SPARC Programming Lab 2

OEIS Prediction

This lab has a single task: predicting the next term in a sequence of integers. Each sequence has 10 integers, all between 0 and 999. You are encouraged to use the functions `get_next_example` and `evaluate` from `oeis_helper.py`. `get_next_example` will return a sequence of 10 integers representing a randomly chosen sequence (pulled from a large database of mathematical sequences). After you have called it 3000 times, it will stop returning new sequences and will instead return `None`.

Your task is to construct a function, `predictor_func`. `predictor_fnc` should take in a single input, which will always be a list of 9 integers. It should then return a list of 1000 non-negative real numbers that sum to 1, representing a probability distribution over the integers between 0 and 999, inclusive. Your score will be the log of the probability that `predictor_func` assigns to the true 10th number in the sequence. If you call `evaluate` with `predictor_func` as an argument, it will evaluate your function against 1000 randomly chosen sequences, and report the average log-probability. A good goal is to get a score of -4.0 or higher. My implementation gets a score of -3.85 without much fiddling.

The file `oeis_data/processed.txt` contains the database of sequences, in case you wish to examine it.