

## My Project

Generated by Doxygen 1.8.13



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# Chapter 1

## Hierarchical Index

### 1.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

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tools._State . . . . .	7
tools.Control . . . . .	14
Sprite	
coin_box.Coin_box . . . . .	9
collider.Collider . . . . .	13
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enemies.Enemy . . . . .	15
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enemies.Koopa . . . . .	22





## Chapter 2

# Class Index

### 2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

<a href="#">tools._State</a>	Abstract base class represents a state of the game . . . . .	7
<a href="#">coin_box.Coin_box</a>	A class to represent a Coin Box . . . . .	9
<a href="#">collider.Collider</a>	. . . . .	13
<a href="#">tools.Control</a>	A class that controls the game states . . . . .	14
<a href="#">enemies.Enemy</a>	Abstract class to represent an <a href="#">Enemy</a> . . . . .	15
<a href="#">enemies.Goomba</a>	SubClass of <a href="#">Enemy</a> to represent a <a href="#">Goomba</a> . . . . .	19
<a href="#">collider.Ground</a>	A class to represent a <a href="#">Ground</a> . . . . .	21
<a href="#">enemies.Koopa</a>	SubClass of <a href="#">Enemy</a> to represent a <a href="#">Koopa</a> . . . . .	22
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## Chapter 3

# File Index

### 3.1 File List

Here is a list of all documented files with brief descriptions:

<a href="#">coin_box.py</a>	Coin Box Component Class . . . . .	29
<a href="#">collider.py</a>	Collider Classes . . . . .	29
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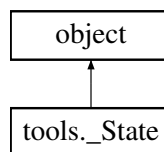
## Chapter 4

# Class Documentation

### 4.1 tools.\_State Class Reference

Abstract base class represents a state of the game.

Inheritance diagram for tools.\_State:



#### Public Member Functions

- def `__init__` (self)  
*Box3D constructor.*
- def `get_event` (self, event)  
*Abstract method to access the current pygame.event.*
- def `startup` (self, current\_time, persistent)
- def `cleanup` (self)
- def `update` (self, surface, keys, current\_time)  
*Abstract method called once every frame.*

#### Public Attributes

- `start_time`
- `current_time`
- `done`
- `quit`
- `next`
- `previous`
- `persist`

### 4.1.1 Detailed Description

Abstract base class represents a state of the game.

### 4.1.2 Constructor & Destructor Documentation

#### 4.1.2.1 `__init__()`

```
def tools._State.__init__ (
    self )
```

Box3D constructor.

initializes the game state variables

### 4.1.3 Member Function Documentation

#### 4.1.3.1 `get_event()`

```
def tools._State.get_event (
    self,
    event )
```

Abstract method to access the current `pygame.event`.

Called by control everytime an event occurs

#### Parameters

<i>event</i>	<code>pygame.event</code> object representing user events (mouse, keyboard, etc)
--------------	--

#### 4.1.3.2 `update()`

```
def tools._State.update (
    self,
    surface,
    keys,
    current_time )
```

Abstract method called once every frame.

Called by control every frame

## Parameters

<i>surface</i>	pygame.surface representing game window
<i>keys</i>	pygame.keys representing keys pressed
<i>current_time</i>	number representing elapsed time of game in seconds

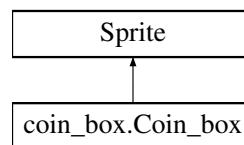
The documentation for this class was generated from the following file:

- [tools.py](#)

## 4.2 coin\_box.Coin\_box Class Reference

A class to represent a Coin Box.

Inheritance diagram for coin\_box.Coin\_box:



### Public Member Functions

- def `__init__` (self, x, y, contents='coin', group=None)  
*Coin Box Constructor.*
- def `set_dimensions` (self, x, y)  
*sets the x and y values of the screen*
- def `serialize` (self)  
*Gets object x and y values as dictionary.*
- def `get_image` (self, x, y, width, height)
- def `setup_frames` (self)
- def `update` (self, game\_info)
- def `handle_states` (self)
- def `resting` (self)
- def `bumped` (self)
- def `start_bump` (self, score\_group)
- def `opened` (self)

### Public Attributes

- `sprite_sheet`
- `frames`
- `frame_index`
- `image`
- `rect`
- `mask`
- `animation_timer`
- `first_half`
- `state`
- `gravity`
- `y_vel`
- `contents`
- `group`
- `rest_height`
- `current_time`

### 4.2.1 Detailed Description

A class to represent a Coin Box.

### 4.2.2 Constructor & Destructor Documentation

#### 4.2.2.1 `__init__()`

```
def coin_box.Coin_box.__init__ (
    self,
    x,
    y,
    contents = 'coin',
    group = None )
```

Coin Box Constructor.

initializes Coin Box component

##### Parameters

<i>x</i>	x-pixel coordinate
<i>y</i>	y-pixel coordinate
<i>contents</i>	string representing contents inside the coin box when bumped (optional)
<i>group</i>	pygame.sprite group that the powerup belongs to (optional)

### 4.2.3 Member Function Documentation

#### 4.2.3.1 `bumped()`

```
def coin_box.Coin_box.bumped (
    self )
```

Action after Mario has bumped the box from below



#### 4.2.3.2 get\_image()

```
def coin_box.Coin_box.get_image (
    self,
    x,
    y,
    width,
    height )
```

Extract image from sprite sheet

#### 4.2.3.3 handle\_states()

```
def coin_box.Coin_box.handle_states (
    self )
```

Determine action based on RESTING, BUMPED or OPENED state

#### 4.2.3.4 opened()

```
def coin_box.Coin_box.opened (
    self )
```

Placeholder for OPENED state

#### 4.2.3.5 resting()

```
def coin_box.Coin_box.resting (
    self )
```

Action when in the RESTING state

#### 4.2.3.6 `serialize()`

```
def coin_box.Coin_box.serialize (
    self )
```

Gets object x and y values as dictionary.

##### Returns

dictionary object with the x,y,content key values

#### 4.2.3.7 `set_dimensions()`

```
def coin_box.Coin_box.set_dimensions (
    self,
    x,
    y )
```

sets the x and y values of the screen

##### Parameters

x	x-pixel coordinate
x	y-pixel coordinate

#### 4.2.3.8 `setup_frames()`

```
def coin_box.Coin_box.setup_frames (
    self )
```

Create frame list

#### 4.2.3.9 `start_bump()`

```
def coin_box.Coin_box.start_bump (
    self,
    score_group )
```

Transitions box into BUMPED state

#### 4.2.3.10 update()

```
def coin_box.Coin_box.update (
    self,
    game_info )
```

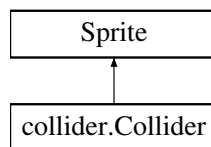
Update coin box behavior

The documentation for this class was generated from the following file:

- [coin\\_box.py](#)

## 4.3 collider.Collider Class Reference

Inheritance diagram for collider.Collider:



### Public Member Functions

- `def __init__(self, x, y, width, height, name='collider')`

### Public Attributes

- **image**
- **rect**
- **state**

#### 4.3.1 Detailed Description

Invisible sprites placed overtop background parts that can be collided with (pipes, steps, ground, etc.

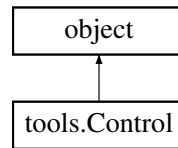
The documentation for this class was generated from the following file:

- [collider.py](#)

## 4.4 tools.Control Class Reference

A class that controls the game states.

Inheritance diagram for tools.Control:



### Public Member Functions

- `def __init__ (self, caption)`
- `def setup_states (self, state_dict, start_state)`
- `def update (self)`
- `def flip_state (self)`
- `def event_loop (self)`
- `def toggle_show_fps (self, key)`
- `def main (self)`

### Public Attributes

- `screen`
- `done`
- `clock`
- `caption`
- `fps`
- `show_fps`
- `current_time`
- `keys`
- `state_dict`
- `state_name`
- `state`

#### 4.4.1 Detailed Description

A class that controls the game states.

Control class for entire project. Contains the game loop, and contains the event\_loop which passes events to States as needed. Logic for flipping states is also found here.

#### 4.4.2 Member Function Documentation

## 4.4.2.1 main()

```
def tools.Control.main (
    self )
```

Main loop for entire program

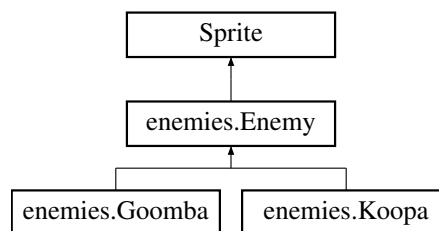
The documentation for this class was generated from the following file:

- [tools.py](#)

## 4.5 enemies.Enemy Class Reference

Abstract class to represent an [Enemy](#).

Inheritance diagram for enemies.Enemy:



## Public Member Functions

- `def __init__ (self)`
- `def setup_enemy (self, x, y, direction, name, setup_frames)`
- `def set_dimensions (self, x, y)`  
*sets the x and y values of the screen*
- `def set_velocity (self)`  
*calculate velocity of enemy*
- `def get_image (self, x, y, width, height)`
- `def handle_state (self)`
- `def walking (self)`  
*process enemy walking*
- `def falling (self)`  
*process enemy falling*
- `def jumped_on (self)`  
*process enemy jumped on.*
- `def death_jumping (self)`
- `def start_death_jump (self, direction)`
- `def animation (self)`
- `def update (self, game_info, args)`
- `def serialize (self)`  
*Gets enemy data as dictionary.*

## Public Attributes

- `sprite_sheet`
- `frames`
- `frame_index`
- `animate_timer`
- `death_timer`
- `gravity`
- `state`
- `name`
- `direction`
- `image`
- `rect`
- `x_vel`
- `y_vel`
- `current_time`

### 4.5.1 Detailed Description

Abstract class to represent an [Enemy](#).

Base class for all enemies (Goombas, Koopas, etc.)

### 4.5.2 Member Function Documentation

#### 4.5.2.1 `animation()`

```
def enemies.Enemy.animation (  
    self )
```

Basic animation, switching between two frames

#### 4.5.2.2 `death_jumping()`

```
def enemies.Enemy.death_jumping (  
    self )
```

Death animation

#### 4.5.2.3 falling()

```
def enemies.Enemy.falling (
    self )
```

process enemy falling

For when it falls off a ledge

#### 4.5.2.4 get\_image()

```
def enemies.Enemy.get_image (
    self,
    x,
    y,
    width,
    height )
```

Get the image frames from the sprite sheet

#### 4.5.2.5 handle\_state()

```
def enemies.Enemy.handle_state (
    self )
```

Enemy behavior based on state

#### 4.5.2.6 jumped\_on()

```
def enemies.Enemy.jumped_on (
    self )
```

process enemy jumped on.

Abstract

Placeholder for when the enemy is stomped on

#### 4.5.2.7 `serialize()`

```
def enemies.Enemy.serialize (
    self )
```

Gets enemy data as dictionary.

##### Returns

dictionary object with the x,y,name key values

#### 4.5.2.8 `set_dimensions()`

```
def enemies.Enemy.set_dimensions (
    self,
    x,
    y )
```

sets the x and y values of the screen

##### Parameters

<i>x</i>	x-pixel coordinate
<i>y</i>	y-pixel coordinate

#### 4.5.2.9 `set_velocity()`

```
def enemies.Enemy.set_velocity (
    self )
```

calculate velocity of enemy

Sets velocity vector based on direction

#### 4.5.2.10 `setup_enemy()`

```
def enemies.Enemy.setup_enemy (
    self,
    x,
    y,
    direction,
    name,
    setup_frames )
```

Sets up various values for enemy



#### 4.5.2.11 start\_death\_jump()

```
def enemies.Enemy.start_death_jump (
    self,
    direction )
```

Transitions enemy into a DEATH JUMP state

#### 4.5.2.12 update()

```
def enemies.Enemy.update (
    self,
    game_info,
    args )
```

Updates enemy behavior

#### 4.5.2.13 walking()

```
def enemies.Enemy.walking (
    self )
```

process enemy walking

Default state of moving sideways

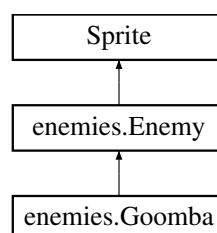
The documentation for this class was generated from the following file:

- [enemies.py](#)

## 4.6 enemies.Goomba Class Reference

SubClass of [Enemy](#) to represent a [Goomba](#).

Inheritance diagram for enemies.Goomba:



## Public Member Functions

- `def __init__ (self, x, y=c.GROUND_HEIGHT, direction=c.LEFT, name='Goomba')`
- `def setup_frames (self)`
- `def jumped_on (self)`

## Public Attributes

- `frame_index`

### 4.6.1 Detailed Description

SubClass of [Enemy](#) to represent a [Goomba](#).

### 4.6.2 Member Function Documentation

#### 4.6.2.1 jumped\_on()

```
def enemies.Goomba.jumped_on (  
    self )
```

When Mario squishes him

#### 4.6.2.2 setup\_frames()

```
def enemies.Goomba.setup_frames (  
    self )
```

Put the image frames in a list to be animated

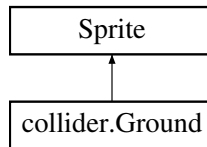
The documentation for this class was generated from the following file:

- [enemies.py](#)

## 4.7 collider.Ground Class Reference

A class to represent a [Ground](#).

Inheritance diagram for collider.Ground:



### Public Member Functions

- `def \_\_init\_\_ (self, x, y, width)`  
[Ground](#).
- `def serialize (self)`  
*Gets dictionary with ground data.*

### Public Attributes

- **image**
- **rect**
- **state**

#### 4.7.1 Detailed Description

A class to represent a [Ground](#).

#### 4.7.2 Constructor & Destructor Documentation

##### 4.7.2.1 `__init__()`

```
def collider.Ground.__init__ (
    self,
    x,
    y,
    width )
```

[Ground](#).

initializes [Ground](#) component

**Parameters**

<i>x</i>	x-pixel coordinate
<i>y</i>	y-pixel coordinate
<i>width</i>	pixel width of ground

**4.7.3 Member Function Documentation****4.7.3.1 serialize()**

```
def collider.Ground.serialize (
    self )
```

Gets dictionary with ground data.

**Returns**

dictionary object with the start x,y,width key values

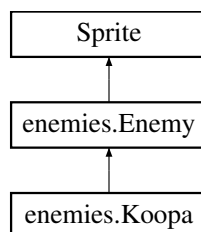
The documentation for this class was generated from the following file:

- [collider.py](#)

**4.8 enemies.Koopa Class Reference**

SubClass of [Enemy](#) to represent a [Koopa](#).

Inheritance diagram for enemies.Koopa:

**Public Member Functions**

- def **\_\_init\_\_** (self, x, y=c.GROUND\_HEIGHT, direction=c.LEFT, name='Koopa')
- def **setup\_frames** (self)
- def **jumped\_on** (self)
- def **shell\_sliding** (self)

## Public Attributes

- `x_vel`
- `frame_index`
- `rect`
- `direction`

### 4.8.1 Detailed Description

SubClass of [Enemy](#) to represent a [Koopa](#).

### 4.8.2 Member Function Documentation

#### 4.8.2.1 `jumped_on()`

```
def enemies.Koopa.jumped_on (  
    self )
```

When Mario jumps on the Koopa and puts him in his shell

#### 4.8.2.2 `setup_frames()`

```
def enemies.Koopa.setup_frames (  
    self )
```

Sets frame list

#### 4.8.2.3 `shell_sliding()`

```
def enemies.Koopa.shell_sliding (  
    self )
```

When the koopa is sliding along the ground in his shell

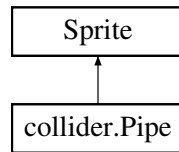
The documentation for this class was generated from the following file:

- [enemies.py](#)

## 4.9 collider.Pipe Class Reference

A class to represent a [Pipe](#).

Inheritance diagram for collider.Pipe:



### Public Member Functions

- def [\\_\\_init\\_\\_](#) (self, x, height)  
*Pipe Constructor.*
- def [set\\_dimensions](#) (self, x, height)  
*sets the x and height values of the screen*
- def [serialize](#) (self)  
*Gets object x and height values as dictionary.*

### Public Attributes

- **pipe\_bottom**
- **pipe\_top**
- **image**
- **rect**

### 4.9.1 Detailed Description

A class to represent a [Pipe](#).

### 4.9.2 Constructor & Destructor Documentation

#### 4.9.2.1 `__init__()`

```
def collider.Pipe.__init__ (
    self,
    x,
    height )
```

[Pipe](#) Constructor.

initializes [Pipe](#) component

## Parameters

<i>x</i>	x-pixel coordinate
<i>height</i>	number of pixels above the ground

### 4.9.3 Member Function Documentation

#### 4.9.3.1 serialize()

```
def collider.Pipe.serialize (
    self )
```

Gets object x and height values as dictionary.

## Returns

dictionary object with the x,height key values

#### 4.9.3.2 set\_dimensions()

```
def collider.Pipe.set_dimensions (
    self,
    x,
    height )
```

sets the x and height values of the screen

## Parameters

<i>x</i>	x-pixel coordinate
	<b>height</b> number of pixels above the ground

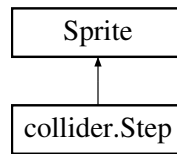
The documentation for this class was generated from the following file:

- [collider.py](#)

## 4.10 collider.Step Class Reference

A class to represent a [Step](#).

Inheritance diagram for collider.Step:



## Public Member Functions

- `def __init__ (self, x, y)`  
*Step Constructor.*
- `def set_dimensions (self, x, y)`  
*sets the x and height values of the screen*
- `def serialize (self)`  
*Gets dictionary with step data.*

## Public Attributes

- `x`
- `y`
- `sprite_sheet`
- `image`
- `rect`
- `state`

### 4.10.1 Detailed Description

A class to represent a [Step](#).

### 4.10.2 Constructor & Destructor Documentation

#### 4.10.2.1 \_\_init\_\_()

```
def collider.Step.__init__ (  
    self,  
    x,  
    y )
```

[Step](#) Constructor.

initializes [Step](#) component



**Parameters**

<i>x</i>	x-pixel coordinate
<i>y</i>	y-pixel coordinate

**4.10.3 Member Function Documentation****4.10.3.1 serialize()**

```
def collider.Step.serialize (
    self )
```

Gets dictionary with step data.

**Returns**

dictionary object with the start x,y key values

**4.10.3.2 set\_dimensions()**

```
def collider.Step.set_dimensions (
    self,
    x,
    y )
```

sets the x and height values of the screen

**Parameters**

<i>x</i>	x-pixel coordinate
<i>y</i>	y-pixel coordinate

The documentation for this class was generated from the following file:

- [collider.py](#)



## Chapter 5

# File Documentation

### 5.1 coin\_box.py File Reference

Coin Box Component Class

#### Classes

- class `coin_box.Coin_box`  
*A class to represent a Coin Box.*

#### 5.1.1 Detailed Description

Coin Box Component Class

### 5.2 collider.py File Reference

Collider Classes

#### Classes

- class `collider.Collider`
- class `collider.Pipe`  
*A class to represent a [Pipe](#).*
- class `collider.Ground`  
*A class to represent a [Ground](#).*
- class `collider.Step`  
*A class to represent a [Step](#).*

#### 5.2.1 Detailed Description

Collider Classes

## 5.3 enemies.py File Reference

Enemy Classes

### Classes

- class `enemies.Enemy`  
*Abstract class to represent an `Enemy`.*
- class `enemies.Goomba`  
*SubClass of `Enemy` to represent a `Goomba`.*
- class `enemies.Koopa`  
*SubClass of `Enemy` to represent a `Koopa`.*

### 5.3.1 Detailed Description

Enemy Classes

## 5.4 tools.py File Reference

Utility classes and functions

### Classes

- class `tools.Control`  
*A class that controls the game states.*
- class `tools._State`  
*Abstract base class represents a state of the game.*

### Functions

- def `tools.load_all_gfx` (directory, colorkey=(255, 0, 255), accept=('.png', 'jpg', 'bmp'))
- def `tools.load_all_music` (directory, accept=('.wav', '.mp3', '.ogg', '.mdi'))
- def `tools.load_all_fonts` (directory, accept=('.ttf'))
- def `tools.load_all_sfx` (directory, accept=('.wav', '.mpe', '.ogg', '.mdi'))
- def `tools.load_level_json` (filename)
- def `tools.get_level_list` ()
- def `tools.write_level_json` (filename, data)
- def `tools.is_num` (x)
- def `tools.round_to_multiple` (x, base)
- def `tools.get_surface_text` (text, color, size=20)

### Variables

- dictionary `tools.keybinding`

### 5.4.1 Detailed Description

Utility classes and functions

### 5.4.2 Variable Documentation

#### 5.4.2.1 keybinding

dictionary tools.keybinding

**Initial value:**

```
1 = {  
2     'action':pg.K_s,  
3     'jump':pg.K_a,  
4     'left':pg.K_LEFT,  
5     'right':pg.K_RIGHT,  
6     'down':pg.K_DOWN  
7 }
```



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