1. df1 = data.frame(CustId = c(1:6), Product = c(rep("TV", 3), rep("Radio", 3)))

df2 = data.frame(CustId = c(2, 4, 6), State = c(rep("Texas", 2), rep("NYC", 1)))
df1 #left table
df2 #right table
For the above given data frames and tables perform the following operations:

- Return only the rows in which the left table have match.
- Returns all rows from both tables, join records from the left which have matching keys in the right table.
- Return all rows from the left table, and any rows with matching keys from the right table.
- Return all rows from the right table, and any rows with matching keys from the left table.

df1 = data.frame(CustId = c(1:6), Product = c(rep("TV", 3), rep("Radio", 3)))
df2 = data.frame(CustId = c(2, 4, 6), State = c(rep("Texas", 2), rep("NYC", 1)))

 # Return only the rows in which the left table have match
left <- merge(df1, df2, by.x = "CustId")

```
> print(left)
  CustId Product State
1      2      TV Texas
2      4   Radio Texas
3      6   Radio   NYC
```

 # Returns all rows from both tables, join records from the left which have matching keys in the right table.
right <- merge(df1, df2, by="CustId", all = TRUE)

```
> print(right)
  CustId Product State
1      1      TV  <NA>
2      2      TV Texas
3      3      TV  <NA>
4      4   Radio Texas
5      5   Radio  <NA>
6      6   Radio   NYC
```

 # Return all rows from the left table, and any rows with matching keys from the right table.
left1 <- merge(df1,df2, by="CustId", all.x = TRUE)

```
> print(left1)
  CustId Product State
1      1      TV  <NA>
2      2      TV Texas
3      3      TV  <NA>
4      4   Radio Texas
5      5   Radio  <NA>
6      6   Radio   NYC
```

 # Return all rows from the right table, and any rows with matching keys from the left table.
right1 <- merge(df1,df2, by="CustId", all.y = TRUE)

```
> print(right1)
  CustId Product State
1      2      TV Texas
2      4   Radio Texas
3      6   Radio   NYC
```

2. Perform the below operations on above given data frames and tables:

- Return a long format of the datasets without matching key.

  full <- merge(df1, df2, all=TRUE)

```
> print(full)
  CustId Product State
1      1      TV  <NA>
2      2      TV Texas
3      3      TV  <NA>
4      4   Radio Texas
5      5   Radio  <NA>
6      6   Radio   NYC
```

- Keep only observations in df1 that match in df2.

  library(dplyr)

  semi_join(df1,df2)

```
> semi_join(df1,df2)
Joining, by = "CustId"
  CustId Product
1      2      TV
2      4   Radio
3      6   Radio
```

- Drop all observations in df1 that match in df2.

  library(dplyr)

  anti_join(df1,df2)

```
> anti_join(df1,df2)
Joining, by = "CustId"
  CustId Product
1      1      TV
2      3      TV
3      5   Radio
```