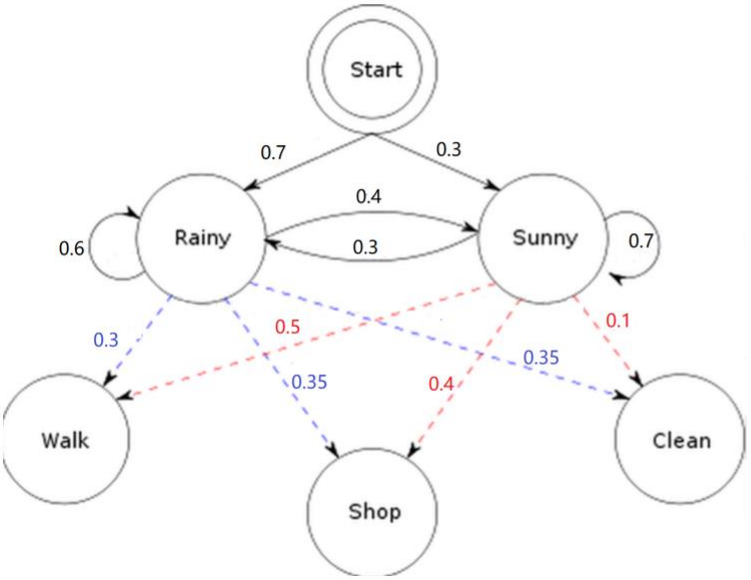
Homework 2

Due 2/19/2018

HMM Decoding: Viterbi Algorithm

Implement the Viterbi algorithm and run it with the HMM in Figure 1 to compute the most likely weather sequence.



	Rainy	Sunny
Rainy	0.6	0.4
Sunny	0.3	0.7

	walk	shop	clean
Rainy	0.3	0.35	0.35
Sunny	0.5	0.4	0.1

Figure 1. A Hidden Markov Model for relating action (Walk, Shop and Clean, the observations) to weather (Rainy or Sunny, the hidden variables). For this example, we are not using an end-state, instead allowing both states Rainy and Sunny to be a final (accepting) state.

1. The observation sequences (input sequence) could be any length from 1 to 10.
2. You can hard code the HMM in Figure 1 inside the program, but do not hard code the observation sequence (input sequence).
3. Program from scratch, do not use any high-level package that already contains the algorithm.
4. Command Line: Python Viterbi.py <sequence>

Example of input/output:

Observation (input): WCWWSSCWC (Command line: Python Viterbi.py “WCWWSSCWC”)

W-Walk, C-Clean, S-Shop

Weather (output): RRSSSSRRR

R-Rainy, S-Sunny