Database Management Systems

18CSC303J

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CSE_SWE L2

Exp 5 - Integrity and Constraints

Aim:

To study the various Integrity and Constraints on the database.

Constraints are used to limit the type of data that can go into a table. This ensures the accuracy and reliability of the data in the table. If there is any violation between the constraint and the data action, the action is aborted.

Constraints can be column level or table level. Column level constraints apply to a column, and table level constraints apply to the whole table.

Commands:

PRIMARY KEY/UNIQUE – value which is unique for every record in the table.
CREATE TABLE (() PRIMARY KEY, …);

FOREIGN KEY – Used to relate to the primary key of another table.
CREATE TABLE <table-name2> (<column name> <data type>(<size>), …
REFERENCES<table-name1> <column name);

NOT NULL – Used to implement a column to NOT accept NULL values in the table.
CREATE TABLE (() NOT NULL,…);

CHECK – Used to limit the value range that can be placed in a column in the table.
CREATE TABLE (() CHECK (condition),…);

INDEX – Used to retrieve data from the database more quickly than otherwise.
CREATE INDEX ON ();

```
Enter user-name: RA1911033010021/RA1911033010021@drsenthilkumar-l2.c6hfisyr3ugy.us-east-1.rds.amazonaws.com:1521/l2

Connected to:
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production

SQL> spool on
SQL> spool week5.lst
SQL> create table parent(id number(10) primary key, name varchar(10), pay number(6));

Table created.

SQL> insert into parent values(021, 'Sairam', 200000);

1 row created.

SQL> insert into parent values(014, 'lavan', 170000);

1 row created.

SQL> desc parent;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 ID                                        NOT NULL NUMBER(10)
 NAME                                               VARCHAR2(10)
 PAY                                                NUMBER(6)

SQL> select * from parent;

        ID NAME              PAY
---------- ---------- ----------
        21 Sairam         200000
        14 lavan          170000

SQL> create table child(role varchar(15), id number(10) references parent(id));

Table created.
```

```
SQL> insert into child values('Entrepreneur', 021);

1 row created.

SQL> insert into child values('Manager', 014);

1 row created.

SQL> select * from child;

ROLE                    ID
--------------- ----------
Entrepreneur            21
Manager                 14

SQL> Alter table parent modify pay number(6) not null;

Table altered.

SQL> insert into parent values(011, 'Lucky', NULL);
insert into parent values(011, 'Lucky', NULL)
                                        *
ERROR at line 1:
ORA-01400: cannot insert NULL into ("RA1911033010021"."PARENT"."PAY")


SQL> Alter table parent add check (pay>=150000);

Table altered.

SQL> insert into parent values(011, 'Lucky', 150000);

1 row created.

SQL> insert into parent values(011, 'Lucky', 10000);
insert into parent values(011, 'Lucky', 10000)
*
ERROR at line 1:
ORA-02290: check constraint (RA1911033010021.SYS_C006216) violated
```

```
SQL> create index i1 on parent(pay);

Index created.

SQL> set autotrace on explain
SQL> select * from parent where pay=150000;

        ID NAME              PAY
---------- ---------- ----------
        11 Lucky          150000


Execution Plan
----------------------------------------------------------
Plan hash value: 2998437169

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| Id  | Operation                           | Name   | Rows  | Bytes | Cost (%CP
U)| Time     |

-------------------------------------------------------------------------------
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|   0 | SELECT STATEMENT                    |        |     1 |    33 |     2   (
0)| 00:00:01 |

|   1 |  TABLE ACCESS BY INDEX ROWID BATCHED| PARENT |     1 |    33 |     2   (
0)| 00:00:01 |

|*  2 |   INDEX RANGE SCAN                  | I1     |     1 |       |     1   (
0)| 00:00:01 |

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Predicate Information (identified by operation id):
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   2 - access("PAY"=150000)

Note
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   - dynamic statistics used: dynamic sampling (level=2)
```

RESULT :

Thus, the integrity constraints commands have been executed successfully