

Python Turtle



- <https://realpython.com/beginners-guide-python-turtle/>
- <https://docs.python.org/3/library/turtle.html>
- https://almettkidscoding.github.io/basics/pong_game/

What is Resolution?



- Your laptop has a resolution, this is described in terms of how many pixels can be displayed at once.
- A Youtube or TicToc video will have a resolution, described the same way, for instance 720p or 1080p which is also expressed as:
 - 720p = 1280x720
 - 1080p = 1280x1080
- The first number is usually the width, the second is the height.
- So a 720p video is 1280 pixels wide and 720 pixels high

X, Y Coordinates



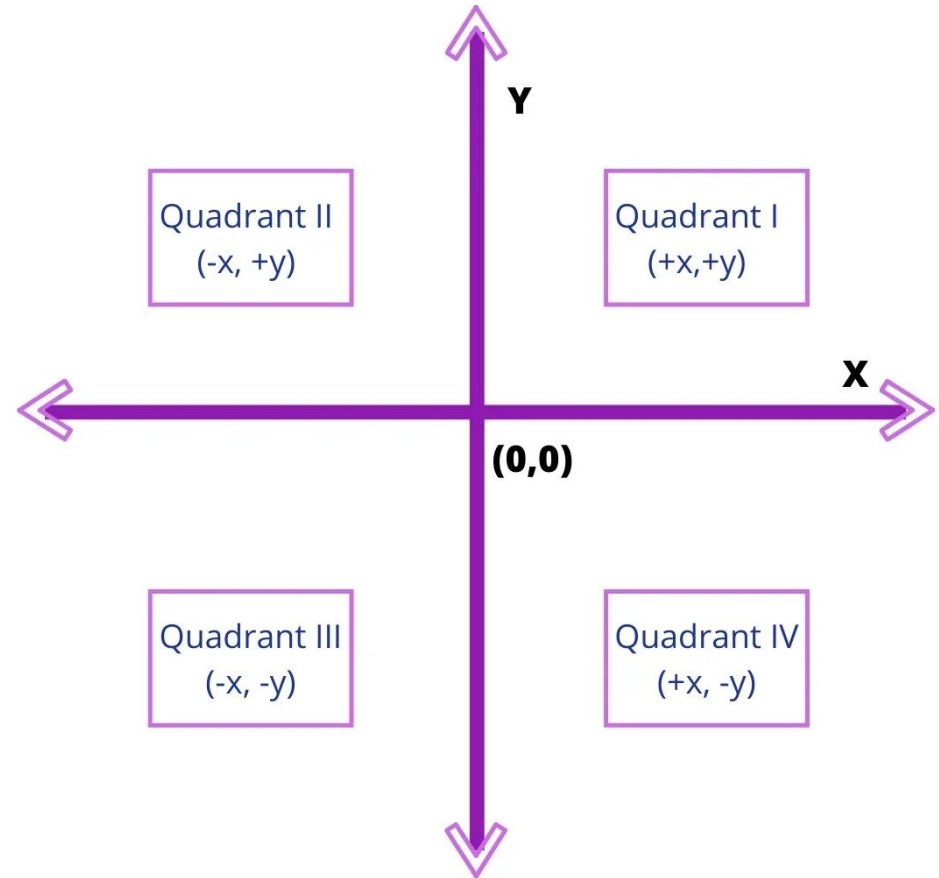
- In Computer Graphics the position of a pixel is expressed as its X, Y coordinates.
- The Y is the position across the screen or windows width, while the X is the position across its height.



Python Window Coordinates



- The `goto(x, y)` command for turtle positions the turtle in the window.
- The coordinates are a bit weird, when $X=0$, and $Y=0$, the turtle is in the middle of the window!
- Top left of a 360x360 window is:
 - $X=-160$, $Y=160$
- Bottom right of a 360x360 window is:
 - $X=160$, $Y=-160$



Samples



- square.py – draws a square (obviously :-)
- Initials.py – try to draw your initials with the turtle
- race.py – race those turtles
- pong.py
- single-player-pong.py
- coordinates.py

Exercises



- Change square.py
 - Change the colour
 - Draw a different shape
 - See how many shapes you can draw all at once!
- Change race.py
 - Change the **Finished** text to display the name of the winning turtle, for example change 'Finished' so it says 'Blue Finished First', of course if blue finished first!
 - You will need to think a little about this and perhaps use an if statement with conditions!
 - Rig the race, so that your favourite coloured turtle always wins!
- Improve the pong game
 - You have to move the paddle to make the ball bounce off it, otherwise it goes right through
 - Make it single player (no left paddle)

Exercises



- Have a play with `coordinates.py`
 - Change the turtle shape
 - Change the background colour
 - Change the colour of the turtle
 - Change the Colour of the coordinates output
- Change `single-player-pong.py` or `pong.py`
 - Change the paddle and ball colours
 - Change the shape of the ball
 - Change the background
 - Change the speed of the ball