

A Python package designed for writing video games--it includes computer graphics and sound libraries that can be used with Python.

Installing Pygame

```
$ pip3 install pygame
```

Writing Pygame Code

Initialize Pygame

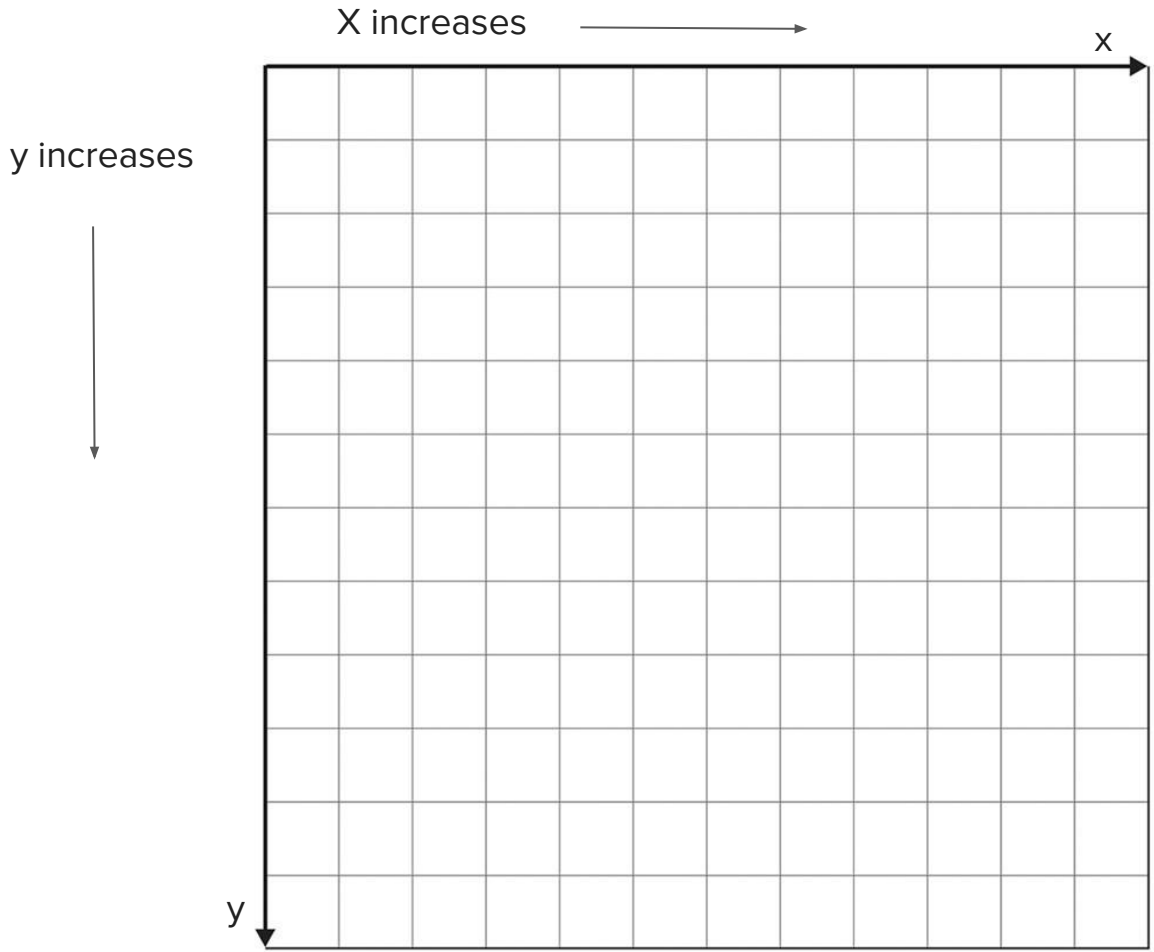
```
import pygame
```

```
pygame.init()
```

Creating a Display Surface

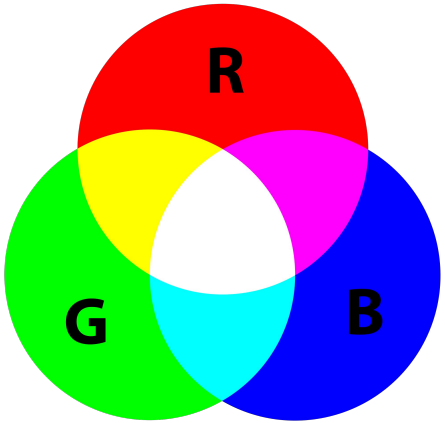
Because we need something to draw on.

```
window = pygame.display.set_mode([width, height])
```


X increases
x
y increases
y

Using Colors

```
pygame.Color(red, green, blue, alpha)
```



- Specify red, green, and blue values to make any color
  - Values range from 0 to 255
- **Optional:** can also specify alpha for transparency
  - Value ranges from 0 to 1

Example: Using Colors

```
pygame.Color(0, 150, 150)
```

red green blue



```
pygame.Color(255, 255, 0)
```



```
pygame.Color(255, 100, 100)
```



Drawing Functions

Create simple shapes on a surface

`pygame.draw.rect`	draw a rectangle shape
`pygame.draw.polygon`	draw a shape with any number of sides
`pygame.draw.circle`	draw a circle around a point
`pygame.draw.ellipse`	draw a round shape inside a rectangle
`pygame.draw.arc`	draw a partial section of an ellipse
`pygame.draw.line`	draw a straight line segment
`pygame.draw.lines`	draw multiple contiguous line segments

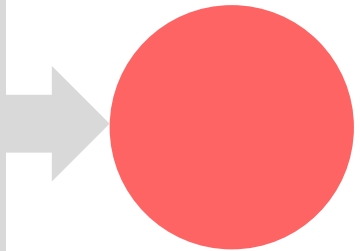
Using the Buffer

```
pygame.display.flip()
```

Example: Circle Drawing Function

Draws a circular shape on our surface which we've called window. We have to pass window as an argument into our function.

```
. . .
color = pygame.Color(255, 100, 100)
pos = (300, 50)
radius = 25
pygame.draw.circle(window, color, pos, radius)
pygame.display.flip()
```



Dealing with User Interactions

Event Listeners

How can we tell when someone interacts with the program?

```
pygame.event.get()
```

An Event Loop

A loop that checks what events have happened since the last loop and acts accordingly

```
# start main loop
while True:
    # start event loop
    for event in pygame.event.get():
        if event.type == pygame.QUIT:
            pygame.quit()
```

Bouncing Ball Example

Pygame Summary

- Initializing Pygame with `pygame.init()`
- Creating Surfaces
- Using Colors and Drawing Functions
- Dealing with User Interactions
    - Event Listeners
        - `pygame.event.get()`
    - Event Loops

Additional Resources

Cheat Sheets available in the shared Google Drive folder

- Pygame Cheat Sheet
- Python Cheat Sheet
- Pygame Online Documentation
- Pygame Online Cheat Sheet 2
- RGB Color Online Resource