CS 537: Intro to Operating Systems (Summer 2017) Worksheet 11 - Hard Disk Drives

 $\mathbf{DUE:}\ \mathrm{Aug}\ 1^{\mathrm{st}},\ 2017\ (\mathrm{Tuesday})$

Assume you have a hard-disk drive with these characteristics: 200 MB/s transfer rate, 9 millisecond (ms) **maximum** seek time, and 10,000 RPM speed of rotation.

| mil | lisecond (ms) maximum seek time, and 10,000 RPM speed of rotation. |
|-----|---|
| a. | When reading a 4KB block, what is the worst-case time for this hard drive? |
| b. | What would you expect the average time to read a 4KB block to be? |
| c. | When reading a 2MB block, what is the worst-case time for this hard drive? |
| d. | What would you expect the average time to read a 2MB block to be? |
| e. | Now assume you have a series of ten 4KB reads to perform on the disk. What series of ten reads would you send to the drive to get the worst case performance? (Assume the disk scheduler is FIFO. i.e., The ten reads are processed in the order in which they arrive.) |
| f. | How long will these ten requests take to complete? |