COMP9315 Assignment 2
Z5089358
Fengting YANG

Create Database and Insert Data:

I used the command ./create R 5000 4 1000 and ./gendata 5000 4| ./insert R to insert 5000 tuple into the database named R.

Query Result:

Not using indexing:

1. ./select R 1000001,?,?,? x

   Mathched Tuple: 1000001,hidDQscdxRjMowfRXSJY,a3-001,a4-001

   Query Stats:

   # signatures read: 0

   # sig pages read: 0

   # tuples examined: 5000

   # data pages read: 52

   # false match pages: 51

Open query:

2. ./select R ?,?,?,? x

   Query Stats:

   # signatures read: 0

   # sig pages read: 0

   # tuples examined: 5000

   # data pages read: 52

   # false match pages: 0

3. ./select R ?,?,?,? t

   Query Stats:

   # signatures read: 5000

   # sig pages read: 10

   # tuples examined: 5000

   # data pages read: 52

   # false match pages: 0

4. ./select R ?,?,?,? p

Query Stats:

signatures read: 52

sig pages read: 11

tuples examined: 5000

data pages read: 52

false match pages: 0

5. ./select R ?,?,?,? b

Query Stats:

signatures read: 0

sig pages read: 0

tuples examined: 5000

data pages read: 52

false match pages: 0

Query with one solution:

6. ./select R 1000001,?,?,? x

Mathched Tuple: 1000001,hidDQscdxRjMowfRXSJY,a3-001,a4-001

Query Stats:

signatures read: 0

sig pages read: 0

tuples examined: 5000

data pages read: 52

false match pages: 51

7. ./select R 1000001,?,?,? t

Mathched Tuple: 1000001,hidDQscdxRjMowfRXSJY,a3-001,a4-001

Query Stats:

signatures read: 5000

sig pages read: 10

tuples examined: 388

data pages read: 4

false match pages: 3

8. ./select R 1000001,?,?,? p

Mathched Tuple: 1000001,hidDQscdxRjMowfRXSJY,a3-001,a4-001

Query Stats:

signatures read: 52

sig pages read: 11

tuples examined: 97

data pages read: 1

false match pages: 0

9. ./select R 1000001,?,?,? b

Mathched Tuple: 1000001,hidDQscdxRjMowfRXSJY,a3-001,a4-001

Query Stats:

signatures read: 9

sig pages read: 6

tuples examined: 97

data pages read: 1

false match pages: 0

Query with many solutions:

10. ./select R ?,?,a3-001,? x

Query Stats:

signatures read: 0

sig pages read: 0

tuples examined: 5000

data pages read: 52

false match pages: 31

11. ./select R ?,?,a3-001,? t

Query Stats:

signatures read: 5000

sig pages read: 10

tuples examined: 2381

data pages read: 25

false match pages: 4

12. ./select R ?,?,a3-001,? p

Query Stats:

signatures read: 52

sig pages read: 11

tuples examined: 1993

data pages read: 21

false match pages: 0

13. ./select R ?,?,a3-001,? b

Query Stats:

signatures read: 9

sig pages read: 5

tuples examined: 1993

data pages read: 21

false match pages: 0

Query with multiple values:

14. ./select R 1000001,?,a3-001,? x

Mathched Tuple: 1000001,hidDQscdxRjMowfRXSJY,a3-001,a4-001

Query Stats:

signatures read: 0

sig pages read: 0

tuples examined: 5000

data pages read: 52

false match pages: 51

15. ./select R 1000001,?,a3-001,? t

Mathched Tuple: 1000001,hidDQscdxRjMowfRXSJY,a3-001,a4-001

Query Stats:

signatures read: 5000

sig pages read: 10

tuples examined: 97

data pages read: 1

false match pages: 0

16. ./select R 1000001,?,a3-001,? p

Mathched Tuple: 1000001,hidDQscdxRjMowfRXSJY,a3-001,a4-001

Query Stats:

signatures read: 52

sig pages read: 11

tuples examined: 97

data pages read: 1

false match pages: 0

17. ./select R 1000001,?,a3-001,? b

Mathched Tuple: 1000001,hidDQscdxRjMowfRXSJY,a3-001,a4-001

Query Stats:

signatures read: 18

sig pages read: 8

tuples examined: 97

data pages read: 1

false match pages: 0

Result Analysis:

In general, no index will lead to more time to get the tuple since it will compare the tuples one by one. If tuple signature is used, it will save some time since it only needs to compare tuple signature, which will save lots of time compared to no index used. If Page signature is used, it will save lots of time since it can almost find the page where the tuple matches the query tuple. If bit-sliced signature is used, it will faster than page signature since it will be more efficiency than page signature.