



Query Optimization

7. Exercise, Summer 2009

Due 2009-06-10.

1. Implement a program that measures the physical characteristics (in particular bandwidth and seek time) of a hard disk. Measure the values for your own hard disk.
2. Given these values, determine the break even point where a scan becomes cheaper than an index lookup.
3. We assume the query optimizer has underestimated the costs of a scan by a factor α ($\alpha > 1$) and overestimated the costs of an index lookup by a factor β ($\beta < 1$). What is the maximum error caused by this misestimation?
4. Assume the following kinds of SQL queries are executed frequently. Which index structures would you propose?

(a)

```
select e.room
from   employee
where  e.id=17
```

(b)

```
select m.plot
from   movies m
where  m.title="Metropolis" and m.year=1927
```

(c)

```
select e.name
from   employee e, departments d
where  e.did=d.id and d.building="123" and e.gender="F"
```