EXPERIMENT 2

Aim: To study and perform Join operations using Foreign Key and Primary Key.

Software Used: MySQL

Theory:

Primary Key:

The primary key is a constraint which uniquely identifies each record in the table. It must contain unique values and cannot contain NULL values.

A table can have only one primary key, and in the table, this primary key can consist of single or multiple columns.

```
CREATE TABLE gadgets(gadget_id INT NOT NULL, gadget_name VARCHAR(60),type_id INT NOT NULL, PRIMARY KEY(gadget_id))
```

Figure: SQL Query to create a table with a Primary Key.

Foreign Key:

The Foreign Key is a constraint used to prevent actions that would destroy the link between tables.

A foreign key is a field or a collection of fields in one table, that refers to the Primary key of another table.

The table with the foreign key is called the child table, and the table with the primary key is called the referenced or parent table.

```
CREATE TABLE gadget_types( type_id INT NOT NULL, NAME VARCHAR(60), PRIMARY KEY(type_id), FOREIGN KEY( type_id) REFERENCES gadgets(type_id))
```

Figure: SQL Query to create a table with a foreign key.

For the experiment, the following tables were designed to perform join operations.

type_id	name
1	Entertainment
2	Computing
3	Communication
4	Lifestyle
5	Cameras

Figure: Table Gadget type

gadget_id	gadget_name	type_id
1	Amazon Kindle	1
2	Apple iPod	1
3	Audio Highway Listen Up	1
4	Apple iPad	2
5	MicroSD	2
6	Apple iPhone	3
7	BlackBerry 6210	3
8	Pager	3
9	Air Taser Model 34000	4
10	Credit Card	4
11	Zippo	4
12	Casio G-Shock DW-5000C	4
13	Nikon F	5
14	Canon EOS 5D Mark II	5

Figure: Table Gadget

JOIN:

It is used to combine two or more tables. There are different types of SQL JOIN.

1) Inner Join:
   It is used to select records that have matching values in both tables if the condition is satisfied. It returns the combination of all rows from both the tables where the condition is satisfied.

```
SELECT
gadgets.gadget_id,gadgets.gadget_name,gadgets.type_id,gadget_types.name
FROM gadgets
INNER JOIN gadget_types ON gadgets.type_id=gadget_types.type_id
```

Figure: SQL Query to perform Inner Join

gadget_id	gadget_name	type_id	name
1	Amazon Kindle	1	Entertainment
2	Apple iPod	1	Entertainment
3	Audio Highway Listen Up	1	Entertainment
4	Apple iPad	2	Computing
5	MicroSD	2	Computing
6	Apple iPhone	3	Communication
7	BlackBerry 6210	3	Communication
8	Pager	3	Communication
9	Air Taser Model 34000	4	Lifestyle
10	Credit Card	4	Lifestyle
11	Zippo	4	Lifestyle
12	Casio G-Shock DW-5000C	4	Lifestyle
13	Nikon F	5	Cameras
14	Canon EOS 5D Mark II	5	Cameras

Figure: Inner Join

2) Left Join:

It returns the values from the left table and the matching values from the right table. If there are no matching values, the join will return NULL.

```
SELECT gadgets.gadget_id,gadgets.gadget_name,gadget_types.name FROM gadgets LEFT JOIN gadget_types ON gadgets.type_id=gadget_types.type_id;
```

Figure: SQL Query to perform Left Joint

gadget_id	gadget_name	name
1	Amazon Kindle	Entertainment
2	Apple iPod	Entertainment
3	Audio Highway Listen Up	Entertainment
4	Apple iPad	Computing
5	MicroSD	Computing
6	Apple iPhone	Communication
7	BlackBerry 6210	Communication
8	Pager	Communication
9	Air Taser Model 34000	Lifestyle
10	Credit Card	Lifestyle
11	Zippo	Lifestyle
12	Casio G-Shock DW-5000C	Lifestyle
13	Nikon F	Cameras
14	Canon EOS 5D Mark II	Cameras

Figure: Left Joint

3) Right Join:

It returns all the values from the values from the rows of right table and the matched values from the left table. If there is no matching in both tables, it will return NULL.

```
SELECT gadgets.gadget_id,gadgets.gadget_name,gadgets.type_id,gadget_types.name
FROM gadgets RIGHT JOIN gadget_types ON gadgets.gadget_id=gadget_types.type_id;
```

Figure: SQL Query to perform Right Join

gadget_id	gadget_name	type_id	name
1	Amazon Kindle	1	Entertainment
2	Apple iPod	1	Computing
3	Audio Highway Listen Up	1	Communication
4	Apple iPad	2	Lifestyle
5	MicroSD	2	Cameras

Figure: Right Join

Conclusion: Join operations such as Inner Join ,Left Join and Right Join were performed using primary and foreign key.