

Python Games



Session 9

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Rules

“Above all, be cool.”

General Information

Wi-Fi Name: CoderDojo

Password: coderdojowireless

Website: <http://cdathenry.wordpress.com/>

Useful Links

Recommended reading:

<http://inventwithpython.com>

Reference Guide

<http://www.tutorialspoint.com/python/>

Social Media

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Installation

As we will be moving on to graphical games we will need to install both Python and Pygame*

* If you have Python 3.x.x and Pygame installed you can ignore the next slide

Installation

We are using version 3.2 of Python go to <https://www.python.org/download/releases/3.2.5/>

Select [Windows x86 MSI Installer \(3.2.5\)](#)

To install Pygame go to

<http://pygame.org/download.shtml>

Select [pygame-1.9.2a0.win32-py3.2.msi](#)

10 Tips for Staying Safe Online

1. **Don't post any personal information online** – like your home address, email address or phone number.
2. **Think carefully before uploading pictures or videos of yourself.** Once you've put a picture of yourself online most people can see it and may be able to download it and pass it on to their friends.
3. **Never give out your passwords** (not even to your best friends)
4. **Do not befriend people you don't know.**
5. Remember that **not everyone online is who they say they are.**

10 Tips for Staying Safe Online

- 6. Don't meet up with people you've met online.** Speak to an adult about anyone who suggests that you meet them in person.
- 7. Think carefully** about what you are typing before you post it online.
- 8. Respect** other people's opinions, even if you don't agree with them. If you have something to say there is no need to be rude.
- 9. Don't download files or attachments** from people or websites you don't know. Check with an adult before you download anything unknown as it may be an unwanted message or harm your computer or mobile device.
- 10. If you see something online that makes you feel uncomfortable, unsafe or worried: leave the website** and tell an adult immediately!

Rotating sprites

The rotate method is used to rotate sprites. The angle is in degrees and negative angle values rotate clockwise.

```
playerrot = pygame.transform.rotate(player, angle)
screen.blit(playerrot, (xpos, ypos))
```

In the above code a new surface is created from our player surface(image) and the angle. This is then blitted on to our screen at xpos,ypos

[See example 1](#)

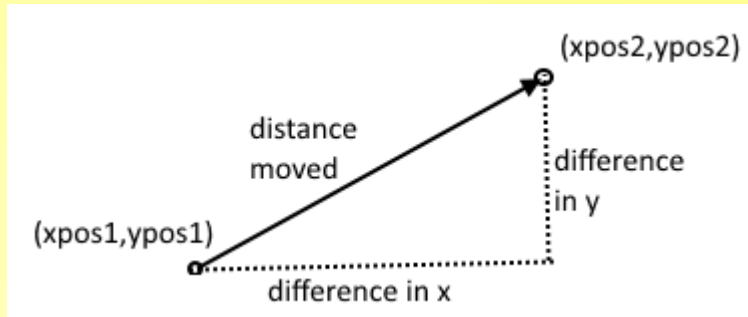
Rotating sprites

You will notice that there is a slight tumbling effect if we want to counter that we need to change xpos and ypos slightly to compensate.

```
playerrot = pygame.transform.rotate(player, angle)
xpos_1 = xpos - playerrot.get_rect().width/2
ypos_1 = ypos - playerrot.get_rect().height/2
screen.blit(playerrot, (xpos_1, ypos_1))
```

[See example 2](#)

Trigonometry



If we want to move our sprite from $(xpos1, ypos1)$ to $(xpos2, ypos2)$ as above we need to use trigonometry to calculate how much we will change x and y by. Here is a short video which explains trigonometry.

[Trig tutorial](#)

Trigonometry

If you don't understand this don't worry most of you will not have covered it in school yet. All you need to be able to do is reuse the following code in your own games.

```
movex=math.cos(angle/57.29)*speed  
movey=math.sin(angle/57.29)*speed  
xpos+=movex  
ypos-=movey
```

Here we use the cos function from python's math module to calculate the difference between the old x position and the new x position

Trigonometry

We also use the sin function to calculate the difference between the old y position and the new y position.

The angle is divided by 57.29 because the trigonometry functions in python take radians not degrees as their input. There are 2π radians in a circle.

[See example 3](#)

Next session

We are going to start working on our own games.

We are going to start off with a pong/tennis game and then see where we go from there.