Problem 99

Comparing two numbers written in index form like 2^{11} and 3^7 is not difficult, as any calculator would confirm that $2^{11} = 2048 < 3^7 = 2187$.

However, confirming that $632\,382^{518\,061} > 519\,432^{525\,806}$ would be much more difficult, as both numbers contain over three million digits.

Using base_exp.txt (right click and 'Save Link/Target As...'), a 22K text file containing one thousand lines with a base/exponent pair on each line, determine which line number has the greatest numerical value.

NOTE: The first two lines in the file represent the numbers in the example given above.

Solution

```
In[17]:= With[{dat = #[[2]] Log[#[[1]]] & /@ input},
         Position[dat, Max[dat]]
        ]
```

```
Out[17]= {{709}}
```

```
In[16]:= input = Uncompress@
        "1:eJx1nHlcz9n3xz+hhCgl22Rfyr6MEpItS5ayRbKT5YMs2cYwwmQZMRprRrZBsmQPZR/7
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          Sz6CTnJobos14jrgh2OE3/U94KeaiJ+J5wGfWkj839sM+JkCkvOzF4Bf3C7+L+0Fn61Gi/
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```

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