Date: 20-04-23

Experiment – 3

Aim:

To apply the integrity constraints like primary key, foreign key, check, not null, etc. to the tables.

Tools Used:

MariaDB

SQL Constraints:

1. **Primary Key:**
   A primary key is a unique identifier for a row in a table. It is used to enforce uniqueness and to provide a way to reference a particular row from another table.
   Query:
   Add a Primary key constraint to Roll No. in student table.
   Code:
   ```
   MariaDB [student]> ALTER TABLE student ADD PRIMARY KEY (`Roll No.`);
   Query OK, 0 rows affected (1.196 sec)
   Records: 0  Duplicates: 0  Warnings: 0
   ```

2. **Foreign Key:**
   A foreign key is a column or a set of columns in a table that refers to the primary key of another table. It is used to maintain referential integrity between tables.
   Query:
   Create another table and make Roll No. a Foreign Key reference to student table.
   Code:
   ```
   MariaDB [student]> CREATE TABLE enrollments(`St_enroll_no.` int(11) PRIMARY KEY, `Roll No.` int(11), course_id int(11), FOREIGN KEY (`Roll No.`) REFERENCES student(`Roll No.`));
   Query OK, 0 rows affected (0.046 sec)
   ```

3. **NOT NULL:**
   A not null constraint is used to ensure that a column cannot contain null values.
   Query:
   Add NOT NULL Constraint to Column Ph. No. in student table.
   Code:
   ```
   MariaDB [student]> ALTER TABLE student MODIFY COLUMN `Ph. No.` BIGINT(10) NOT NULL;
   Query OK, 0 rows affected (0.064 sec)
   Records: 0  Duplicates: 0  Warnings: 0
   ```

4. CHECK:

A check constraint is used to limit the values that can be inserted into a column. It is used to enforce data integrity rules.

Query:

Add CHECK constraint to column Semester in student table such that Semester>=4.

Code:

```
MariaDB [student]> ALTER TABLE student ADD CHECK (Semester>=4);
Query OK, 1 row affected (0.063 sec)
Records: 1  Duplicates: 0  Warnings: 0
```

Structure of the tables after all the queries:

MariaDB [student]> DESC student;

Field	Type	Null	Key	Default	Extra
Roll No.	int(10)	NO	PRI	NULL	
Name	varchar(20)	YES		NULL	
Ph. No.	bigint(10)	NO		NULL	
Email	varchar(30)	YES		NULL	
Semester	int(1)	YES		NULL	

5 rows in set (0.039 sec)

MariaDB [student]> DESC enrollments;

Field	Type	Null	Key	Default	Extra
St_enroll_no.	int(11)	NO	PRI	NULL	
Roll No.	int(11)	YES	MUL	NULL	
course_id	int(11)	YES		NULL	

3 rows in set (0.030 sec)