PYTHON: GAMES

PYGAME FRAMEWORK

```
$ pip install pygame
```

Game loop

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  handle_input(keys, mouse)
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  for obj in objects:
    obj.update(delta)
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  # are some keys pressed? has the mouse moved?
  handle_input(keys, mouse)

  # move objects, check collisions, update physics
  for obj in objects:
    obj.update(delta)

  # render graphics to screen
  for obj in objects:
    obj.draw(screen)
```

What is delta?

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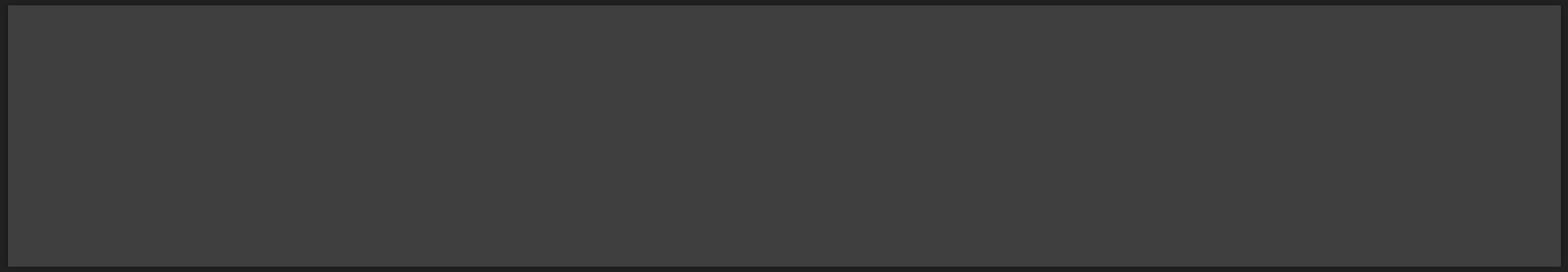
```

- adjustment for computer speed
- usually capped at 60 FPS

Rectangle



Rectangle

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r.center = (50, 60)    # sets center to (50, 60)
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Rectangle

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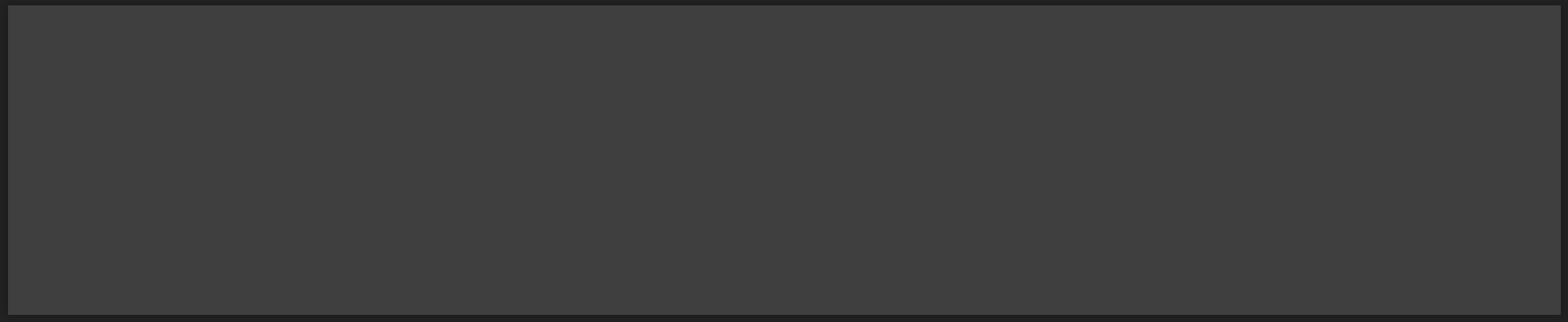
pos = (1, 1)  # points are represented as tuple (x, y)
size = (30, 30)
r = pygame.Rect(pos, size)
r.center = (50, 60)    # sets center to (50, 60)
moved = r.move(50, 30) # new rectangle at (x + 50, y + 30)
```

Drawing an image to screen



Drawing an image to screen

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image = load_image('images/enemy1.gif')
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Drawing an image to screen

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image = load_image('images/enemy1.gif')
rect = image.get_rect() # image rectangle
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def draw(self, screen):
  screen.blit(image, rect)
```

Reacting to user input

```
for event in pygame.event.get():
  if event.type == pygame.KEYDOWN:
      if event.key == pygame.K_LEFT:
          pass
```

Object groups

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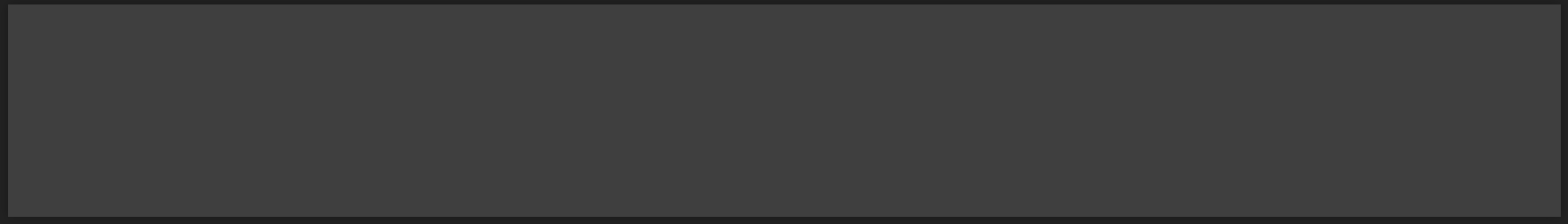
len(enemies)  # 1
enemy.kill()  # remove enemy from all collections
len(enemies)  # 0
```

Testing collisions



Testing collisions

```
cols = pygame.sprite.spritecollide(player, enemies, False)
# `cols` now contains `enemies` that collide with `player`
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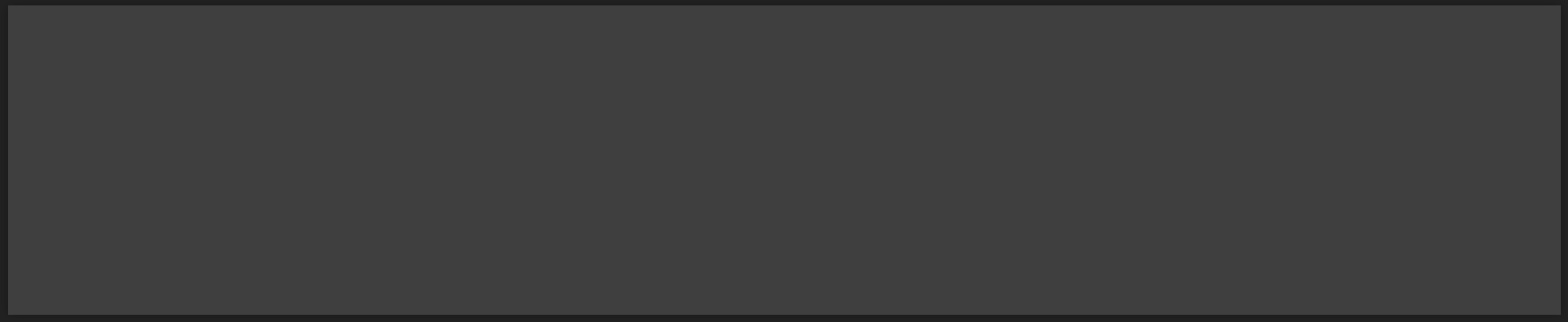
# `cols` now contains `enemies` that collide with `player`
for item in cols:
  item.kill()
```

Cooldown



Cooldown

```
cd = Cooldown(500) # CD for 500 ms
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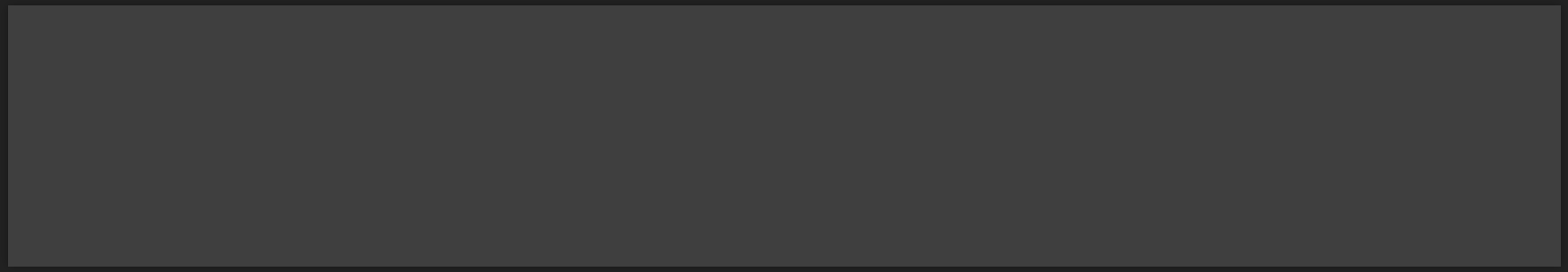
def update(self, engine, delta):
  cd.update(delta)
  if cd.reset_if_ready():
    # fire in the hole!
```

Pseudo-random generator



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r.random()              # random number between in range (0, 1)
r.randint(3, 5)         # random number in range [3, 5]
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Pseudo-random generator

```
import random
r = random.Random()
r.random()            # random number between in range (0, 1)
r.randint(3, 5)       # random number in range [3, 5]
r.choice([1, 2, 3])   # randomly selects an item from iterable
```