Learn to Code: Make Art

Learn the basics of how you can make art using code. We will be learning some basic Python coding skills, and using the Trinket.io platform to make our art.

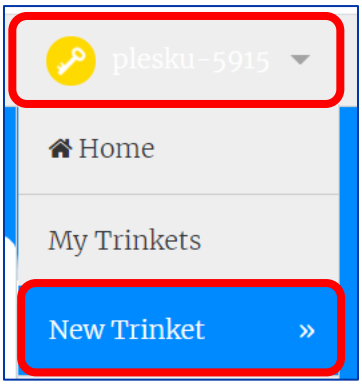
GETTING STARTED

Create a Trinket.io Account

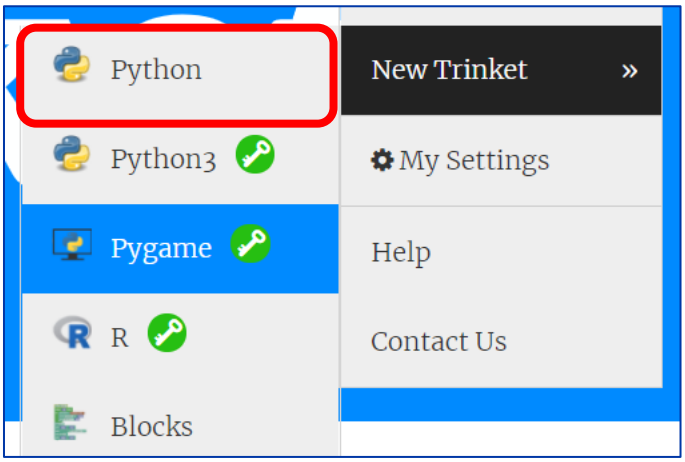
- Go to www.trinket.io
- Click **Sign Up For Your Free Account**
- Enter your email address
- Choose a password
- Click **Sign Up**

Starting a New Project

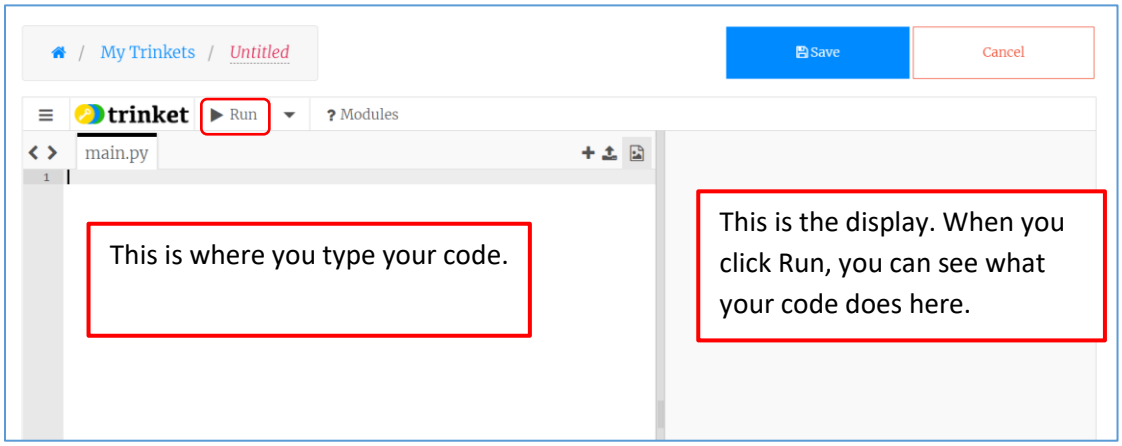
- Click on your username
- Click **New Trinket**



- Click **Python**



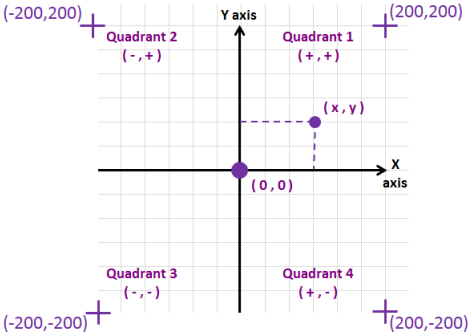
- You will see a blank, untitled Trinket



USING PYTHON TO MAKE ART

Turtles

Python has a library of built in commands called turtle. This library allows you to draw on a virtual canvas that is laid out like an x-y coordinate plane. The canvas is 400 X 400 grid with the point (0, 0) in the center.



Commands

Here are the key commands that you will use to draw using Python turtles. We will review these during our session.

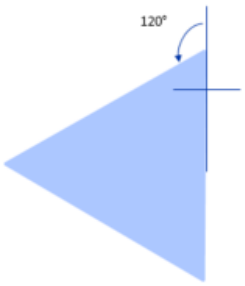
Command	Description
`import turtle`	imports the library we need to use the 'turtle' pen
`myScreen = turtle.Screen()`	use the turtle library to create your screen, name it “myScreen”
`myScreen.bgcolor("teal")`	changes the colour of your turtle screen **NOTE**: the colours need to be in quotes and needs to be a listed colour from colour libraries
`myPen = turtle.Turtle()`	use the turtle library to create a pen to draw with, name it “myPen”
`myPen.color("black")`	changes the pen colour, you can also change the pen size and shape; the default start location for your pen is (0,0)
`myPen.goto(50,50)`	moves your pen to the specified location
`myPen.penup()`	lifts up your pen so that it doesn't make a mark
`myPen.pendown()`	puts your pen down so that it makes a mark
`myPen.forward(200)` `[myPen.backward()]`	moves your pen in a straight line forwards (or backwards) by the number of pixels your specify
`myPen.right(90)` `[myPen.left]`	turns your pen to the right (or left) by the specified number of degrees
`#comment`	any line with a # at the front is a comment and will not be run as code

Drawing with Shapes

Using Python **loops** we can easily make shapes. A loop runs the same command repeatedly. We will be using a **for loop** which looks like this:

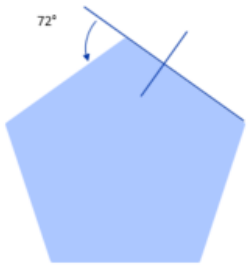
for i in range(#): *instructions to be followed*	i could theoretically be replaced by any letter # is replaced by the number of times you want to repeat the instructions The instructions **must** be indented

Let's look at some common shapes as examples:



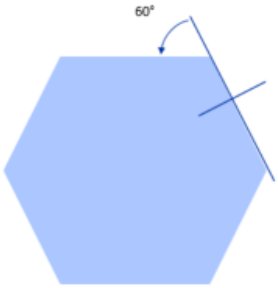
Repeat this 3 times:
- Go straight
- Turn 120°

```
for i in range(3):
    myPen.forward(50)
    myPen.right(120)
```



Repeat this 5 times:
- Go straight
- Turn 72°

```
for i in range(5):
    myPen.forward(50)
    myPen.right(72)
```

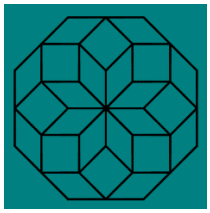


Repeat this 6 times:
- Go straight
- Turn 60°

```
for i in range(6):
    myPen.forward(50)
    myPen.right(60)
```

You can also put loops inside loops to make beautiful patterns. Here's an example using an octagon:

```
for j in range(8):
    for i in range(8):
        myPen.forward(70)
        myPen.right(45)
    myPen.right(45)
```



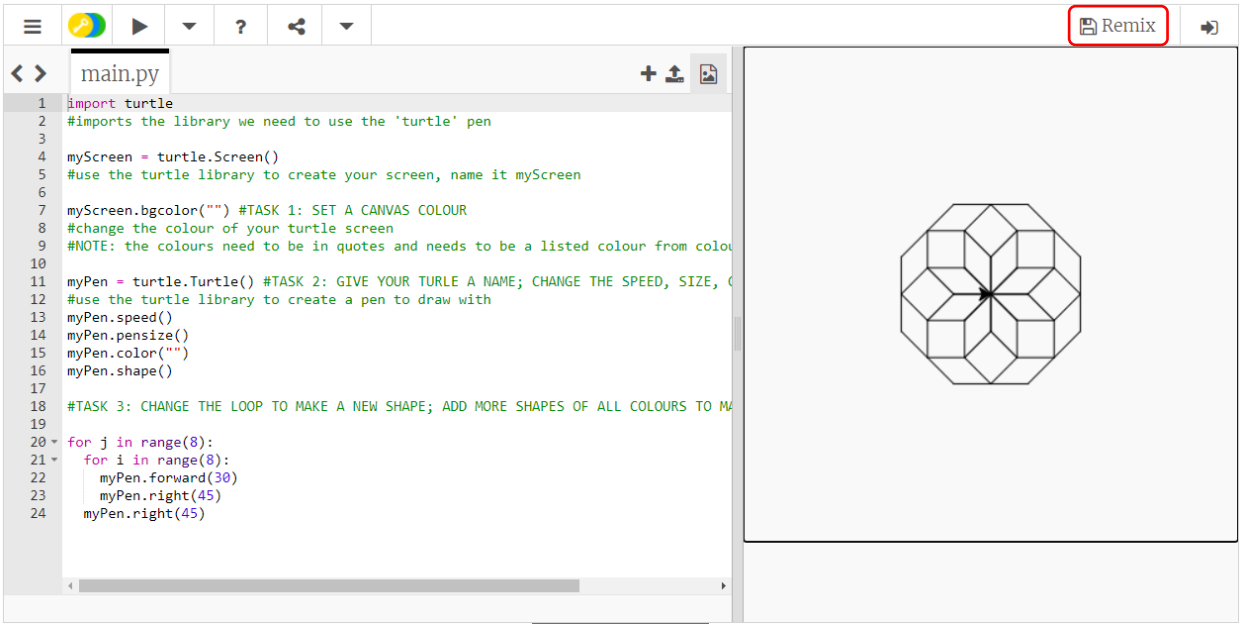
YOUR PROJECT

Use the skills that we cover in our class to make your own work of art.

You can make you own project from scratch or to help get you started, you can use the following template program:

https://trinket.io/python/289c105934

Open the link, then hit **remix** in the top right corner to log in and save your work.



There are 3 tasks outlined to get you started. Work through these, then add more to make it your own.

- Task 1: change the canvas colour
- Task 2: customize the turtle colour, speed, size, and shape
- Task 3: draw shapes; change the octagon shape or add more to make your own design

LEARN MORE

- For detailed information about the Python turtle library: https://docs.python.org/3/library/turtle.html
- Take an introductory lesson about using Turtles on Trinket.io: https://hourofpython.trinket.io/a-visual-introduction-to-python#/welcome/an-hour-of-code
- Cheat sheet of colours you can use in Trinket: https://trinket.io/docs/colors