```

```
counter = 0
```

```
# Extension 8
```

```
symbol_1 = input("What symbol is Player 1 using? ")
```

```
symbol_2 = input("What symbol is Player 2 using? ")
```

```
# Extension 9 symbol = symbol_1
```

```
symbol = random.choice([symbol_1, symbol_2])
```

```
# Extension 10
```

```
if symbol == symbol_1:
```

```
    current_player = p1_name
```

```
else:
```

```
    current_player = p2_name
```

```
# Extension 11
```

```
free_squares = ["1", "2", "3", "4", "5", "6", "7", "8", "9"]
```

```

# Part 4
while True:
    # Extensions 8 & 10
    print("It's " + current_player + ' ' + symbol + "'s turn!")
    # Extension 11
    if current_player == "computer":
        square = random.choice(free_squares)
        print("computer chooses " + square)
    else:
        square = input("Which square do you want to place your symbol on? ")

# Part 2
# Extension 8
symbol = input("What symbol are you using? ")
square = input("Which square do you want to place your symbol on? ")

# Part 3 / Extension 6
if square == "1" and square_1 == " ":
    square_1 = symbol
elif square == "2" and square_2 == " ":
    square_2 = symbol
elif square == "3" and square_3 == " ":
    square_3 = symbol
elif square == "4" and square_4 == " ":
    square_4 = symbol
elif square == "5" and square_5 == " ":
    square_5 = symbol
elif square == "6" and square_6 == " ":
    square_6 = symbol
elif square == "7" and square_7 == " ":
    square_7 = symbol
elif square == "8" and square_8 == " ":
    square_8 = symbol
elif square == "9" and square_9 == " ":
    square_9 = symbol

# Bonus 3.5 / Extension 6 & 7
else:
    print("Error! Not a valid square or spot is already taken.")
    # Extension 7
    continue

print("-----")
print ("| " + square_1 + " | " + square_2 + " | " + square_3 + " |")
print("-----")
print ("| " + square_4 + " | " + square_5 + " | " + square_6 + " |")
print("-----")
print ("| " + square_7 + " | " + square_8 + " | " + square_9 + " |")
print("-----")

```

#### *# Extension 7*

```
counter = counter + 1
```

#### *# Part 5 / Extension 10*

```
if square_1 == square_2 == square_3 and square_1 != " ":
    print(current_player + " wins!")
    break
elif square_1 == square_4 == square_7 and square_1 != " ":
    print(current_player + " wins!")
    break
elif square_4 == square_5 == square_6 and square_4 != " ":
    print(current_player + " wins!")
    break
elif square_7 == square_8 == square_9 and square_7 != " ":
    print(current_player + " wins!")
    break
elif square_2 == square_5 == square_8 and square_2 != " ":
    print(current_player + " wins!")
    break
elif square_3 == square_6 == square_9 and square_3 != " ":
    print(current_player + " wins!")
    break
elif square_1 == square_5 == square_9 and square_1 != " ":
    print(current_player + " wins!")
    break
elif square_3 == square_5 == square_7 and square_3 != " ":
    print(current_player + " wins!")
    break
```

#### *# Extension 7*

```
if counter == 9:
    print("It's a tie!")
    break
```

#### *# Extensions 8 & 10*

```
if symbol == symbol_1:
    symbol = symbol_2
    current_player = p2_name
elif symbol == symbol_2:
    symbol = symbol_1
    current_player = p1_name
```