In [ ]:
```
import numpy as np
import pandas as pd
```

In [ ]:
```
pb1 = np.array(pd.read_csv('C:/School/Applied ML FSU/Applied-ML-FSU/Data/hmm_pb1.csv', header=None)).squeeze()
```

In [ ]:
```
st = np.array([0,1])
init = np.array([0.5,0.5])

tr = np.array([[0.95, 0.5],
                      [0.5, 0.95]])

em = np.array([[1/6, 1/6, 1/6, 1/6, 1/6, 1/6],
                    [1/10, 1/10, 1/10, 1/10, 1/10, 1/2]])
```

In [ ]:
```
c = np.zeros((2, pb1.shape[0]))
ptr = np.zeros((2, pb1.shape[0]))
y = np.ones_like(pb1)

c[:,0] = em[:, (int(pb1[0])-1)]*init

for t in range(1, pb1.shape[0]):
    trc = tr + c[:, t-1].reshape(-1,1)
    c[:, t] =em[:, pb1[t]-1] + np.max(trc, axis = 0)
    ptr[:, t] = np.argmax(trc, axis = 0)

y[-1] = np.argmax(c[:, -1])

for t in range(pb1.shape[0]-1, 0, -1):
    y[t-1] = ptr[y[t], t]

y = y+1

print(y)
```

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