

Running time:

BGL

|      | Brain | Drain  | Spell  | Logram | AEL   | MoLFI  | LenMa |
|------|-------|--------|--------|--------|-------|--------|-------|
| 2K   | 0.05s | 0.19s  | 0.39s  | 0.04s  | 0.13  | 3.37   |       |
| 10K  | 0.28s | 3.49s  | 3.60s  | 0.15s  | 3.40  | 5.61   |       |
| 100K | 2.1s  | 10.37s | 11.10s | 1.4s   | 7.93  | 15.93  |       |
| 500K | 12.5s | 38.52s | 41.35s | 7.82s  | 26.85 | 51.53  |       |
| 1M   | 26.1s | 82.59s | 85.24s | 15.68s | 66.58 | 110.98 |       |

Brain

2K 0.05s  
10K 0.28s  
100K 2.1s  
500K 12.5s  
1M 26.1s

Drain

2K 0.19s  
10K 3.49s  
100K 10.37s  
500K 38.52s  
1M 82.59s

Spell

2K 0.39s  
10K 3.60s  
100K 11.10s  
500K 41.35s  
1M 85.24s

Logram

2K 0.04s  
10K 0.15s  
100K 1.4s  
500K 7.82s  
1M 15.68s

## HDFS

|      | Brain | Drain | Spell   | Logram | AEL   | MoLFI  | LenMa |
|------|-------|-------|---------|--------|-------|--------|-------|
| 2K   | 0.08  | 0.19  | 0.20s   | 0.09s  | 0.13  | 1.9    |       |
| 10K  | 0.44  | 8.34  | 8.27s   | 0.3s   | 8.43  | 10.14  |       |
| 100K | 4.32  | 16.29 | 17.07s  | 3.0s   | 14.02 | 23.57  |       |
| 500K | 21.93 | 52.77 | 58.14s  | 15.49s | 41.34 | 79.59  |       |
| 1M   | 44.57 | 97.84 | 105.56s | 38.44  | 78.97 | 150.40 |       |

### Brain

2K 0.08s

10K 0.44s

100K 4.32s

500K 21.93s

1M 44.57s

### Drain

2K 0.19s

10K 8.34s

100K 16.29s

500K 52.77s

1M 97.84s

### Spell

2K 0.20s

10K 8.27s

100K 17.07s

500K 58.14s

1M 105.56s

### Logram

2K 0.09s

10K 0.3s

100K 3.0s

500K 15.49s

1M 38.44

## Android

|      | Brain  | Drain   | Spell    | Logram | AEL    | MoLFI    | LenMa |
|------|--------|---------|----------|--------|--------|----------|-------|
| 2K   | 0.14s  | 0.26s   | 0.32s    | 0.10s  | 0.19   | 16.57    |       |
| 10K  | 0.60s  | 2.01s   | 2.85s    | 0.81s  | 1.51   | 61.75    |       |
| 100K | 6.39s  | 20.21s  | Too long | 5.4s   | 13.16  | Too long |       |
| 500K | 33.65s | 102.44s | Too long | 34.7s  | 64.79  | Too long |       |
| 1M   | 49.03s | 306.33s | Too long | 57.29  | 133.07 | Too long |       |

### Brain

2K 0.14s

10K 0.60s

100K 6.39s

500K 33.65s

1M 49.03s

### Drain

2K 0.26s

10K 2.01s

100K 20.21s

500K 102.44s

1M 306.33s

### Spell

2K 0.32s

10K 2.85s

100K 27.07s

500K 208.14s

1M 605.56s

### Logram

2K 0.10s

10K 0.81s

100K 5.4s

500K 34.7s

1M 57.29

### Spark

|      | Brain  | Drain  | Spell   | Logram | AEL      | MoLFI    | LenMa |
|------|--------|--------|---------|--------|----------|----------|-------|
| 2K   | 0.10s  | 0.20s  | 0.21s   | 0.07s  | 0.15     | 12.67    |       |
| 10K  | 2.14s  | 2.29s  | 2.42s   | 0.71s  | 4.43     | Too long |       |
| 100K | 7.84s  | 11.52s | 12.95s  | 5.1s   | 29.77    | Too long |       |
| 500K | 34.19s | 51.15s | 56.19s  | 19.4s  | Too long | Too long |       |
| 1M   | 64.87s | 99.17s | 102.89s | 40.2s  | Too long | Too long |       |

### Brain

2K 0.10s  
 10K 2.14s  
 100K 7.84s  
 500K 34.19s  
 1M 64.87s

### Drain

2K 0.20s  
 10K 2.29s  
 100K 11.52s  
 500K 51.15s  
 1M 99.17s

### Spell

2K 0.21s  
 10K 2.42s  
 100K 12.95s  
 500K 56.19s  
 1M 102.89s

### Logram

2K 0.07s  
 10K 0.71s  
 100K 5.1s  
 500K 19.4s  
 1M 40.2s

### Windwos

#### Brain

2K 0.10s  
10K 2.14s  
100K 7.84s  
500K 34.19s  
1M 64.87s

#### Drain

2K 0.20s  
10K 2.29s  
100K 11.52s  
500K 51.15s  
1M 99.17s

#### Spell

2K 0.21s  
10K 2.42s  
100K 12.95s  
500K 56.19s  
1M 102.89s

#### Logram

2K 0.07s  
10K 0.71s  
100K 5.1s  
500K 19.4s  
1M 40.2s

Average 1M 46.14 224.81 146.48

#### Sensity anaylsis

2 0.768  
3 0.898  
4 0.960  
5 0.973  
6 0.972  
7 0.960  
8 0.919  
9 0.920  
10 0.921

0.1

0.979, 0.977, 0.977, 0.965, 0.955, 0.951, 0.950

Down tree

0.99  
0.885  
0.9605  
0.9975  
0.9835  
0.99  
0.869  
0.9645  
0.999  
0.931  
0.7705  
1.0  
1.0  
1.0  
0.9235  
0.929

Up tree

0.99  
0.9975  
0.808  
0.081  
0.9945  
0.861  
0.829  
0.659  
0.9945  
0.1865  
0.9605  
0.4265  
1.0  
0.431  
0.85  
0.7175

The accuracy of choosing the right root node.

1.0

1.0

0.997

0.999

1.0

1.0

0.999

1.0

0.996

1.0

0.989

1.0

1.0

1.0

0.984

0.982

Runing time with Size:

Brain

1GB : 182 seconds HDFS

Logram 231 seconds

Logram 148.93seconds 500M HDFS

Dictionary num

HDFS 1M 501 346

BGL 1M dou 73303 tr 41507

Android 77895 60695