CHAPTER 12 DISCUSSIONS 1

Discussion 12-1

Two queries *Q* and *Q'* on a DB schema *S* are equivalent if the answer sets of *Q* and *Q'* are the same in *any instances* of the DB.

Discuss the implications of changing the underlined expression to 'any *legal instances* of the DB'.

Discussion 12-2

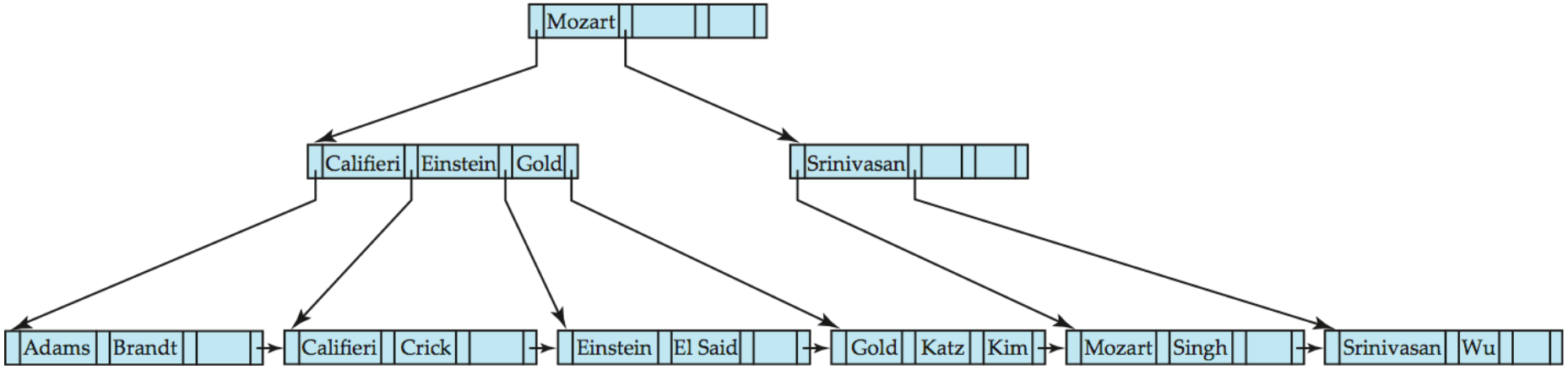
Suppose the following B+-tree index on *Name* is primary and nonkey. Estimate the number of seeks and block transfers needed to answer the following queries.

a) **select** * **from** instructors **where** name = ‘Kim’

b) **select** * **from** instructors **where** name **like** ‘K%’

c) **select** * **from** instructors **where** name >= ‘Kim’

d) **select** * **from** instructors **where** name != ‘Kim’



Discussion 12-3

Suppose the *students* table has 20,000 records stored in 1,000 blocks with a primary B+-tree index on *ID* (an index block can hold up to 100 entries).

Estimate the disk access time required to answer the following query, where t_T =10ms and t_S =20ms.

select * **from** students
where ID = ‘12121’

Discussion 12-4

Suppose the *students* table has 20,000 records stored in 1,000 blocks with a primary B+-tree index on *ID* (an index block can hold up to 100 entries).

Estimate the disk access time required to answer the following query, where t_T =10ms and t_S =20ms.

select * **from** students
where ID **between** ‘12121’ **and** ‘42424’

Discussion 12-5

Perform an *external sort-merge* operation on the relation *r* based on the first attribute (numeric). Assume *M* = 3.

relation *r*

3	A
10	B
8	C
6	D
1	E
9	F
8	G
2	H
7	I
2	J
4	K
5	L
3	M
6	N
9	O
1	P