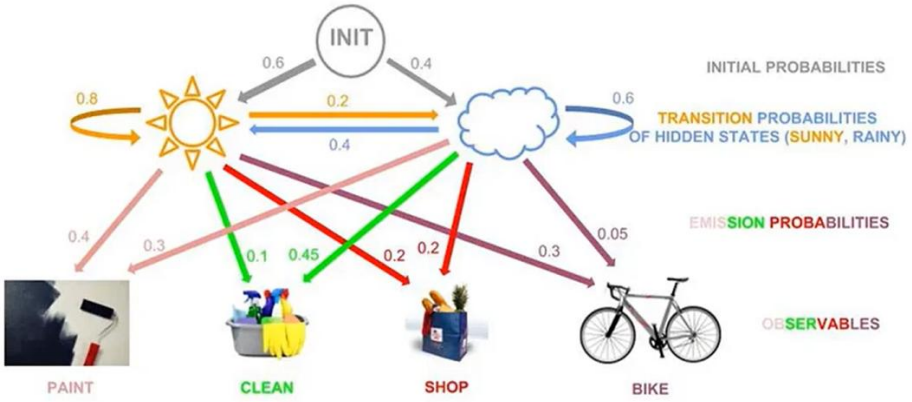
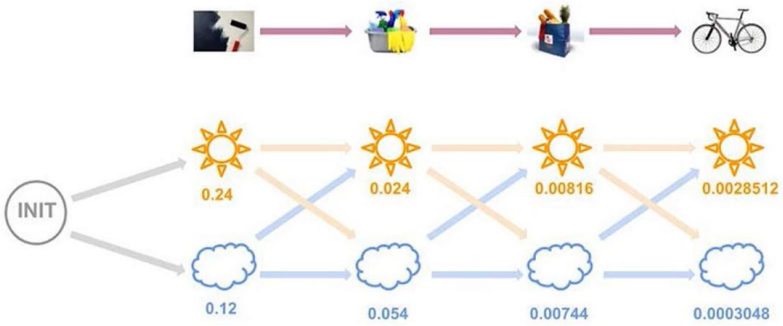
Example#2

Solve the problem below:



Apply Forward algorithm and verify the answers using the values given below:

- We have all the forward variables:



- Termination

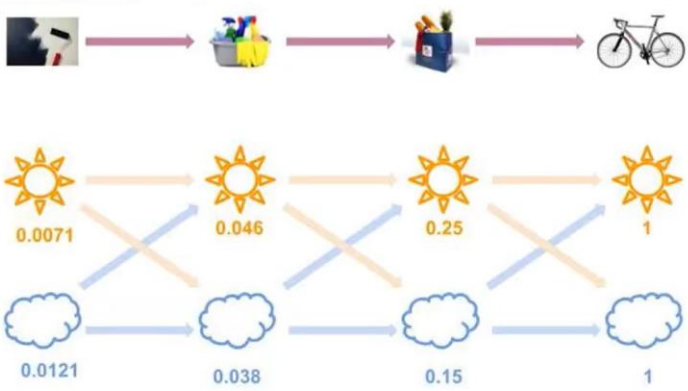
$$P(O|\lambda) = \sum_{i=1}^{N} \alpha_T(i)$$

- This final equation tells us that to find the probability of an observation sequence O deriving from an HMM model λ, we need to sum up all the forward variables at time T,
- i.e. all the variables of every state at the end of the observation sequence. Hence, in our example above,

$P(O|\lambda) = 0.0028512 + 0.0003048 = 0.003156$

Apply Backward algorithm and verify the answers using the values given below:

- Final Backward Probabilities



Finally use the Forward-Backward algorithm to solve the decoding problem and determine the hidden states behind the observation sequence (Paint, Clean, Shop, Bike).

Also apply the same problem using Viterbi algorithm.