PYTHON: GAMES

PYGAME FRAMEWORK

\$ pip install pygame

while	True:		

```
while True:
    # are some keys pressed? has the mouse moved?
    handle_input(keys, mouse)
```

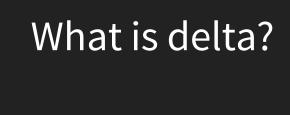
```
while True:
    # are some keys pressed? has the mouse moved?
    handle_input(keys, mouse)

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



```
x += speed * delta
```

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x += speed * delta
# frame took 1/60 s -> small movement
```

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# frame took 1/60 s -> small movement
# frame took 1 s -> large movement
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adjustment for computer speed

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# frame took 1/60 s -> small movement
# frame took 1 s -> large movement
```

- adjustment for computer speed
- usually capped at 60 FPS

```
pos = (1, 1) # points are represented as tuple (x, y)
```

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pos = (1, 1) # points are represented as tuple (x, y) size = (30, 30)
```

```
pos = (1, 1) # points are represented as tuple (x, y)
size = (30, 30)
r = pygame.Rect(pos, size)
```

```
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)
```

```
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)
```

```
image = load_image('images/enemy1.gif')
```

```
image = load_image('images/enemy1.gif')
rect = image.get_rect() # image rectangle
```

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rect = image.get_rect() # image rectangle
rect.center = (30, 30) # change position
```

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rect = image.get_rect() # image rectangle
rect.center = (30, 30) # change position

def draw(self, screen):
    screen.blit(image, rect)
```

```
enemy = Enemy((50, 50)) # inherits from pygame.sprite.Sprite
```

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enemy = Enemy((50, 50)) # inherits from pygame.sprite.Sprite
enemies = pygame.sprite.Group() # list of game objects
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enemies.add(enemy)
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enemies.add(enemy)

enemies.update(p1, ...) # update(p1, ...) on all enemies
```

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enemies.add(enemy)

enemies.update(p1, ...) # update(p1, ...) on all enemies
enemies.draw(p1, ...) # draw(p1, ...) on all enemies
len(enemies) # 1
```

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enemies = pygame.sprite.Group() # list of game objects
enemies.add(enemy)

enemies.update(p1, ...) # update(p1, ...) on all enemies
enemies.draw(p1, ...) # draw(p1, ...) on all enemies

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

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enemies = pygame.sprite.Group() # list of game objects
enemies.add(enemy)

enemies.update(p1, ...) # update(p1, ...) on all enemies
enemies.draw(p1, ...) # draw(p1, ...) on all enemies

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`
```

Testing collisions

```
cols = pygame.sprite.spritecollide(player, enemies, False)
# `cols` now contains `enemies` that collide with `player`
if len(cols) > 0:
   for item in cols:
     item.kill()
```

Cooldown

Cooldown

cd = Cooldown(500) # CD for 500 ms

Cooldown

```
cd = Cooldown(500) # CD for 500 ms

def update(self, engine, delta):
   cd.update(delta)
   if cd.reset_if_ready():
      # fire in the hole!
```

import random

```
import random
r = random.Random()
```

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import random
r = random.Random()
r.random()  # random number between in range (0, 1)
```

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import random
r = random.Random()
r.random()  # random number between in range (0, 1)
r.randint(3, 5)  # random number in range [3, 5]
```

```
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
```