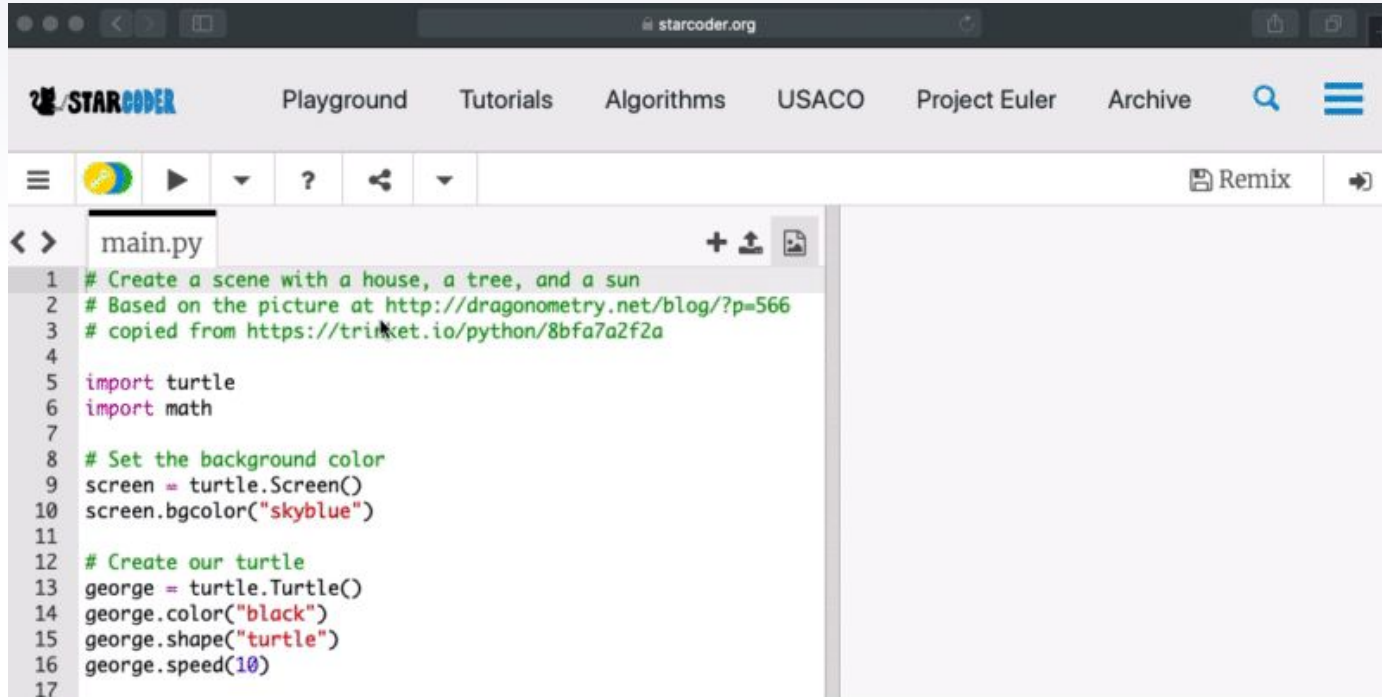# Welcome to Lesson 4: Turtle

What is Turtle?

▸ Turtle – Python feature that allows you to draw things

▸ Using a turtle

Cool Example!

Importing and Creation

- Getting all the turtle commands

  import turtle
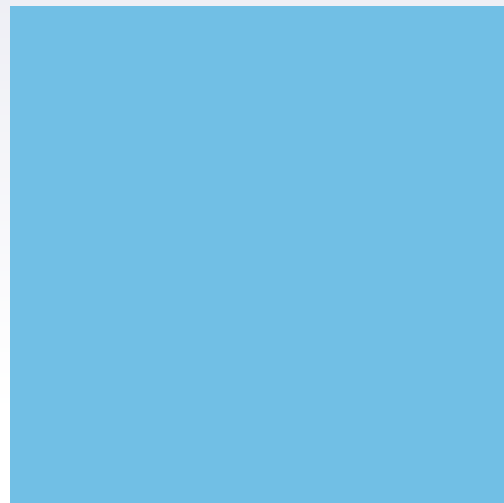
- Create a turtle

  name = turtle.Turtle()

Screen

- Setting up the screen

  screen = turtle.Screen()

- screen.bgcolor("skyblue")

Settings of Cursor Turtle

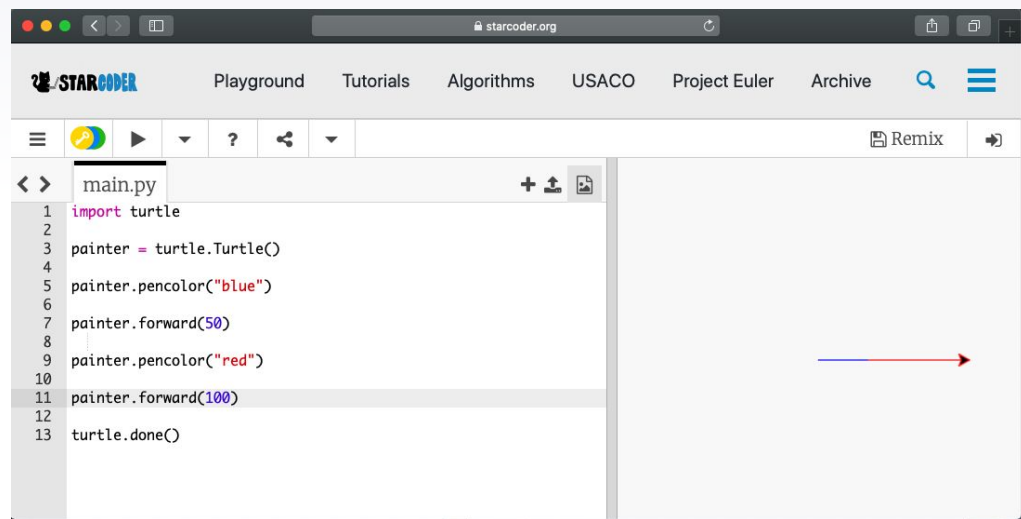▸ name.pensize(thickness)

0 is max speed!

▸ name.speed(number)

▸ name.shape("turtle")

arrow

classic

turtle

circle

Changing Colors

▶ painter.pencolor("blue")

Red colors

Name	Hex			R	G	B
IndianRed	CD	5C	5C	205	92	92
LightCoral	F0	80	80	240	128	128
Salmon	FA	80	72	250	128	114
DarkSalmon	E9	96	7A	233	150	122
LightSalmon	FF	A0	7A	255	160	122
Crimson	DC	14	3C	220	20	60
Red	FF	00	00	255	0	0
FireBrick	B2	22	22	178	34	34
DarkRed	8B	00	00	139	0	0

Pink colors

Name	Hex			R	G	B
Pink	FF	C0	CB	255	192	203
LightPink	FF	B6	C1	255	182	193
HotPink	FF	69	B4	255	105	180
DeepPink	FF	14	93	255	20	147
MediumVioletRed	C7	15	85	199	21	133
PaleVioletRed	DB	70	93	219	112	147

Orange colors

Name	Hex			R	G	B
LightSalmon	FF	A0	7A	255	160	122
Coral	FF	7F	50	255	127	80
Tomato	FF	63	47	255	99	71
OrangeRed	FF	45	00	255	69	0
DarkOrange	FF	8C	00	255	140	0
Orange	FF	A5	00	255	165	0

Yellow colors

Name	Hex			R	G	B
Gold	FF	D7	00	255	215	0
Yellow	FF	FF	00	255	255	0
LightYellow	FF	FF	E0	255	255	224
LemonChiffon	FF	FA	CD	255	250	205
LightGoldenrodYellow	FA	FA	D2	250	250	210
PapayaWhip	FF	EF	D5	255	239	213
Moccasin	FF	E4	B5	255	228	181
PeachPuff	FF	DA	B9	255	218	185
PaleGoldenrod	EE	E8	AA	238	232	170
Khaki	F0	E6	8C	240	230	140
DarkKhaki	BD	B7	6B	189	183	107

Purple colors

Name	Hex			R	G	B
Lavender	E6	E6	FA	230	230	250
Thistle	D8	BF	D8	216	191	216
Plum	DD	A0	DD	221	160	221
Violet	EE	82	EE	238	130	238
Orchid	DA	70	D6	218	112	214
Fuchsia	FF	00	FF	255	0	255
Magenta	FF	00	FF	255	0	255
MediumOrchid	BA	55	D3	186	85	211
BlueViolet	8A	2B	E2	138	43	226
DarkViolet	94	00	D3	148	0	211
DarkOrchid	99	32	CC	153	50	204
DarkMagenta	8B	00	8B	139	0	139
Purple	80	00	80	128	0	128
Indigo	4B	00	82	75	0	130
SlateBlue	6A	5A	CD	106	90	205
DarkSlateBlue	48	3D	8B	72	61	139
MediumSlateBlue	7B	68	EE	123	104	238

Green colors

Name	Hex			R	G	B
GreenYellow	AD	FF	2F	173	255	47
Chartreuse	7F	FF	00	127	255	0
LawnGreen	7C	FC	00	124	252	0
Lime	00	FF	00	0	255	0
LimeGreen	32	CD	32	50	205	50
PaleGreen	98	FB	98	152	251	152
LightGreen	90	EE	90	144	238	144
MediumSpringGreen	00	FA	9A	0	250	154
SpringGreen	00	FF	7F	0	255	127
MediumSeaGreen	3C	B3	71	60	179	113
SeaGreen	2E	8B	57	46	139	87
ForestGreen	22	8B	22	34	139	34
Green	00	80	00	0	128	0
DarkGreen	00	64	00	0	100	0
YellowGreen	9A	CD	32	154	205	50
OliveDrab	6B	8E	23	107	142	35
Olive	80	80	00	128	128	0
DarkOliveGreen	55	6B	2F	85	107	47
MediumAquamarine	66	CD	AA	102	205	170
DarkSeaGreen	8F	BC	8F	143	188	143
LightSeaGreen	20	B2	AA	32	178	170
DarkCyan	00	8B	8B	0	139	139
Teal	00	80	80	0	128	128

Blue/Cyan colors

Name	Hex			R	G	B
Aqua	00	FF	FF	0	255	255
Cyan	00	FF	FF	0	255	255
LightCyan	E0	FF	FF	224	255	255
PaleTurquoise	AF	EE	EE	175	238	238
Aquamarine	7F	FF	D4	127	255	212
Turquoise	40	E0	D0	64	224	208
MediumTurquoise	48	D1	CC	72	209	204
DarkTurquoise	00	CE	D1	0	206	209
CadetBlue	5F	9E	A0	95	158	160
SteelBlue	46	82	B4	70	130	180
LightSteelBlue	B0	C4	DE	176	196	222
PowderBlue	B0	E0	E6	176	224	230
LightBlue	AD	D8	E6	173	216	230
SkyBlue	87	CE	EB	135	206	235
LightSkyBlue	87	CE	FA	135	206	250
DeepSkyBlue	00	BF	FF	0	191	255
DodgerBlue	1E	90	FF	30	144	255
CornflowerBlue	64	95	ED	100	149	237
MediumSlateBlue	7B	68	EE	123	104	238
RoyalBlue	41	69	E1	65	105	225
MediumBlue	00	00	CD	0	0	205
DarkBlue	00	00	8B	0	0	139
Navy	00	00	80	0	0	128
MidnightBlue	19	19	70	25	25	112

Brown colors

Name	Hex			R	G	B
Cornsilk	FF	F8	DC	255	248	220
BlanchedAlmond	FF	EB	CD	255	235	205
Bisque	FF	E4	C4	255	228	196
NavajoWhite	FF	DE	AD	255	222	173
Wheat	F5	DE	B3	245	222	179
BurlyWood	DE	B8	87	222	184	135
Tan	D2	B4	8C	210	180	140
RosyBrown	BC	8F	8F	188	143	143
SandyBrown	F4	A4	60	244	164	96
Goldenrod	DA	A5	20	218	165	32
DarkGoldenrod	B8	86	0B	184	134	11
Peru	CD	85	3F	205	133	63
Chocolate	D2	69	1E	210	105	30
SaddleBrown	8B	45	13	139	69	19
Sienna	A0	52	2D	160	82	45
Brown	A5	2A	2A	165	42	42
Maroon	80	00	00	128	0	0

White colors

Name	Hex			R	G	B
White	FF	FF	FF	255	255	255
Snow	FF	FA	FA	255	250	250
Honeydew	F0	FF	F0	240	255	240
MintCream	F5	FF	FA	245	255	250
Azure	F0	FF	FF	240	255	255
AliceBlue	F0	F8	FF	240	248	255
GhostWhite	F8	F8	FF	248	248	255
WhiteSmoke	F5	F5	F5	245	245	245
Seashell	FF	F5	EE	255	245	238
Beige	F5	F5	DC	245	245	220
OldLace	FD	F5	E6	253	245	230
FloralWhite	FF	FA	F0	255	250	240
Ivory	FF	FF	F0	255	255	240
AntiqueWhite	FA	EB	D7	250	235	215
Linen	FA	F0	E6	250	240	230
LavenderBlush	FF	F0	F5	255	240	245
MistyRose	FF	E4	E1	255	228	225

Gray colors

Name	Hex			R	G	B
Gainsboro	DC	DC	DC	220	220	220
LightGrey	D3	D3	D3	211	211	211
Silver	C0	C0	C0	192	192	192
DarkGray	A9	A9	A9	169	169	169
Gray	80	80	80	128	128	128
DimGray	69	69	69	105	105	105
LightSlateGray	77	88	99	119	136	153
SlateGray	70	80	90	112	128	144
Black	00	00	00	0	0	0

Drawing a Line


```python
import turtle

alice = turtle.Turtle()

alice.forward(100)
turtle.done()
```
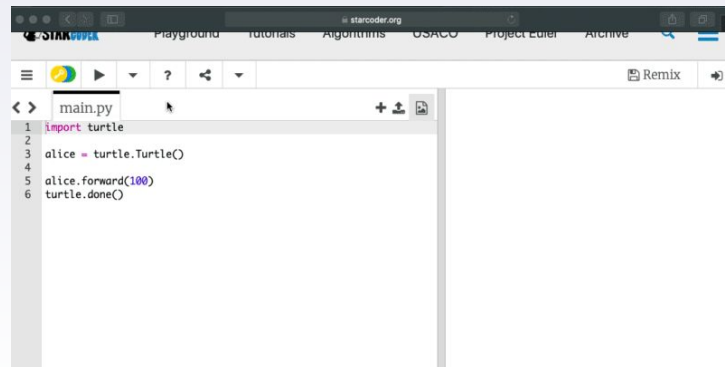
▸ Moving the turtle

name.forward(amount of pixels)

▸ Turning the turtle

name.right(degrees)

name.left(degrees)

All you need!

Geometry Review

- Angles in a shape
  - Square
  - Equilateral Triangle
  - Hexagon
  - 180(sides - 2)
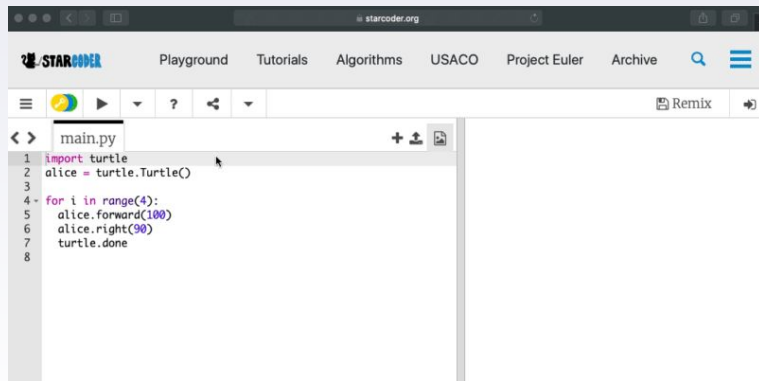
- Turtle turns: 180 - angle
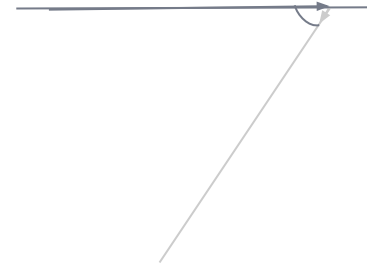
Squares

import turtle

alice = turtle.Turtle()

for i in range(4):

    alice.forward(100)

    alice.right(90)

turtle.done
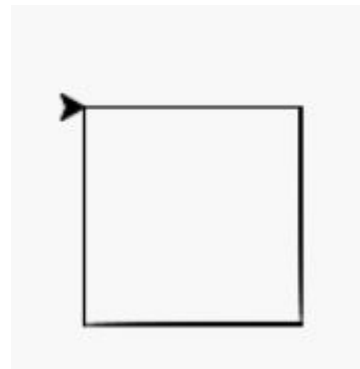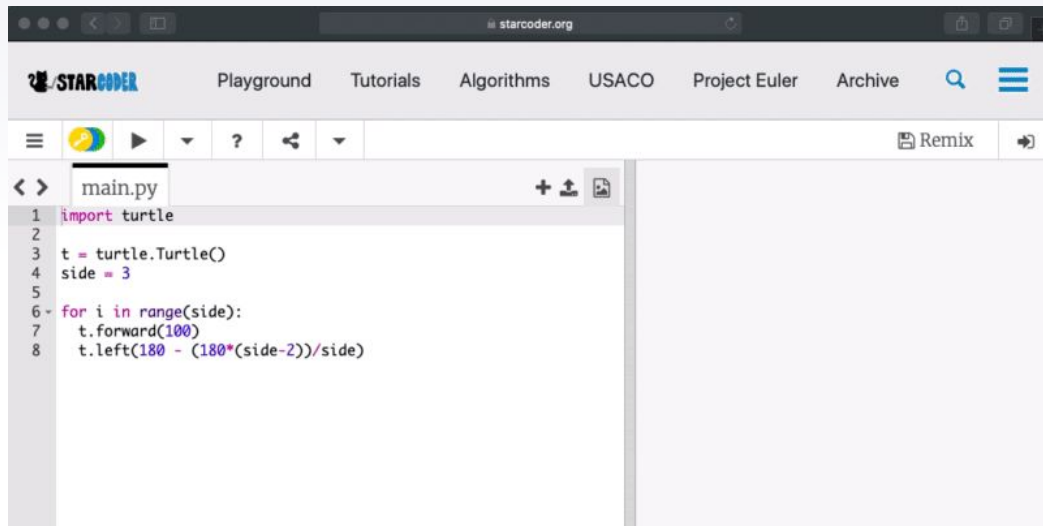
Stars

```python
import turtle

star = turtle.Turtle()

for i in range(5):
    star.forward(50)
    star.right(144)
turtle.done()
```
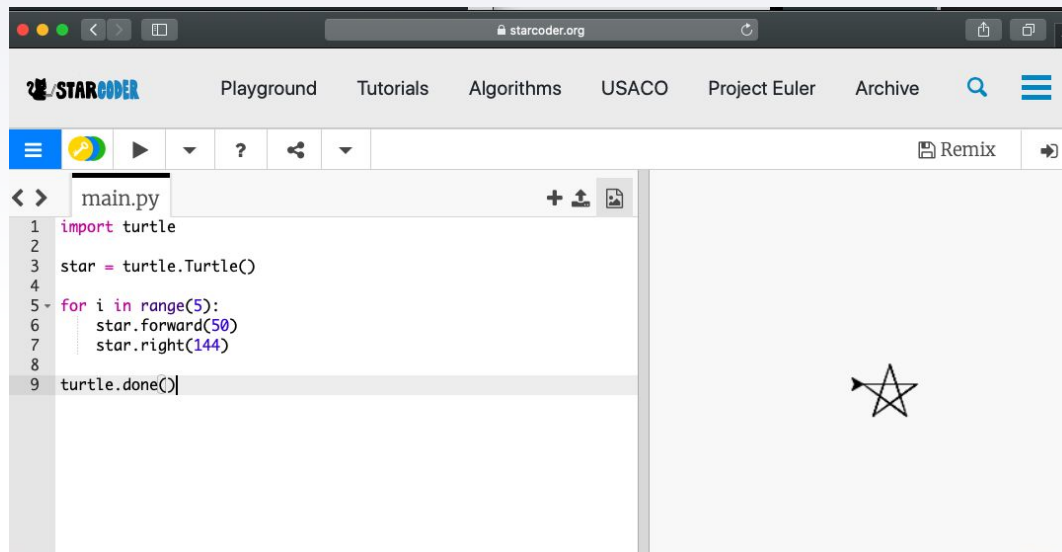
All Main Shapes

```python
import turtle
t = turtle.Turtle()
side = [insert side #]
for i in range(side):
    t.forward(100)
    t.left(180 - (180*(side-2))/side)
```

Incrementing Values

import turtle

spiral = turtle.Turtle()

for i in range(20):

    spiral.forward(i * 10)
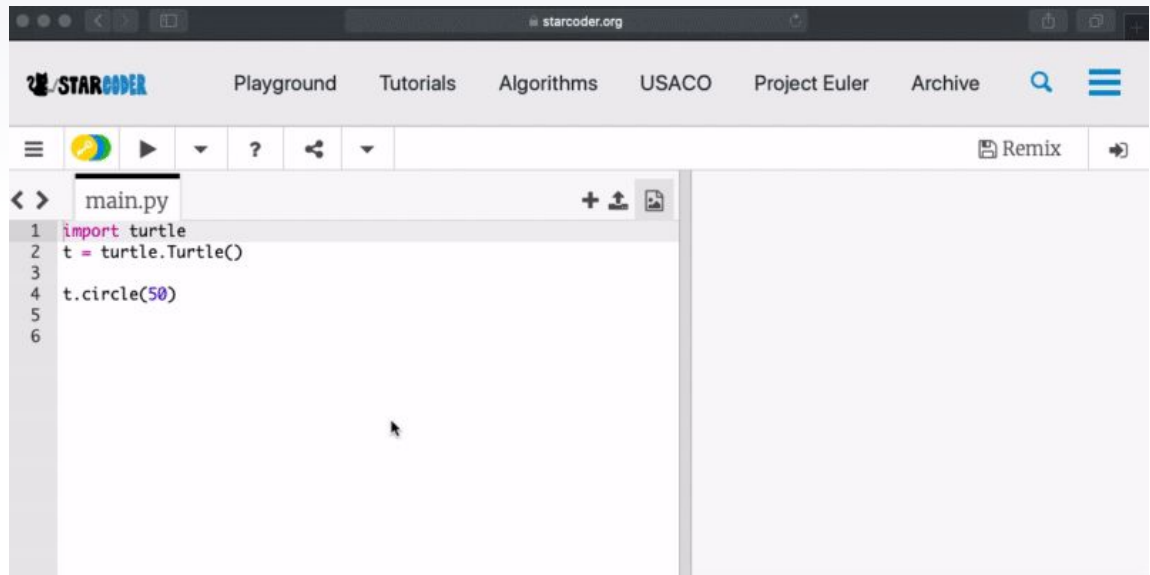
    spiral.right(144)

turtle.done()

Circles

import turtle

t = turtle.Turtle()

t.circle(50)
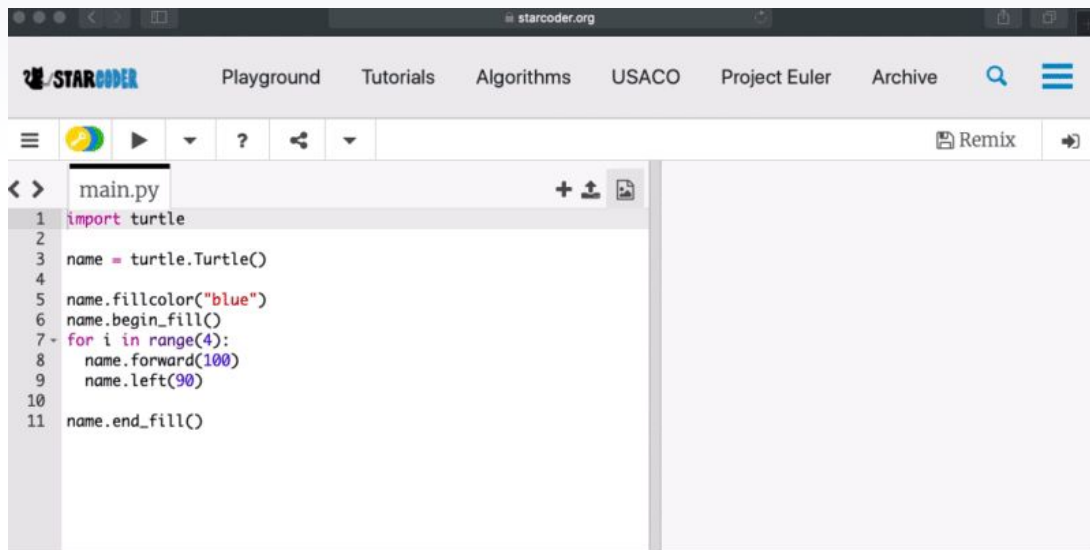
Multiple Shapes

- Pen up

  name.up()

- Pen down

  up.down()

Filling in Shapes

- Set color

  name.fillcolor("blue")

- Start fill

  name.start_fill()

- Draw shape

- End fill

  name.end_fill()

Examples and Problems!

Type Your Answers in the Chat

Example: Spiral


```python
import turtle

spiral = turtle.Turtle()
spiral.speed(10)

for i in range(20):
    spiral.forward(i * 10)
    spiral.right(144)

turtle.done()
```

name.circle(40)
What does the 40 mean?

name.forward(100)
What unit is the 100 in?