1_SVG_converter_Normal

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In [1]:
```
from svg.path import parse_path
from svg.path.path import Line
from xml.dom import minidom

# Learned from
# https://python5.com/q/twovjmxc
```

In [2]:
```
# read the SVG file
doc = minidom.parse('LaneMap2.svg')
path_strings = [path.getAttribute('d') for path
                in doc.getElementsByTagName('path')]
doc.unlink()
```

In [3]:
```
path_strings
```

Out[3]:
```
['M72,54h72c0,0,18,0,27,9s9,27,9,27v72',
 'M72,72h72c0,0,9,0,18,0s18,18,18,18',
 'M180,126c0-9-9-18-18-27s-18-9-18-9H72',
 'M72,108h72c0,0,9,0,18,9s18,18,18,27']
```

In [4]:
```
path_strings[2]
```

Out[4]:
```
'M180,126c0-9-9-18-18-27s-18-9-18-9H72'
```

In [6]:
```
parse_path(path_strings[2])
```

Out[6]:
```
Path(Move(to=(180+126j)), CubicBezier(start=(180+126j), control1=(180+117j), control2=
```

In [46]:
```
e in path
```

Out[46]:
```
False
```

In [16]:
```
for path_string in path_strings:
    path = parse_path(path_string)
    for e in path:
        if type(e).__name__ == 'Line':
            x0 = e.start.real
            y0 = e.start.imag
            x1 = e.end.real
            y1 = e.end.imag
            print("(%.2f, %.2f) - (%.2f, %.2f)" % (x0, y0, x1, y1))
```

```
(72.00, 54.00) - (144.00, 54.00)
(180.00, 90.00) - (180.00, 162.00)
(72.00, 72.00) - (144.00, 72.00)
(144.00, 90.00) - (72.00, 90.00)
(72.00, 108.00) - (144.00, 108.00)
```

```
In [37]: path=parse_path(path_strings[1])
         key=0
         path[key]
```

```
Out[37]: Move(to=(72+72j))
```

```
In [38]: type(path[key]).__name__
```

```
Out[38]: 'Move'
```

```
In [39]: path[key].start.real
```

```
Out[39]: 72.0
```

```
In [40]: path[key].start.imag
```

```
Out[40]: 72.0
```

```
In [41]: key=1
         path[key]
```

```
Out[41]: Line(start=(72+72j), end=(144+72j))
```

```
In [42]: type(path[key]).__name__
```

```
Out[42]: 'Line'
```

```
In [43]: path[key].start.real
```

```
Out[43]: 72.0
```

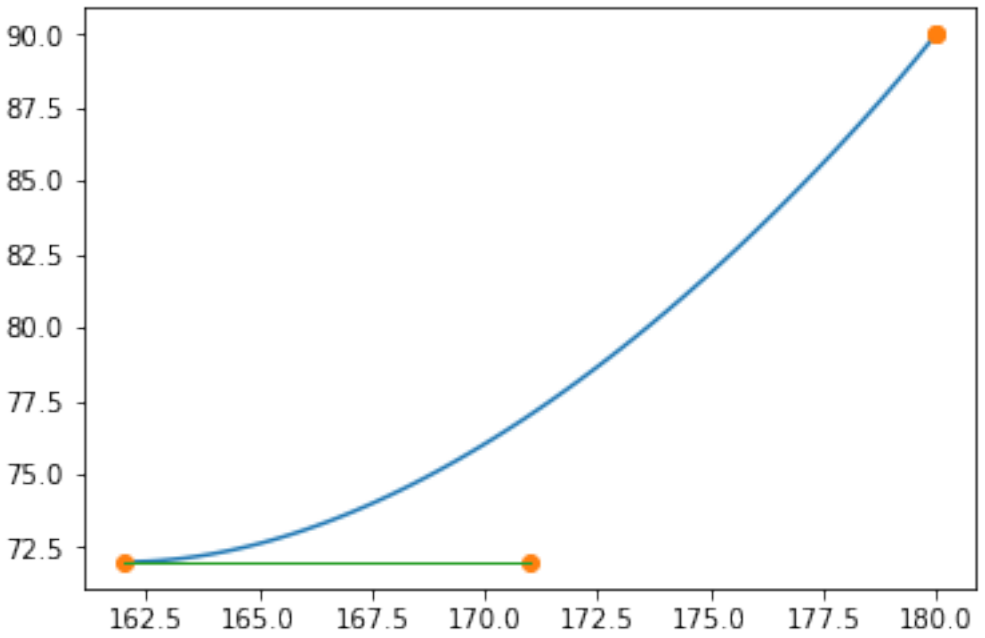
```
In [44]: path[key].start.imag
```

```
Out[44]: 72.0
```

```
In [45]: def cubic_bezier_converter(start, control1, control2, end):
             original_data = np.array([start, control1, control2, end])
             cubic_bezier_matrix = np.array([
                 [-1,  3, -3,  1],
                 [ 3, -6,  3,  0],
                 [-3,  3,  0,  0],
                 [ 1,  0,  0,  0]
             ])
             return_data = cubic_bezier_matrix.dot(original_data)

             return (lambda t: np.array([t**3, t**2, t, 1]).dot(return_data))

         # Learned from
         # https://stackoverflow.com/questions/36971363/how-to-interpolate-svg-path-into-a-pix
```

In [51]:
```
import numpy as np
import matplotlib.pyplot as plt

block=1
n_dots=100
key=3

path=parse_path(path_strings[block])

dat=path[key]
if type(path[key]).__name__=='CubicBezier':
    start_np = np.array([dat.start.real, dat.start.imag])
    control1_np = np.array([dat.control1.real, dat.control1.imag])
    control2_np = np.array([dat.control2.real, dat.control2.imag])
    end_np = np.array([dat.end.real, dat.end.imag])
    converted_curve = cubic_bezier_converter(start_np, control1_np, control2_np, end_
    points_np = np.array([converted_curve(t) for t in np.linspace(0, 1, n_dots)])
```

In [52]:
```
# == plot the line==
controls_np = np.array([start_np, control1_np, control2_np, end_np])
#  curve drawing
plt.plot(points_np[:, 0], points_np[:, 1], '-')
# showing of control points
plt.plot(controls_np[:,0], controls_np[:,1], 'o')
#  control line drawing
plt.plot([start_np[0], control1_np[0]], [start_np[1], control1_np[1]], '-', lw=1)
plt.plot([control2_np[0], end_np[0]], [control2_np[1], end_np[1]], '-', lw=1)

plt.show()
```



In [ ]: