Disk-Head Scheduling Algorithms

These charts give an example of the various disk-head scheduling algorithms and how they affect servicing of requests. The disk has 200 tracks, with track 200 on the outside of the disk. The set of requests is

98 183 37 122 14 124 65 67

and the disk head starts at cylinder 53. Where direction is important (LOOK and SCAN), the disk head is moving outward.

Order of Service

This chart shows the order in which the disk requests are serviced.

algorithm	request order							
fcfs	98	183	37	122	14	124	65	67
pickup	65	67	98	122	124	183	37	14
sstf	65	67	37	14	98	122	124	183
scan	65	67	98	122	124	183	37	14
look	65	67	98	122	124	183	37	14
c-scan	65	67	98	122	124	183	14	37
c-look	65	67	98	122	124	183	14	37

Head Motion

This chart shows how far the disk heads move to service each request, and the mean and standard deviation of the head motion.

algorithm	number of cylinders moved								total	mean	stdev
fcfs	45	85	146	85	108	110	59	2	640	80.00	44.47
pickup	12	2	31	24	2	59	146	23	299	37.38	47.57
sstf	12	2	30	23	84	24	2	59	236	29.50	28.62
scan	12	2	31	24	2	59	180	23	333	41.63	58.84
look	12	2	31	24	2	59	146	23	299	37.38	47.57
c-scan	12	2	31	24	2	59	231	23	384	48.00	76.18
c-look	12	2	31	24	2	59	169	23	322	40.25	55.16

Waiting Motion

This chart shows the (cumulative) number of cylinders the disk heads must move before servicing each request, and the mean and standard deviation.

algorithm	cumulative number of cylinders moved								total	mean	stdev
fcfs	45	130	276	361	469	579	638	640	3138	392.25	228.78
pickup	12	14	45	69	71	130	276	299	916	114.50	113.24
sstf	12	14	44	67	151	175	177	236	876	109.50	85.60
scan	12	14	45	69	71	130	310	333	984	123.00	128.19
look	12	14	45	69	71	130	276	299	916	114.50	113.24
c-scan	12	14	45	69	71	130	361	384	1086	135.75	150.91
c-look	12	14	45	69	71	130	299	322	962	120.25	123.33