

*** 9i example where each block has 50% or less used space ...

*** First create a table and populate it with 1000000 rows ...

```
SQL> CREATE TABLE bowie_stuff (id NUMBER, name VARCHAR2(20));
```

Table created.

```
SQL> INSERT INTO bowie_stuff SELECT rownum, 'DAVID BOWIE' FROM dual CONNECT  
BY LEVEL <= 1000000;
```

1000000 rows created.

```
SQL> commit;
```

Commit complete.

*** Create an index on the ID column

```
SQL> CREATE INDEX bowie_stuff_i ON bowie_stuff(id) PCTFREE 10;
```

Index created.

*** Delete 50% of all rows, deleting every alternative row in the table ..

```
SQL> DELETE bowie_stuff WHERE mod(id,2) = 1;
```

500000 rows deleted.

```
SQL> commit;
```

Commit complete.

*** Check size of index

```
SQL> ANALYZE INDEX bowie_stuff_i VALIDATE STRUCTURE;
```

Index analyzed.

```
SQL> SELECT height, blocks, lf_blks, br_blks, btree_space FROM index_stats;
```

HEIGHT	BLOCKS	LF_BKLS	BR_BKLS	BTREE_SPACE
3	2240	2226	5	17848160

*** Let's coalesce the index

```
SQL> ALTER INDEX bowie_stuff_i COALESCE;
```

Index altered.

*** Check size of index again

```
SQL> ANALYZE INDEX bowie_stuff_i VALIDATE STRUCTURE;
```

Index analyzed.

```
SQL> SELECT height, blocks, lf_blks, br_blks, btree_space FROM index_stats;
```

HEIGHT	BLOCKS	LF_BKLS	BR_BKLS	BTREE_SPACE
3	2240	1148	5	9224160

*** We notice that indeed the index has successfully been coalesced and lf_blks have been reduced from 2226 to 1448 lf_blks

*** However, if we do the same thing in 9i but this time delete less than 50% of the rows ...

```
SQL> drop table bowie_stuff;
```

Table dropped.

```
SQL> CREATE TABLE bowie_stuff (id NUMBER, name VARCHAR2(20));
```

Table created.

```
SQL> INSERT INTO bowie_stuff SELECT rownum, 'DAVID BOWIE' FROM dual CONNECT BY LEVEL <= 1000000;
```

1000000 rows created.

```
SQL> commit;
```

Commit complete.

```
SQL> CREATE INDEX bowie_stuff_i ON bowie_stuff(id) PCTFREE 10;
```

Index created.

*** Delete just 25% of rows

```
SQL> DELETE bowie_stuff WHERE mod(id,4) = 1;
```

250000 rows deleted.

```
SQL> commit;
```

Commit complete.

```
SQL> ANALYZE INDEX bowie_stuff_i VALIDATE STRUCTURE;
```

Index analyzed.

```
SQL> SELECT height, blocks, lf_blks, br_blks, btree_space FROM index_stats;
```

HEIGHT	BLOCKS	LF_BKLS	BR_BKLS	BTREE_SPACE
3	2240	2226	5	17848160

*** Note 2226 leaf blocks ...

*** Let's coalesce the index

```
SQL> ALTER INDEX bowie_stuff_i COALESCE;
```

Index altered.

```
SQL> ANALYZE INDEX bowie_stuff_i VALIDATE STRUCTURE;
```

Index analyzed.

```
SQL> SELECT height, blocks, lf_blks, br_blks, btree_space FROM index_stats;
```

HEIGHT	BLOCKS	LF_BKLS	BR_BKLS	BTREE_SPACE
3	2240	2226	5	17848160

*** And we note that the index has the same number of leaf blocks ...

*** Coalesce did not reduce leaf blocks because no two consecutive blocks could be merged as the sum of used space for all consecutive blocks always exceeded 100%

*** However, in 10g, this behaviour has changed ...

*** Let's run the example again where we only delete 25% or so of rows ...

```
SQL> CREATE TABLE bowie_stuff (id NUMBER, name VARCHAR2(20));
```

Table created.

```
SQL> INSERT INTO bowie_stuff SELECT rownum, 'DAVID BOWIE' FROM dual CONNECT BY LEVEL <= 1000000;
```

1000000 rows created.

```
SQL> commit;
```

Commit complete.

```
SQL> CREATE INDEX bowie_stuff_i ON bowie_stuff(id);
```

Index created.

*** Again, only delete 25% of rows ...

SQL> DELETE bowie_stuff WHERE mod(id,4) = 1;

250000 rows deleted.

SQL> commit;

Commit complete.

SQL> ANALYZE INDEX bowie_stuff_i VALIDATE STRUCTURE;

Index analyzed.

*** Check index space

SQL> SELECT height, blocks, lf_blks, br_blks, btree_space FROM index_stats;

HEIGHT	BLOCKS	LF_BKLS	BR_BKLS	BTREE_SPACE
3	2304	2226	5	17848160

SQL> ALTER INDEX bowie_stuff_i COALESCE;

Index altered.

SQL> ANALYZE INDEX bowie_stuff_i VALIDATE STRUCTURE;

Index analyzed.

SQL> SELECT height, blocks, lf_blks, br_blks, btree_space FROM index_stats;

HEIGHT	BLOCKS	LF_BKLS	BR_BKLS	BTREE_SPACE
3	2304	1671	5	13408160

*** And we notice that indeed, the number of leaf blocks has reduced, even though all blocks had more than 50% used space

*** Coalesce can be used in far more situations in 10g than it could in 9i
...