

Project 6:

Using graphics

Program Recipes: Adding graphics to a game.

1. We are going to add the graphics we made to a pre-created program that allows a human to play noughts and crosses against a computer.

Open your copy of this program called ATicTactoe.py and also open your copy of the graphical TicTactoe program.

2. Give the game graphics capabilities.

Copy these lines from your graphical program and paste them into the beginning of ATicTactoe.py

```
from tkinter import *
```

```
window = Tk()
```

```
window.wm_title("Tic Tac Toe")
```

```
canvas1 = Canvas(window, width=300, height=300)
```

```
canvas1.pack()
```

Now, under this add your lines that draw the grid for the game.

```
down_grid = canvas1.create_rectangle(100, 0, 200, 400, outline = "black")
```

```
across_grid = canvas1.create_rectangle(0, 100, 400, 200, outline = "black")
```

3. Add your functions for drawing noughts and crosses to the other function definitions. You can add these functions anywhere, as long as they are not in the main while loop or in another if statement

```
def draw_cross(x, y):
```

```
    backstroke = canvas1.create_line(x, y, x + 100, y + 100, fill = "blue")
```

```
    forwardstroke = canvas1.create_line(x, y + 100, x + 100, y, fill = "blue")
```

```
def draw_nought(x, y):
```

```
    nought = canvas1.create_oval(x, y, x + 100, y + 100, outline = "red")
```



4. Add two new functions so that the program is able to match an index in the game list to X and Y coordinates on the game board.

```
5. Add this function underneath the
previous one you added;
def draw_players_turn(position):
    if position == 0:
        draw_nought(0,0)
    elif position == 1:
        draw_nought(100,0)
    elif position == 2:
        draw_nought(200,0)
    elif position == 3:
        draw_nought(0,100)
    elif position == 4:
        draw_nought(100,100)
    elif position == 5:
        draw_nought(200,100)
    elif position == 6:
        draw_nought(0,200)
    elif position == 7:
        draw_nought(100,200)
    elif position == 8:
        draw_nought(200,200)
```

```
5. Now add this one under the last
def draw_computers_turn(position):
    if position == 0:
        draw_cross(0,0)
    elif position == 1:
        draw_cross(100,0)
    elif position == 2:
        draw_cross(200,0)
    elif position == 3:
        draw_cross(0,100)
    elif position == 4:
        draw_cross(100,100)
    elif position == 5:
        draw_cross(200,100)
    elif position == 6:
        draw_cross(0,200)
    elif position == 7:
        draw_cross(100,200)
    elif position == 8:
        draw_cross(200,200)
```

Tip: Copy and paste the last function and change the text.

5. Add a call to your draw_players_turn function to the two places in the main while loop that allows the player to choose where to go.

```
if not gameover and not isDraw(game) and not
isWin(game):
    place = int(input("Where do you want to put your O?
"))
    if game[place] == ".":
        game[place] = "O"
        draw_players_turn(place)
    else:
        print("That place has already been taken.")
```

6. There are two of these, one near the top and one near the bottom of the while loop. You must add this line `draw_players_turn(place)` to both of these.

6. Now look for every place in the main while loop that the computer takes it's turn.

Each time you see a line like this: `game[2]] = "X"`
Add below it a line like this:
`draw_computers_turn(2)`. Make sure you match the indentation that's used and you modify the number to match the number of the place the computer is going in.

```
Python 3.4.0 Shell
File Edit Shell Debug Options Windows Help
0,1,2
3,4,5
6,7,8
Where do you want to put your O? 7
draw
[1,0,1, 'X', 'O', 'O']
[1,0,1, 'O', 'X', 'O']
[1,0,1, 'O', 'O', 'X']
0,1,2
3,4,5
6,7,8
>>> |
```

