

Overview

In this lesson, you will learn how to draw **rectangles directly on the Tk canvas** using the turtle library. Instead of moving a turtle, you will create rectangles by defining corner points and adjusting common rectangle settings such as **outline color**, **fill color**, **line thickness**, and **dash style**.

Important Information

When drawing rectangles on the canvas, you are working directly with pixel coordinates rather than turtle movement commands.

Creating a Rectangle

Rectangles are drawn using:

```
canvas.create_rectangle(x1, y1, x2, y2)
```

- `(x1, y1)` is one corner of the rectangle
- `(x2, y2)` is the opposite corner
- These points define the rectangle's width and height

Canvas coordinates work as follows:

- `(0, 0)` is the **center** of the canvas
- X values increase to the right
- Y values increase downward

Outline Color

The rectangle's border color is controlled using the `outline` setting:

```
canvas.create_rectangle(x1, y1, x2, y2, outline="black")
```

Common outline colors include:

- `"black"`
- `"red"`
- `"blue"`
- `"green"`
- `"purple"`

If `outline` is not specified, it defaults to black.

Fill Color

You can fill the inside of the rectangle using the `fill` setting:

```
canvas.create_rectangle(x1, y1, x2, y2, fill="yellow")
```

Important notes:

- The fill color affects only the interior
- The outline color remains separate

Border Thickness

You can control how thick the rectangle's border is using `width`:

```
canvas.create_rectangle(x1, y1, x2, y2, width=5)
```

- Larger numbers create thicker borders
- Smaller numbers create thinner borders

Dashed Borders

You can create dashed rectangle borders using `dash`:

```
canvas.create_rectangle(x1, y1, x2, y2, dash=(10, 5))
```

- The first number is the dash length
- The second number is the space between dashes

Dashed settings affect only the outline, not the fill.

Combining Settings

Rectangle settings can be combined in a single call:

```
canvas.create_rectangle(  
    x1, y1, x2, y2,  
    outline="blue",  
    fill="lightblue",  
    width=4,  
    dash=(8, 4)  
)
```

Set Up

Create a new Python file called `canvas_rectangles.py`.

Copy, Change, Challenge

Copy

Copy and run the following code.

```
import turtle  
  
screen = turtle.Screen()  
canvas = screen.getcanvas()  
  
canvas.create_rectangle(50, 50, 200, 150)  
  
turtle.done()
```

You should see a simple rectangle drawn on the canvas.

Change

Modify the rectangle so that:

- The outline color is different
- The rectangle has a fill color
- The border is thicker
- The border is dashed

Run the program again and observe how each setting changes the rectangle.

Challenge

Add additional rectangles so that:

- Each rectangle uses a different combination of outline, fill, and width
- At least one rectangle has no fill
- At least one rectangle has a thick dashed border