6.824 Spring 2015 Paper Questions

For each paper, your assignment is two-fold. By 10PM the evening before lecture:

- Submit your answer for each lecture's paper question via the submission web site, and
- Submit your own question about the paper (e.g., what you find most confusing about the paper or the paper's general context/problem). You cannot use the question below. To the extent possible, during lecture we will try to answer questions submitted the evening before.

You can also upload your questions and answers using curl:

```
## Answer goes into lecN.txt
$ curl -F file=@lec2.txt \
       -F key=XXXXXXXX \
       http://6824.scripts.mit.edu/submit/handin.py/upload
## Question goes into sqN.txt
$ curl -F file=@sq2.txt \
       -F key=XXXXXXXX \
       http://6824.scripts.mit.edu/submit/handin.py/upload
```

Lecture 24

Experiences with a Distributed, Scalable, Methodological File System: AnalogicFS. In many ways, this experiences paper raises more questions than it answers. Please answer one of the following questions, taking into consideration the rich history of AnalogicFS and the spirit in which the paper was written:

a) The analysis of A* search shown in Figure 1 claims to be an introspective visualization of the AnalogicFS methodology; however, not all decisions are depicted in the figure. In particular, if I <= P, what should be the next node explored such that all assumptions in Section 2 still hold? Show your work.

b) Despite the authors' claims in the introduction that AnalogicFS was developed to study SCSI disks (and their interaction with lambda calculus), the experimental setup detailed in Section 4.1 involves decommissioned Gameboys instead, which use cartridge-based, Flash-like memory. If the authors had used actual SCSI disks during the experiments, how exactly might have their results changed quantitatively?

c) AnalogicFS shows rather unstable multicast algorithm popularity (Figure 5), especially compared with some of the previous systems we've read about in 6.824. Give an example of another system that would have a more steady measurement of popularity pages, especially in the range of 0.1-0.4 decibels of bandwidth.

d) For his 6.824 project, Ben Bitdiddle chose to build a variant of Lab 4 that faithfully emulates the constant expected seek time across LISP machines, as AnalogicFS does. Upon implementation, however, he immediately ran into the need to cap the value size to 400 nm, rather than 676 nm. Explain what assumptions made for the AnalogicFS implementation do not hold true for Lab 4, and why that changes the maximum value size.

Questions or comments regarding 6.824? Send e-mail to 6.824-staff@pdos.csail.mit.edu.

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