In [1]:
```
import numpy as np
import matplotlib.pyplot as plt
```

mcculloch_pitts_neuron

In [33]:
```
def mcculloch_pitts_neuron(inputs, weights, threshold):
  inputs = np.array(inputs)
  weights = np.array(weights)

  weighted_sum = sum(inputs * weights)
  return 1 if weighted_sum >= threshold else 0
```

AND

In [36]:
```
weights = [1, 1]
threshold = 2
print(mcculloch_pitts_neuron(inputs=[1, 1],
      weights=weights, threshold=threshold))
print(mcculloch_pitts_neuron(inputs=[1, 0],
      weights=weights, threshold=threshold))
print(mcculloch_pitts_neuron(inputs=[0, 1],
      weights=weights, threshold=threshold))
print(mcculloch_pitts_neuron(inputs=[0, 0],
      weights=weights, threshold=threshold))
```

```
1
0
0
0
```

OR

In [37]:
```
weights = [1, 1]
threshold = 1
print(mcculloch_pitts_neuron(inputs=[1, 1],
      weights=weights, threshold=threshold))
print(mcculloch_pitts_neuron(inputs=[1, 0],
      weights=weights, threshold=threshold))
print(mcculloch_pitts_neuron(inputs=[0, 1],
      weights=weights, threshold=threshold))
print(mcculloch_pitts_neuron(inputs=[0, 0],
      weights=weights, threshold=threshold))
```

```
1
1
1
0
```

NOT

In [40]:
```
weights = [-1]
threshold = 0
print(mcculloch_pitts_neuron(inputs=[1], weights=weights, threshold=threshold))
print(mcculloch_pitts_neuron(inputs=[0], weights=weights, threshold=threshold))
```

```
0
1
```

NAND

In [41]:
```
weights = [-1, -1]
threshold = -1
print(mcculloch_pitts_neuron(inputs=[1, 1],
      weights=weights, threshold=threshold))
print(mcculloch_pitts_neuron(inputs=[1, 0],
      weights=weights, threshold=threshold))
print(mcculloch_pitts_neuron(inputs=[0, 1],
      weights=weights, threshold=threshold))
print(mcculloch_pitts_neuron(inputs=[0, 0],
      weights=weights, threshold=threshold))
```

```
0
1
1
1
```

NOR

In [43]:
```
weights = [-1, -1]
threshold = 0
print(mcculloch_pitts_neuron(inputs=[1, 1],
      weights=weights, threshold=threshold))
print(mcculloch_pitts_neuron(inputs=[1, 0],
      weights=weights, threshold=threshold))
print(mcculloch_pitts_neuron(inputs=[0, 1],
      weights=weights, threshold=threshold))
print(mcculloch_pitts_neuron(inputs=[0, 0],
      weights=weights, threshold=threshold))
```

```
0
0
0
1
```