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!!

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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

```python
# 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?

```python
# 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")
```

```python
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!

```python
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
```

```python
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

```python
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":
```

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

Extensions

```python
# Extensions D & F
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 B
counter = 0

# Extension 8
symbol_1 = input("What symbol is Player 1 using? ")
symbol_2 = input("What symbol is Player 2 using? ")
# Extension D symbol = symbol_1
symbol = random.choice([symbol_1, symbol_2])

# Extension E
if symbol == symbol_1:
  current_player = p1_name
else:
  current_player = p2_name

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

```python
# Part 4
while True:
  # Extensions C & E
    print("It's " + current_player + ' ' + symbol + "'s turn!")
  # Extension F    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 C symbol = input("What symbol are you using? ")
    square = input("Which square do you want to place your symbol on? ")

  # Part 3 / Extension A
    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 A & B
    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 B
```

```python
        counter = counter + 1

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

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

# Extensions C & E
    if symbol == symbol_1:
        symbol = symbol_2
        current_player = p2_name
    elif symbol == symbol_2:
        symbol = symbol_1
        current_player = p1_name
```