

# TIC TAC TOE Algorithm

## Game Algorithm Steps:

1- Print Board With Begin Data

2- Ask player to press (Y) key to start the game

```
While ( True ):
    X = str( input() )
    If ( x == "Y" or x == "y" ):
        break
```

3- Ask player to choose who will start player 1 or 2

```
While ( true ):
    Index = int( input() )
    If ( index == 1 or index == 2):
        Break
```

4- Start game by enter to the main loop

5- Print player number

```
Print( "Player " , playernumber , " Turn" )
```

6- Ask player who are play in this turn to enter position number

```
Pos = int( input() )
```

## 7- Check if position value in range ( 1 , 9 )

```
while( True ):
    if ( pos > 9 or pos < 1 ):
        print( "Oops! - Sorry Poistion Should Be In Range 1 TO 9 " )
        pos = int( input('Choose Position : ' ) )
    else:
        break
```

## 8- Check if position is available

## 9- Ask player who are play in this turn to enter value

## 10- Make Some Condition on Value:

- Check if value in range ( 1 , 9 )
- If this turn to player one check if value is odd
- If this turn to player two check if value is even
- Check if this value not taken yet

```
while( True ):
    if ( val > 9 or val < 0 ):
        print( "Oops! - Sorry Value Should Be In Range 1 TO 9 " )
        val = int( input('Choose Value : ' ) )
    elif ( k == 1 and val % 2 == 0 ):
        print( "Oops! - Sorry You Should Choose Odd Numbers " )
        val = int( input('Choose Another Value : ' ) )
    elif ( k == 2 and val % 2 != 0 ):
        print( "Oops! - Sorry You Should Choose Even Numbers " )
        val = int( input('Choose Another Value : ' ) )
    elif ( val in GameData ):
        print( "Oops! - Sorry You Are Use This Value Before " )
        val = int( input('Choose Another Value : ' ) )
    else:
        break
```

11- Put value in position

```
GameData[pos] = val
```

12- Print the board with new changes

13- Check for winner:

- Loop Horizontal , Vertical with main diameter and sub-diameter and calculate the sum
- If ( sum == 15 ):  
    Print( the winner )
- Break Game main loop
- Else: continue

14- Change Player Number ( prepare to next turn )

```
If ( playernumber == 1 ):
```

```
    Playernumber = 2
```

```
Else:
```

```
    Playernumber = 1
```

15- Ask Players If they want to play another game

```
ask = str( input( "Do You Want To Play Another Game ? : " ) )
```

```
if ( ask != "Y" and ask != "y" ):
```

```
    break
```

# Computer Strategy to Play

## Computer strategy Algorithm :

1- Loop Loop Horizontal , Vertical with main diameter and sub-diameter

2- Check For Computer Winner:

- If The computer system found any row or column have only two value
- Make sum of this two value and subtract sum from 15
- If result number from possible value computer choose this value and win

5		
	6	
		4

$$15 - ( 5 + 6 ) = 4$$

### 3- Check For Defense:

- If The computer system found any row or column have only two value
- Make sum of this two value and subtract sum from 15
- If result number will make player win in next turn, play in this positi

1		
7	0	8
	2	

### 4- No win Case and No defense Case, play random:

- Choose random position
- Check if this position this available
- Choose random value
- Check if this value is not taken before
- If this condition true:

Play this value in this position