

HW3

November 5, 2018

```
In [1]: import numpy as np
```

```
X = [ 'A', 'B1', 'B2', 'C', 'D', 'E', 'F']
```

```
A = ['a', 'b', 'c']
```

```
Z = ['A', 'B', 'C', 'D', 'E', 'F']
```

```
# Preserving the order in X
```

```
Pa =np.array([[0, 0.5, 0.5, 0, 0, 0, 0],  
              [0, 0, 0, 0, 0, 1, 0],  
              [0, 0, 0, 0, 0, 0, 1],  
              [0, 1, 0, 0, 0, 0, 0],  
              [0, 0, 1, 0, 0, 0, 0],  
              [1, 0, 0, 0, 0, 0, 0],  
              [1, 0, 0, 0, 0, 0, 0]  
            ])
```

```
Pb =np.array([[0, 0.5, 0.5, 0, 0, 0, 0],  
              [0, 0, 0, 0, 0, 0, 1],  
              [0, 0, 0, 0, 0, 1, 0],  
              [0, 1, 0, 0, 0, 0, 0],  
              [0, 0, 1, 0, 0, 0, 0],  
              [1, 0, 0, 0, 0, 0, 0],  
              [1, 0, 0, 0, 0, 0, 0]  
            ])
```

```
Pc =np.array([[0, 0.5, 0.5, 0, 0, 0, 0],  
              [0, 0, 0, 1, 0, 0, 0],  
              [0, 0, 0, 0, 1, 0, 0],  
              [0, 1, 0, 0, 0, 0, 0],  
              [0, 0, 1, 0, 0, 0, 0],  
              [1, 0, 0, 0, 0, 0, 0],  
              [1, 0, 0, 0, 0, 0, 0]  
            ])
```

```

    ])

Za = np.array([
    [1, 0, 0, 0, 0, 0],
    [0, 1, 0, 0, 0, 0],
    [0, 1, 0, 0, 0, 0],
    [0, 0, 1, 0, 0, 0],
    [0, 0, 0, 1, 0, 0],
    [0, 0, 0, 0, 1, 0],
    [0, 0, 0, 0, 0, 1]
])

Zb = Zc = Za

C = np.array([
    [1, 1, 1],
    [1, 1, 1],
    [1, 1, 1],
    [1, 1, 1],
    [1, 1, 1],
    [1, 1, 1],
    [0, 0, 0]
])

bt = np.array([0, 0.5, 0.5, 0, 0, 0, 0])

ba = np.dot(bt,Pa)

bb = np.dot(bt,Pb)

bc = np.dot(bt,Pc)

print("ba = ", ba)
print("\n")
print("bb = ", bb)
print("\n")
print("bc = ", bc)
print("\n")

ba = [0.  0.  0.  0.  0.  0.5 0.5]

bb = [0.  0.  0.  0.  0.  0.5 0.5]

bc = [0.  0.  0.  0.5 0.5 0.  0. ]

```

```
In [ ]:
```