

Project 5: Graphics in Python

Using tkinter

Start a new program file by clicking File -> new File.

Start off your program by importing the tkinter library:

```
from tkinter import *
```

Use tkinter and Python to create a window and canvas to display the graphics for our game of noughts and crosses.

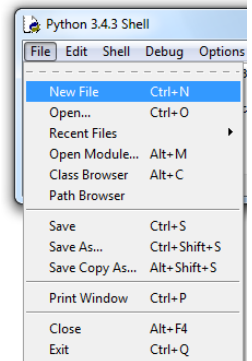
```
window = Tk()
```

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

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

```
canvas1.pack()
```

This will create a 300 pixel wide and 300 pixel high canvas that we can use to display our graphics. Now we need to draw a grid for our game of noughts and crosses. Do this by drawing two intersecting rectangles.



Add the following two lines

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

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

Save your program with a suitable name such as TicTacToe.py by clicking File -> Save As.

Run your program. Click Run -> Run Module or press F5.

The function "create_rectangle ()" draws a rectangle inside canvas 1. It takes five "arguments" in the brackets. These arguments are:

What X position and what Y position to start drawing the rectangle.

What X and Y position to stop drawing the rectangle.

What colour the outline should be.

We can also add another argument if we want, fill. Colour. For example:

```
example = canvas1.create_rectangle(100, 100, 200, 200, outline = "red", fill = "white")
```

This will draw a white rectangle in the centre of the canvas with a red outline.

Function Recipe:

Drawing noughts and crosses

1: Now that we have created a canvas with a grid for our game it is time to draw some noughts and crosses. We are going to need to repeat the same instructions to create these shapes but in different places on the canvas.

We will use functions to simplify the programs we are going to make. You start a function by defining a unique name and some parameters.

3: The parameters we will need to give are the X and Y coordinates of where to draw the noughts and crosses. The first function we will create is going to be called `draw_cross`. Add the following two custom function definitions to your program.

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

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

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

This will draw two lines in a cross shape at the coordinates that you will specify in the parameters.

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

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

This function will draw an "O" shape at the coordinates you specify.

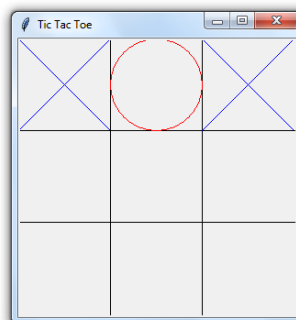
Practice using your functions.

```
draw_cross(0, 0)
```

```
draw_nought(100, 0)
```

```
draw_cross(200, 0)
```

Click Run -> Run Module or press F5



Can you use this example to draw noughts and crosses in every square by repeating the function name and changing the X and Y coordinates!