Response

As a part of the programming task, implement the Viterbi algorithm and to ensure the correctness of the program, output the hidden states of the observed sequence [sunny, rainy] with the transition and emission probabilities given below. The initial probability of being Happy and Sad is 0.1 and 0.9 respectively.

                  Table 1: Emission Probabilities

|  |  |  |
| --- | --- | --- |
|  | sunny | rainy |
| Happy | 0.8 | 0.2 |
| Sad | 0.4 | 0.6 |

**Transition Probabilities**

p(wk=Happy|wk−1=Happy)=0.7p(wk=Happy|wk−1=Happy)=0.7

p(wk=Sad|wk−1=Happy)=0.3p(wk=Sad|wk−1=Happy)=0.3

p(wk=Happy|wk−1=Sad)=0.4p(wk=Happy|wk−1=Sad)=0.4

p(wk=Sad|wk−1=Sad)=0.6p(wk=Sad|wk−1=Sad)=0.6

Note: Please upload the .ipynb file and make sure to print the output.