# Lab 1 Results

The maximum values in each es and us dataset were found to be 79.823 and 29.993 respectively. The results of running the best employee algorithm through each dataset are displayed in the table below.

|  |  |
| --- | --- |
| Dataset | Max Value (using algorithm) |
| Es1 | 53.861 |
| Es2 | 79.823 |
| Es3 | 65.578 |
| Us1 | 29.993 |
| Us2 | 29.993 |
| Us3 | 29.993 |
| Us4 | 11.438 |

As seen from the above results, the maximum value was only found in 4 out of the 7 datasets. Although the maximum value was not found for all datasets, this result was to be expected. This is because the best employee algorithm only has a 1/e (~36%) probability of finding the maximum value. Compared to the theoretical probability, the experimental results yielded a greater probability of 4/7 (~57%) in finding the max in the datasets. The graphs below are of the datasets where the maximum was not found.

As seen from the experimental results and the graphs of the datasets, the different distributions make a difference in determining the result. As seen in the ES1 and ES3 datasets, if the maximum value is located near the end of the dataset, the probability of it being located by the algorithm decreases. We can also see from the US4 dataset that the algorithm will not work on datasets that are sorted in ascending order and similar distributions.