

***SQL MODULE***  
***LAB – 10***

***BY***

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Lab: Use the same student management system Database and table from the previous

lab. Perform the following commands on the table Student and Enrollment.

1. Assume a university where students can enroll in various courses. Now, write down a FULL outer JOIN query to retrieve the details.

2. Assume a university where students can enroll in various courses. Now, write down a Natural JOIN query to retrieve the details.

Submission:

Create an SQL script file containing your solutions for all tasks (queries). Name the file "lab\_assignment1.sql" Provide comments above each query to indicate the query's purpose.

ChatGPT Exercise

Using ChatGPT generates SQL queries of the below problem.

Scenario 1: We have an "inventory" Table with the following columns: ProductID, ProductName, StockQuantity, and "sales" Table with the following columns: SaleID, ProductID(foreign key), SaleQuantity, SaleDate. Now you need to use full outer join to generate a report that includes all products in the inventory and their sales, displaying NULL values for products that haven't been sold. Generate the ChatGPT prompt for the above scenario.

SOLUTION:

1. Assume a university where students can enroll in various courses. Now, write down a FULL outer JOIN query to retrieve the details.

Code:

SELECT

Student.StudentId,

Student.StudentName,

Student.BirthDate,

Student.Email AS Email,

Enrollment.EnrollmentId,

Enrollment.StudentId AS EnrollmentStudentId,

Enrollment.CourseId,

Enrollment.EnrollmentDate,

Enrollment.CourseName

FROM

Student

LEFT JOIN

Enrollment

ON

Student.StudentId = Enrollment.StudentId

## Output:

```
mysql> SELECT
-> Student.StudentId,
-> Student.StudentName,
-> Student.BirthDate,
-> Student.Email AS Email,
-> Enrollment.EnrollmentId,
-> Enrollment.StudentId AS EnrollmentStudentId,
-> Enrollment.CourseId,
-> Enrollment.EnrollmentDate,
-> Enrollment.CourseName
-> FROM
-> Student
-> LEFT JOIN
-> Enrollment
-> ON
-> Student.StudentId = Enrollment.StudentId;
```

| StudentId | StudentName        | BirthDate  | Email                          | EnrollmentId | EnrollmentStudentId | CourseId | EnrollmentDate | CourseName              |
|-----------|--------------------|------------|--------------------------------|--------------|---------------------|----------|----------------|-------------------------|
| 1         | Aarav Sharma       | 2000-01-15 | aarav.sharma@example.com       | 96           | 1                   | 101      | 2021-01-15     | NULL                    |
| 1         | Aarav Sharma       | 2000-01-15 | aarav.sharma@example.com       | 131          | 1                   | 101      | 2021-01-15     | Mathematics             |
| 2         | Vivaan Singh       | 2001-03-22 | vivaan.singh@example.com       | 97           | 2                   | 102      | 2021-02-22     | NULL                    |
| 2         | Vivaan Singh       | 2001-03-22 | vivaan.singh@example.com       | 132          | 2                   | 102      | 2021-02-22     | Physics                 |
| 3         | Aditya Gupta       | 2002-07-10 | aditya.gupta@example.com       | 98           | 3                   | 103      | 2021-03-10     | NULL                    |
| 3         | Aditya Gupta       | 2002-07-10 | aditya.gupta@example.com       | 133          | 3                   | 103      | 2021-03-10     | Chemistry               |
| 4         | Vihaan Kumar       | 2000-11-05 | vihaan.kumar@example.com       | 99           | 4                   | 104      | 2021-04-05     | NULL                    |
| 4         | Vihaan Kumar       | 2000-11-05 | vihaan.kumar@example.com       | 134          | 4                   | 104      | 2021-04-05     | Biology                 |
| 5         | Arjun Patel        | 2003-02-18 | arjun.patel@example.com        | 100          | 5                   | 105      | 2021-05-18     | NULL                    |
| 5         | Arjun Patel        | 2003-02-18 | arjun.patel@example.com        | 135          | 5                   | 105      | 2021-05-18     | Computer Science        |
| 6         | Sai Reddy          | 2001-06-30 | sai.reddy@example.com          | 101          | 6                   | 106      | 2021-06-30     | NULL                    |
| 6         | Sai Reddy          | 2001-06-30 | sai.reddy@example.com          | 136          | 6                   | 106      | 2021-06-30     | History                 |
| 7         | Reyansh Nair       | 2002-09-12 | reyansh.nair@example.com       | 102          | 7                   | 107      | 2021-07-12     | NULL                    |
| 7         | Reyansh Nair       | 2002-09-12 | reyansh.nair@example.com       | 137          | 7                   | 107      | 2021-07-12     | Geography               |
| 8         | Ayaan Iyer         | 2000-12-25 | ayaan.iyer@example.com         | 103          | 8                   | 108      | 2021-08-25     | NULL                    |
| 8         | Ayaan Iyer         | 2000-12-25 | ayaan.iyer@example.com         | 138          | 8                   | 108      | 2021-08-25     | Political Science       |
| 9         | Krishna Rao        | 2001-04-19 | krishna.rao@example.com        | 104          | 9                   | 109      | 2021-09-19     | NULL                    |
| 9         | Krishna Rao        | 2001-04-19 | krishna.rao@example.com        | 139          | 9                   | 109      | 2021-09-19     | Economics               |
| 10        | Ishaan Mehta       | 2002-08-03 | ishaan.mehta@example.com       | 105          | 10                  | 110      | 2021-10-03     | NULL                    |
| 10        | Ishaan Mehta       | 2002-08-03 | ishaan.mehta@example.com       | 140          | 10                  | 110      | 2021-10-03     | English Literature      |
| 11        | Kabir Joshi        | 2000-10-14 | kabir.joshi@example.com        | 106          | 11                  | 111      | 2021-11-14     | NULL                    |
| 11        | Kabir Joshi        | 2000-10-14 | kabir.joshi@example.com        | 141          | 11                  | 111      | 2021-11-14     | Philosophy              |
| 12        | Arnav Das          | 2001-01-29 | arnav.das@example.com          | 107          | 12                  | 112      | 2021-12-29     | NULL                    |
| 12        | Arnav Das          | 2001-01-29 | arnav.das@example.com          | 142          | 12                  | 112      | 2021-12-29     | Sociology               |
| 13        | Atharv Chatterjee  | 2002-05-07 | atharv.chatterjee@example.com  | 108          | 13                  | 113      | 2022-01-07     | Psychology              |
| 13        | Atharv Chatterjee  | 2002-05-07 | atharv.chatterjee@example.com  | 143          | 13                  | 113      | 2022-01-07     | Psychology              |
| 14        | Dhyey Mukherjee    | 2003-09-22 | dhyey.mukherjee@example.com    | 109          | 14                  | 114      | 2022-02-22     | NULL                    |
| 14        | Dhyey Mukherjee    | 2003-09-22 | dhyey.mukherjee@example.com    | 144          | 14                  | 114      | 2022-02-22     | Statistics              |
| 15        | Aarush Roy         | 2000-02-10 | aarush.roy@example.com         | 110          | 15                  | 115      | 2022-03-10     | NULL                    |
| 15        | Aarush Roy         | 2000-02-10 | aarush.roy@example.com         | 145          | 15                  | 115      | 2022-03-10     | Business Administration |
| 16        | Rudra Bhattacharya | 2001-03-18 | rudra.bhattacharya@example.com | 111          | 16                  | 116      | 2022-04-18     | NULL                    |
| 16        | Rudra Bhattacharya | 2001-03-18 | rudra.bhattacharya@example.com | 146          | 16                  | 116      | 2022-04-18     | Marketing               |
| 17        | Advait Banerjee    | 2002-06-25 | advait.banerjee@example.com    | 112          | 17                  | 117      | 2022-05-17     | NULL                    |
| 17        | Advait Banerjee    | 2002-06-25 | advait.banerjee@example.com    | 147          | 17                  | 117      | 2022-05-17     | Finance                 |
| 18        | Yug Verma          | 2003-08-17 | yug.verma@example.com          | 113          | 18                  | 118      | 2022-06-12     | NULL                    |
| 18        | Yug Verma          | 2003-08-17 | yug.verma@example.com          | 148          | 18                  | 118      | 2022-06-12     | Accounting              |
| 19        | Shiv Kapoor        | 2000-11-28 | shiv.kapoor@example.com        | 114          | 19                  | 119      | 2022-07-14     | NULL                    |
| 19        | Shiv Kapoor        | 2000-11-28 | shiv.kapoor@example.com        | 149          | 19                  | 119      | 2022-07-14     | Management              |
| 20        | Aarav Jain         | 2001-02-15 | aarav.jain@example.com         | 115          | 20                  | 120      | 2022-08-28     | NULL                    |
| 20        | Aarav Jain         | 2001-02-15 | aarav.jain@example.com         | 150          | 20                  | 120      | 2022-08-28     | Engineering             |
| 21        | Vivaan Singh       | 2002-04-22 | vivaan.singh@example.com       | 116          | 21                  | 121      | 2022-09-15     | NULL                    |
| 18        | Yug Verma          | 2003-08-17 | yug.verma@example.com          | 148          | 18                  | 118      | 2022-06-12     | Accounting              |
| 19        | Shiv Kapoor        | 2000-11-28 | shiv.kapoor@example.com        | 114          | 19                  | 119      | 2022-07-14     | NULL                    |
| 19        | Shiv Kapoor        | 2000-11-28 | shiv.kapoor@example.com        | 149          | 19                  | 119      | 2022-07-14     | Management              |
| 20        | Aarav Jain         | 2001-02-15 | aarav.jain@example.com         | 115          | 20                  | 120      | 2022-08-28     | NULL                    |
| 20        | Aarav Jain         | 2001-02-15 | aarav.jain@example.com         | 150          | 20                  | 120      | 2022-08-28     | Engineering             |
| 21        | Vivaan Singh       | 2002-04-22 | vivaan.singh@example.com       | 116          | 21                  | 121      | 2022-09-15     | NULL                    |
| 22        | Aditya Gupta       | 2003-07-10 | aditya.gupta@example.com       | 117          | 22                  | 122      | 2022-10-22     | NULL                    |
| 22        | Aditya Gupta       | 2003-07-10 | aditya.gupta@example.com       | 152          | 22                  | 122      | 2022-10-22     | Law                     |
| 23        | Vihaan Kumar       | 2000-09-05 | vihaan.kumar@example.com       | 118          | 23                  | 123      | 2022-11-10     | NULL                    |
| 23        | Vihaan Kumar       | 2000-09-05 | vihaan.kumar@example.com       | 153          | 23                  | 123      | 2022-11-10     | Architecture            |
| 24        | Arjun Patel        | 2001-12-18 | arjun.patel@example.com        | 119          | 24                  | 124      | 2022-12-05     | NULL                    |
| 24        | Arjun Patel        | 2001-12-18 | arjun.patel@example.com        | 154          | 24                  | 124      | 2022-12-05     | Environmental Science   |
| 25        | Sai Reddy          | 2002-03-30 | sai.reddy@example.com          | 120          | 25                  | 125      | 2023-01-18     | NULL                    |
| 25        | Sai Reddy          | 2002-03-30 | sai.reddy@example.com          | 155          | 25                  | 125      | 2023-01-18     | Journalism              |
| 26        | Reyansh Nair       | 2003-06-12 | reyansh.nair@example.com       | 121          | 26                  | 126      | 2023-02-27     | NULL                    |
| 26        | Reyansh Nair       | 2003-06-12 | reyansh.nair@example.com       | 156          | 26                  | 126      | 2023-02-27     | Mass Communication      |
| 27        | Ayaan Iyer         | 2000-07-25 | ayaan.iyer@example.com         | 122          | 27                  | 127      | 2023-03-30     | NULL                    |
| 27        | Ayaan Iyer         | 2000-07-25 | ayaan.iyer@example.com         | 157          | 27                  | 127      | 2023-03-30     | Fine Arts               |
| 28        | Krishna Rao        | 2001-10-19 | krishna.rao@example.com        | 123          | 28                  | 128      | 2023-04-12     | NULL                    |
| 28        | Krishna Rao        | 2001-10-19 | krishna.rao@example.com        | 158          | 28                  | 128      | 2023-04-12     | Performing Arts         |
| 29        | Ishaan Mehta       | 2002-01-03 | ishaan.mehta@example.com       | 124          | 29                  | 129      | 2023-05-19     | NULL                    |
| 29        | Ishaan Mehta       | 2002-01-03 | ishaan.mehta@example.com       | 159          | 29                  | 129      | 2023-05-19     | Graphic Design          |
| 30        | Kabir Joshi        | 2003-04-14 | kabir.joshi@example.com        | 125          | 30                  | 130      | 2023-06-25     | NULL                    |
| 30        | Kabir Joshi        | 2003-04-14 | kabir.joshi@example.com        | 160          | 30                  | 130      | 2023-06-25     | Animation               |
| 31        | Arnav Das          | 2000-08-29 | arnav.das@example.com          | 126          | 31                  | 131      | 2023-07-10     | NULL                    |
| 31        | Arnav Das          | 2000-08-29 | arnav.das@example.com          | 161          | 31                  | 131      | 2023-07-10     | Fashion Design          |
| 32        | Atharv Chatterjee  | 2001-05-07 | atharv.chatterjee@example.com  | 127          | 32                  | 132      | 2023-08-05     | NULL                    |
| 32        | Atharv Chatterjee  | 2001-05-07 | atharv.chatterjee@example.com  | 162          | 32                  | 132      | 2023-08-05     | Interior Design         |
| 33        | Dhyey Mukherjee    | 2002-09-22 | dhyey.mukherjee@example.com    | 128          | 33                  | 133      | 2023-09-22     | NULL                    |
| 33        | Dhyey Mukherjee    | 2002-09-22 | dhyey.mukherjee@example.com    | 163          | 33                  | 133      | 2023-09-22     | Hotel Management        |
| 34        | Aarush Roy         | 2003-02-10 | aarush.roy@example.com         | 129          | 34                  | 134      | 2023-10-17     | NULL                    |
| 34        | Aarush Roy         | 2003-02-10 | aarush.roy@example.com         | 164          | 34                  | 134      | 2023-10-17     | Tourism                 |
| 35        | Rudra Bhattacharya | 2000-06-18 | rudra.bhattacharya@example.com | 130          | 35                  | 135      | 2023-11-14     | NULL                    |
| 35        | Rudra Bhattacharya | 2000-06-18 | rudra.bhattacharya@example.com | 165          | 35                  | 135      | 2023-11-14     | Culinary Arts           |
| 36        | Advait Banerjee    | 2001-11-25 | advait.banerjee@example.com    | NULL         | NULL                | NULL     | NULL           | NULL                    |

71 rows in set (0.00 sec)

Code:

SELECT

Student.StudentId,

Student.StudentName,

Student.BirthDate,

```

Student.Email AS Email,

Enrollment.EnrollmentId,

Enrollment.StudentId AS EnrollmentStudentId,

Enrollment.CourseId,

Enrollment.EnrollmentDate,

Enrollment.CourseName

FROM

Student

RIGHT JOIN

Enrollment

ON

Student.StudentId = Enrollment.StudentId;

```

Output:

```
mysql> SELECT
-> Student.StudentId,
-> Student.StudentName,
-> Student.BirthDate,
-> Student.Email AS Email,
-> Enrollment.EnrollmentId,
-> Enrollment.StudentId AS EnrollmentStudentId,
-> Enrollment.CourseId,
-> Enrollment.EnrollmentDate,
-> Enrollment.CourseName
-> FROM
-> Student
-> RIGHT JOIN
-> Enrollment
-> ON
-> Student.StudentId = Enrollment.StudentId;
```

| StudentId | StudentName        | BirthDate  | Email                          | EnrollmentId | EnrollmentStudentId | CourseId | EnrollmentDate | CourseName  |
|-----------|--------------------|------------|--------------------------------|--------------|---------------------|----------|----------------|-------------|
| 1         | Aarav Sharma       | 2000-01-15 | aarav.sharma@example.com       | 96           | 1                   | 101      | 2021-01-15     | NULL        |
| 2         | Vivaan Singh       | 2001-03-22 | vivaan.singh@example.com       | 97           | 2                   | 102      | 2021-02-22     | NULL        |
| 3         | Aditya Gupta       | 2002-07-10 | aditya.gupta@example.com       | 98           | 3                   | 103      | 2021-03-10     | NULL        |
| 4         | Vihaan Kumar       | 2000-11-05 | vihaan.kumar@example.com       | 99           | 4                   | 104      | 2021-04-05     | NULL        |
| 5         | Arjun Patel        | 2003-02-18 | arjun.patel@example.com        | 100          | 5                   | 105      | 2021-05-18     | NULL        |
| 6         | Sai Reddy          | 2001-06-30 | sai.reddy@example.com          | 101          | 6                   | 106      | 2021-06-30     | NULL        |
| 7         | Reyansh Nair       | 2002-09-12 | reyansh.nair@example.com       | 102          | 7                   | 107      | 2021-07-12     | NULL        |
| 8         | Ayaan Iyer         | 2000-12-25 | ayaan.iyer@example.com         | 103          | 8                   | 108      | 2021-08-25     | NULL        |
| 9         | Krishna Rao        | 2001-04-19 | krishna.rao@example.com        | 104          | 9                   | 109      | 2021-09-19     | NULL        |
| 10        | Ishaan Mehta       | 2002-08-03 | ishaan.mehta@example.com       | 105          | 10                  | 110      | 2021-10-03     | NULL        |
| 11        | Kabir Joshi        | 2000-10-14 | kabir.joshi@example.com        | 106          | 11                  | 111      | 2021-11-14     | NULL        |
| 12        | Arnav Das          | 2001-01-29 | arnav.das@example.com          | 107          | 12                  | 112      | 2021-12-29     | NULL        |
| 13        | Atharv Chatterjee  | 2002-05-07 | atharv.chatterjee@example.com  | 108          | 13                  | 113      | 2022-01-07     | NULL        |
| 14        | Dhyey Mukherjee    | 2003-09-22 | dhyey.mukherjee@example.com    | 109          | 14                  | 114      | 2022-02-22     | NULL        |
| 15        | Aarush Roy         | 2000-02-10 | aarush.roy@example.com         | 110          | 15                  | 115      | 2022-03-10     | NULL        |
| 16        | Rudra Bhattacharya | 2001-03-18 | rudra.bhattacharya@example.com | 111          | 16                  | 116      | 2022-04-18     | NULL        |
| 17        | Advait Banerjee    | 2002-06-25 | advait.banerjee@example.com    | 112          | 17                  | 117      | 2022-05-17     | NULL        |
| 18        | Yug Verma          | 2003-08-17 | yug.verma@example.com          | 113          | 18                  | 118      | 2022-06-12     | NULL        |
| 19        | Shiv Kapoor        | 2000-11-28 | shiv.kapoor@example.com        | 114          | 19                  | 119      | 2022-07-14     | NULL        |
| 20        | Aarav Jain         | 2001-02-15 | aarav.jain@example.com         | 115          | 20                  | 120      | 2022-08-28     | NULL        |
| 21        | Vivaan Singh       | 2002-04-22 | vivaan.singh@example.com       | 116          | 21                  | 121      | 2022-09-15     | NULL        |
| 22        | Aditya Gupta       | 2003-07-10 | aditya.gupta@example.com       | 117          | 22                  | 122      | 2022-10-22     | NULL        |
| 23        | Vihaan Kumar       | 2000-09-05 | vihaan.kumar@example.com       | 118          | 23                  | 123      | 2022-11-10     | NULL        |
| 24        | Arjun Patel        | 2001-12-18 | arjun.patel@example.com        | 119          | 24                  | 124      | 2022-12-05     | NULL        |
| 25        | Sai Reddy          | 2002-03-30 | sai.reddy@example.com          | 120          | 25                  | 125      | 2023-01-18     | NULL        |
| 26        | Reyansh Nair       | 2003-06-12 | reyansh.nair@example.com       | 121          | 26                  | 126      | 2023-02-27     | NULL        |
| 27        | Ayaan Iyer         | 2000-07-25 | ayaan.iyer@example.com         | 122          | 27                  | 127      | 2023-03-30     | NULL        |
| 28        | Krishna Rao        | 2001-10-19 | krishna.rao@example.com        | 123          | 28                  | 128      | 2023-04-12     | NULL        |
| 29        | Ishaan Mehta       | 2002-01-03 | ishaan.mehta@example.com       | 124          | 29                  | 129      | 2023-05-19     | NULL        |
| 30        | Kabir Joshi        | 2003-04-14 | kabir.joshi@example.com        | 125          | 30                  | 130      | 2023-06-25     | NULL        |
| 31        | Arnav Das          | 2000-08-29 | arnav.das@example.com          | 126          | 31                  | 131      | 2023-07-10     | NULL        |
| 32        | Atharv Chatterjee  | 2001-05-07 | atharv.chatterjee@example.com  | 127          | 32                  | 132      | 2023-08-05     | NULL        |
| 33        | Dhyey Mukherjee    | 2002-09-22 | dhyey.mukherjee@example.com    | 128          | 33                  | 133      | 2023-09-22     | NULL        |
| 34        | Aarush Roy         | 2003-02-10 | aarush.roy@example.com         | 129          | 34                  | 134      | 2023-10-17     | NULL        |
| 35        | Rudra Bhattacharya | 2000-06-18 | rudra.bhattacharya@example.com | 130          | 35                  | 135      | 2023-11-14     | NULL        |
| 1         | Aarav Sharma       | 2000-01-15 | aarav.sharma@example.com       | 131          | 1                   | 101      | 2021-01-15     | Mathematics |
| 2         | Vivaan Singh       | 2001-03-22 | vivaan.singh@example.com       | 132          | 2                   | 102      | 2021-02-22     | Physics     |
| 3         | Aditya Gupta       | 2002-07-10 | aditya.gupta@example.com       | 133          | 3                   | 103      | 2021-03-10     | Chemistry   |

|    |                    |            |                                |     |    |     |            |                         |
|----|--------------------|------------|--------------------------------|-----|----|-----|------------|-------------------------|
| 4  | Vihaan Kumar       | 2000-11-05 | vihaan.kumar@example.com       | 134 | 4  | 104 | 2021-04-05 | Biology                 |
| 5  | Arjun Patel        | 2003-02-18 | arjun.patel@example.com        | 135 | 5  | 105 | 2021-05-18 | Computer Science        |
| 6  | Sai Reddy          | 2001-06-30 | sai.reddy@example.com          | 136 | 6  | 106 | 2021-06-30 | History                 |
| 7  | Reyansh Nair       | 2002-09-12 | reyansh.nair@example.com       | 137 | 7  | 107 | 2021-07-12 | Geography               |
| 8  | Ayaan Iyer         | 2000-12-25 | ayaan.iyer@example.com         | 138 | 8  | 108 | 2021-08-25 | Political Science       |
| 9  | Krishna Rao        | 2001-04-19 | krishna.rao@example.com        | 139 | 9  | 109 | 2021-09-19 | Economics               |
| 10 | Ishaan Mehta       | 2002-08-03 | ishaan.mehta@example.com       | 140 | 10 | 110 | 2021-10-03 | English Literature      |
| 11 | Kabir Joshi        | 2000-10-14 | kabir.joshi@example.com        | 141 | 11 | 111 | 2021-11-14 | Philosophy              |
| 12 | Arnav Das          | 2001-01-29 | arnav.das@example.com          | 142 | 12 | 112 | 2021-12-29 | Sociology               |
| 13 | Atharv Chatterjee  | 2002-05-07 | atharv.chatterjee@example.com  | 143 | 13 | 113 | 2022-01-07 | Psychology              |
| 14 | Dhyey Mukherjee    | 2003-09-22 | dhyey.mukherjee@example.com    | 144 | 14 | 114 | 2022-02-22 | Statistics              |
| 15 | Aarush Roy         | 2000-02-10 | aarush.roy@example.com         | 145 | 15 | 115 | 2022-03-10 | Business Administration |
| 16 | Rudra Bhattacharya | 2001-03-18 | rudra.bhattacharya@example.com | 146 | 16 | 116 | 2022-04-10 | Marketing               |
| 17 | Advait Banerjee    | 2002-06-25 | advait.banerjee@example.com    | 147 | 17 | 117 | 2022-05-17 | Finance                 |
| 18 | Yug Verma          | 2003-08-17 | yug.verma@example.com          | 148 | 18 | 118 | 2022-06-12 | Accounting              |
| 19 | Shiv Kapoor        | 2000-11-28 | shiv.kapoor@example.com        | 149 | 19 | 119 | 2022-07-14 | Management              |
| 20 | Aarav Jain         | 2001-02-15 | aarav.jain@example.com         | 150 | 20 | 120 | 2022-08-28 | Engineering             |
| 21 | Vivaan Singh       | 2002-04-22 | vivaan.singh@example.com       | 151 | 21 | 121 | 2022-09-15 | Medicine                |
| 22 | Aditya Gupta       | 2003-07-10 | aditya.gupta@example.com       | 152 | 22 | 122 | 2022-10-22 | Law                     |
| 23 | Vihaan Kumar       | 2000-09-05 | vihaan.kumar@example.com       | 153 | 23 | 123 | 2022-11-10 | Architecture            |
| 24 | Arjun Patel        | 2001-12-18 | arjun.patel@example.com        | 154 | 24 | 124 | 2022-12-05 | Environmental Science   |
| 25 | Sai Reddy          | 2002-03-30 | sai.reddy@example.com          | 155 | 25 | 125 | 2023-01-18 | Journalism              |
| 26 | Reyansh Nair       | 2003-06-12 | reyansh.nair@example.com       | 156 | 26 | 126 | 2023-02-27 | Mass Communication      |
| 27 | Ayaan Iyer         | 2000-07-25 | ayaan.iyer@example.com         | 157 | 27 | 127 | 2023-03-30 | Fine Arts               |
| 28 | Krishna Rao        | 2001-10-19 | krishna.rao@example.com        | 158 | 28 | 128 | 2023-04-12 | Performing Arts         |
| 29 | Ishaan Mehta       | 2002-01-03 | ishaan.mehta@example.com       | 159 | 29 | 129 | 2023-05-19 | Graphic Design          |
| 30 | Kabir Joshi        | 2003-04-14 | kabir.joshi@example.com        | 160 | 30 | 130 | 2023-06-25 | Animation               |
| 31 | Arnav Das          | 2000-08-29 | arnav.das@example.com          | 161 | 31 | 131 | 2023-07-10 | Fashion Design          |
| 32 | Atharv Chatterjee  | 2001-05-07 | atharv.chatterjee@example.com  | 162 | 32 | 132 | 2023-08-05 | Interior Design         |
| 33 | Dhyey Mukherjee    | 2002-09-22 | dhyey.mukherjee@example.com    | 163 | 33 | 133 | 2023-09-22 | Hotel Management        |
| 34 | Aarush Roy         | 2003-02-10 | aarush.roy@example.com         | 164 | 34 | 134 | 2023-10-17 | Tourism                 |
| 35 | Rudra Bhattacharya | 2000-06-18 | rudra.bhattacharya@example.com | 165 | 35 | 135 | 2023-11-14 | Culinary Arts           |

70 rows in set (0.00 sec)

2. Assume a university where students can enroll in various courses. Now, write down a Natural JOIN query to retrieve the details.

Code:

SELECT

Student.StudentId,

Student.StudentName,

Student.BirthDate,

Student.Email,

Enrollment.EnrollmentId,

Enrollment.CourseId,

Enrollment.EnrollmentDate,

Enrollment.CourseName

FROM

Student

NATURAL JOIN

## Enrollment;

## Output:

```
mysql> SELECT
-> Student.StudentId,
-> Student.StudentName,
-> Student.BirthDate,
-> Student.Email,
-> Enrollment.EnrollmentId,
-> Enrollment.CourseId,
-> Enrollment.EnrollmentDate,
-> Enrollment.CourseName
-> FROM
-> Student
-> NATURAL JOIN
-> Enrollment;
```

| StudentId | StudentName        | BirthDate  | Email                          | EnrollmentId | CourseId | EnrollmentDate | CourseName              |
|-----------|--------------------|------------|--------------------------------|--------------|----------|----------------|-------------------------|
| 1         | Aarav Sharma       | 2000-01-15 | aarav.sharma@example.com       | 96           | 101      | 2021-01-15     | NULL                    |
| 1         | Aarav Sharma       | 2000-01-15 | aarav.sharma@example.com       | 131          | 101      | 2021-01-15     | Mathematics             |
| 2         | Vivaan Singh       | 2001-03-22 | vivaan.singh@example.com       | 97           | 102      | 2021-02-22     | NULL                    |
| 2         | Vivaan Singh       | 2001-03-22 | vivaan.singh@example.com       | 132          | 102      | 2021-02-22     | Physics                 |
| 3         | Aditya Gupta       | 2002-07-10 | aditya.gupta@example.com       | 98           | 103      | 2021-03-10     | NULL                    |
| 3         | Aditya Gupta       | 2002-07-10 | aditya.gupta@example.com       | 133          | 103      | 2021-03-10     | Chemistry               |
| 4         | Vihaan Kumar       | 2000-11-05 | vihaan.kumar@example.com       | 99           | 104      | 2021-04-05     | NULL                    |
| 4         | Vihaan Kumar       | 2000-11-05 | vihaan.kumar@example.com       | 134          | 104      | 2021-04-05     | Biology                 |
| 5         | Arjun Patel        | 2003-02-18 | arjun.patel@example.com        | 100          | 105      | 2021-05-18     | NULL                    |
| 5         | Arjun Patel        | 2003-02-18 | arjun.patel@example.com        | 135          | 105      | 2021-05-18     | Computer Science        |
| 6         | Sai Reddy          | 2001-06-30 | sai.reddy@example.com          | 101          | 106      | 2021-06-30     | NULL                    |
| 6         | Sai Reddy          | 2001-06-30 | sai.reddy@example.com          | 136          | 106      | 2021-06-30     | History                 |
| 7         | Reyansh Nair       | 2002-09-12 | reyansh.nair@example.com       | 102          | 107      | 2021-07-12     | NULL                    |
| 7         | Reyansh Nair       | 2002-09-12 | reyansh.nair@example.com       | 137          | 107      | 2021-07-12     | Geography               |
| 8         | Ayaan Iyer         | 2000-12-25 | ayaan.iyer@example.com         | 103          | 108      | 2021-08-25     | NULL                    |
| 8         | Ayaan Iyer         | 2000-12-25 | ayaan.iyer@example.com         | 138          | 108      | 2021-08-25     | Political Science       |
| 9         | Krishna Rao        | 2001-04-19 | krishna.rao@example.com        | 104          | 109      | 2021-09-19     | NULL                    |
| 9         | Krishna Rao        | 2001-04-19 | krishna.rao@example.com        | 139          | 109      | 2021-09-19     | Economics               |
| 10        | Ishaan Mehta       | 2002-08-03 | ishaan.mehta@example.com       | 105          | 110      | 2021-10-03     | NULL                    |
| 10        | Ishaan Mehta       | 2002-08-03 | ishaan.mehta@example.com       | 140          | 110      | 2021-10-03     | English Literature      |
| 11        | Kabir Joshi        | 2000-10-14 | kabir.joshi@example.com        | 106          | 111      | 2021-11-14     | NULL                    |
| 11        | Kabir Joshi        | 2000-10-14 | kabir.joshi@example.com        | 141          | 111      | 2021-11-14     | Philosophy              |
| 12        | Arnav Das          | 2001-01-29 | arnav.das@example.com          | 107          | 112      | 2021-12-29     | NULL                    |
| 12        | Arnav Das          | 2001-01-29 | arnav.das@example.com          | 142          | 112      | 2021-12-29     | Sociology               |
| 13        | Atharv Chatterjee  | 2002-05-07 | atharv.chatterjee@example.com  | 108          | 113      | 2022-01-07     | NULL                    |
| 13        | Atharv Chatterjee  | 2002-05-07 | atharv.chatterjee@example.com  | 143          | 113      | 2022-01-07     | Psychology              |
| 14        | Dhyey Mukherjee    | 2003-09-22 | dhyey.mukherjee@example.com    | 109          | 114      | 2022-02-22     | NULL                    |
| 14        | Dhyey Mukherjee    | 2003-09-22 | dhyey.mukherjee@example.com    | 144          | 114      | 2022-02-22     | Statistics              |
| 15        | Aarush Roy         | 2000-02-10 | aarush.roy@example.com         | 110          | 115      | 2022-03-10     | NULL                    |
| 15        | Aarush Roy         | 2000-02-10 | aarush.roy@example.com         | 145          | 115      | 2022-03-10     | Business Administration |
| 16        | Rudra Bhattacharya | 2001-03-18 | rudra.bhattacharya@example.com | 111          | 116      | 2022-04-10     | NULL                    |
| 16        | Rudra Bhattacharya | 2001-03-18 | rudra.bhattacharya@example.com | 146          | 116      | 2022-04-10     | Marketing               |
| 17        | Advait Banerjee    | 2002-06-25 | advait.banerjee@example.com    | 112          | 117      | 2022-05-17     | NULL                    |
| 17        | Advait Banerjee    | 2002-06-25 | advait.banerjee@example.com    | 147          | 117      | 2022-05-17     | Finance                 |
| 18        | Yug Verma          | 2003-08-17 | yug.verma@example.com          | 113          | 118      | 2022-06-12     | NULL                    |
| 18        | Yug Verma          | 2003-08-17 | yug.verma@example.com          | 148          | 118      | 2022-06-12     | Accounting              |
| 19        | Shiv Kapoor        | 2000-11-28 | shiv.kapoor@example.com        | 114          | 119      | 2022-07-14     | NULL                    |
| 19        | Shiv Kapoor        | 2000-11-28 | shiv.kapoor@example.com        | 149          | 119      | 2022-07-14     | Management              |
| 20        | Aarav Jain         | 2001-02-15 | aarav.jain@example.com         | 115          | 120      | 2022-08-28     | NULL                    |
| 20        | Aarav Jain         | 2001-02-15 | aarav.jain@example.com         | 150          | 120      | 2022-08-28     | Engineering             |
| 21        | Vivaan Singh       | 2002-04-22 | vivaan.singh@example.com       | 116          | 121      | 2022-09-15     | NULL                    |
| 21        | Vivaan Singh       | 2002-04-22 | vivaan.singh@example.com       | 151          | 121      | 2022-09-15     | Medicine                |
| 22        | Aditya Gupta       | 2003-07-10 | aditya.gupta@example.com       | 117          | 122      | 2022-10-22     | NULL                    |
| 22        | Aditya Gupta       | 2003-07-10 | aditya.gupta@example.com       | 152          | 122      | 2022-10-22     | Law                     |
| 23        | Vihaan Kumar       | 2000-09-05 | vihaan.kumar@example.com       | 118          | 123      | 2022-11-10     | NULL                    |
| 23        | Vihaan Kumar       | 2000-09-05 | vihaan.kumar@example.com       | 153          | 123      | 2022-11-10     | Architecture            |
| 24        | Arjun Patel        | 2001-12-18 | arjun.patel@example.com        | 119          | 124      | 2022-12-05     | NULL                    |
| 24        | Arjun Patel        | 2001-12-18 | arjun.patel@example.com        | 154          | 124      | 2022-12-05     | Environmental Science   |
| 25        | Sai Reddy          | 2002-03-30 | sai.reddy@example.com          | 120          | 125      | 2023-01-18     | NULL                    |
| 25        | Sai Reddy          | 2002-03-30 | sai.reddy@example.com          | 155          | 125      | 2023-01-18     | Journalism              |
| 26        | Reyansh Nair       | 2003-06-12 | reyansh.nair@example.com       | 121          | 126      | 2023-02-27     | NULL                    |
| 26        | Reyansh Nair       | 2003-06-12 | reyansh.nair@example.com       | 156          | 126      | 2023-02-27     | Mass Communication      |
| 27        | Ayaan Iyer         | 2000-07-25 | ayaan.iyer@example.com         | 122          | 127      | 2023-03-30     | NULL                    |
| 27        | Ayaan Iyer         | 2000-07-25 | ayaan.iyer@example.com         | 157          | 127      | 2023-03-30     | Fine Arts               |
| 28        | Krishna Rao        | 2001-10-19 | krishna.rao@example.com        | 123          | 128      | 2023-04-12     | NULL                    |
| 28        | Krishna Rao        | 2001-10-19 | krishna.rao@example.com        | 158          | 128      | 2023-04-12     | Performing Arts         |
| 29        | Ishaan Mehta       | 2002-01-03 | ishaan.mehta@example.com       | 124          | 129      | 2023-05-19     | NULL                    |
| 29        | Ishaan Mehta       | 2002-01-03 | ishaan.mehta@example.com       | 159          | 129      | 2023-05-19     | Graphic Design          |
| 30        | Kabir Joshi        | 2003-04-14 | kabir.joshi@example.com        | 125          | 130      | 2023-06-25     | NULL                    |
| 30        | Kabir Joshi        | 2003-04-14 | kabir.joshi@example.com        | 160          | 130      | 2023-06-25     | Animation               |
| 31        | Arnav Das          | 2000-08-29 | arnav.das@example.com          | 126          | 131      | 2023-07-10     | NULL                    |
| 31        | Arnav Das          | 2000-08-29 | arnav.das@example.com          | 161          | 131      | 2023-07-10     | Fashion Design          |
| 32        | Atharv Chatterjee  | 2001-05-07 | atharv.chatterjee@example.com  | 127          | 132      | 2023-08-05     | NULL                    |
| 32        | Atharv Chatterjee  | 2001-05-07 | atharv.chatterjee@example.com  | 162          | 132      | 2023-08-05     | Interior Design         |
| 33        | Dhyey Mukherjee    | 2002-09-22 | dhyey.mukherjee@example.com    | 128          | 133      | 2023-09-22     | NULL                    |
| 33        | Dhyey Mukherjee    | 2002-09-22 | dhyey.mukherjee@example.com    | 163          | 133      | 2023-09-22     | Hotel Management        |
| 34        | Aarush Roy         | 2003-02-10 | aarush.roy@example.com         | 129          | 134      | 2023-10-17     | NULL                    |
| 34        | Aarush Roy         | 2003-02-10 | aarush.roy@example.com         | 164          | 134      | 2023-10-17     | Tourism                 |
| 35        | Rudra Bhattacharya | 2000-06-18 | rudra.bhattacharya@example.com | 130          | 135      | 2023-11-14     | NULL                    |
| 35        | Rudra Bhattacharya | 2000-06-18 | rudra.bhattacharya@example.com | 165          | 135      | 2023-11-14     | Culinary Arts           |

70 rows in set (0.00 sec)

## ChatGPT Exercise

Using ChatGPT generates SQL queries of the below problem.

Scenario 1: We have an "inventory" Table with the following columns: ProductID, ProductName, StockQuantity, and "sales" Table with following columns: SaleID, ProductID(foreign key), SaleQuantity, SaleDate. Now you need to use full outer join to generate a report that includes all products in the inventory and their sales, displaying NULL values for products that haven't been sold. Generate the chatGPT prompt for the above scenario.

Code:

```
-- Create inventory table

CREATE TABLE inventory (
ProductID INT PRIMARY KEY,
ProductName VARCHAR(100),
StockQuantity INT
);
```

Code:

```
-- Insert sample values into inventory table

INSERT INTO inventory (ProductID, ProductName, StockQuantity)
VALUES
(1, 'Product A', 100),
```



(2, 'Product B', 150),  
(3, 'Product C', 200),  
(4, 'Product D', 250),  
(5, 'Product E', 300),  
(6, 'Product F', 350),  
(7, 'Product G', 400),  
(8, 'Product H', 450),  
(9, 'Product I', 500),  
(10, 'Product J', 550);

Output:

```
mysql> -- Create inventory table
mysql> CREATE TABLE inventory (
  -> ProductID INT PRIMARY KEY,
  -> ProductName VARCHAR(100),
  -> StockQuantity INT
  -> );
Query OK, 0 rows affected (0.05 sec)

mysql> -- Insert sample values into inventory table
mysql> INSERT INTO inventory (ProductID, ProductName, StockQuantity) VALUES
  -> (1, 'Product A', 100),
  -> (2, 'Product B', 150),
  -> (3, 'Product C', 200),
  -> (4, 'Product D', 250),
  -> (5, 'Product E', 300),
  -> (6, 'Product F', 350),
  -> (7, 'Product G', 400),
  -> (8, 'Product H', 450),
  -> (9, 'Product I', 500),
  -> (10, 'Product J', 550);
Query OK, 10 rows affected (0.01 sec)
Records: 10  Duplicates: 0  Warnings: 0
```

Code:

```
-- Create sales table

CREATE TABLE sales (

SaleID INT PRIMARY KEY,
```

```
ProductID INT,  
SaleQuantity INT,  
SaleDate DATE,  
FOREIGN KEY (ProductID) REFERENCES inventory(ProductID)  
);
```

Code:

```
-- Insert sample values into sales table
```

```
INSERT INTO sales (SaleID, ProductID, SaleQuantity, SaleDate)  
VALUES  
(1, 1, 10, '2023-01-01'),  
(2, 2, 20, '2023-01-02'),  
(3, 3, 30, '2023-01-03'),  
(4, 4, 40, '2023-01-04'),  
(5, 5, 50, '2023-01-05'),  
(6, 6, 60, '2023-01-06'),  
(7, 7, 70, '2023-01-07'),  
(8, 8, 80, '2023-01-08'),  
(9, 9, 90, '2023-01-09'),  
(10, 10, 100, '2023-01-10');
```

Output:

```
mysql> -- Create sales table
mysql> CREATE TABLE sales (
  -> SaleID INT PRIMARY KEY,
  -> ProductID INT,
  -> SaleQuantity INT,
  -> SaleDate DATE,
  -> FOREIGN KEY (ProductID) REFERENCES inventory(ProductID)
  -> );
Query OK, 0 rows affected (0.06 sec)
```

```
INSERT INTO sales (SaleID, ProductID, SaleQuantity, SaleDate) VALUES
(1, ' at line 1
mysql> -- Insert sample values into sales table
mysql> INSERT INTO sales (SaleID, ProductID, SaleQuantity, SaleDate) VALUES
  -> (1, 1, 10, '2023-01-01'),
  -> (2, 2, 20, '2023-01-02'),
  -> (3, 3, 30, '2023-01-03'),
  -> (4, 4, 40, '2023-01-04'),
  -> (5, 5, 50, '2023-01-05'),
  -> (6, 6, 60, '2023-01-06'),
  -> (7, 7, 70, '2023-01-07'),
  -> (8, 8, 80, '2023-01-08'),
  -> (9, 9, 90, '2023-01-09'),
  -> (10, 10, 100, '2023-01-10');
Query OK, 10 rows affected (0.01 sec)
Records: 10  Duplicates: 0  Warnings: 0
```

Code:

-- Query to generate report with FULL OUTER JOIN

SELECT

inventory.ProductID,

inventory.ProductName,

inventory.StockQuantity,

sales.SaleID,

sales.SaleQuantity,

sales.SaleDate

FROM

inventory

LEFT JOIN

sales

ON

inventory.ProductID = sales.ProductID;

Output:

```
mysql> SELECT
->     inventory.ProductID,
->     inventory.ProductName,
->     inventory.StockQuantity,
->     sales.SaleID,
->     sales.SaleQuantity,
->     sales.SaleDate
-> FROM
->     inventory
-> RIGHT JOIN
->     sales
-> ON
->     inventory.ProductID = sales.ProductID;
```

| ProductID | ProductName | StockQuantity | SaleID | SaleQuantity | SaleDate   |
|-----------|-------------|---------------|--------|--------------|------------|
| 1         | Product A   | 100           | 1      | 10           | 2023-01-01 |
| 2         | Product B   | 150           | 2      | 20           | 2023-01-02 |
| 3         | Product C   | 200           | 3      | 30           | 2023-01-03 |
| 4         | Product D   | 250           | 4      | 40           | 2023-01-04 |
| 5         | Product E   | 300           | 5      | 50           | 2023-01-05 |
| 6         | Product F   | 350           | 6      | 60           | 2023-01-06 |
| 7         | Product G   | 400           | 7      | 70           | 2023-01-07 |
| 8         | Product H   | 450           | 8      | 80           | 2023-01-08 |
| 9         | Product I   | 500           | 9      | 90           | 2023-01-09 |
| 10        | Product J   | 550           | 10     | 100          | 2023-01-10 |

10 rows in set (0.00 sec)

Code:

SELECT

inventory.ProductID,

inventory.ProductName,

inventory.StockQuantity,

sales.SaleID,

```
sales.SaleQuantity,  
  
sales.SaleDate  
  
FROM  
  
inventory  
  
RIGHT JOIN  
  
sales  
  
ON  
  
inventory.ProductID = sales.ProductID;
```

Output:

```
mysql> SELECT  
->     inventory.ProductID,  
->     inventory.ProductName,  
->     inventory.StockQuantity,  
->     sales.SaleID,  
->     sales.SaleQuantity,  
->     sales.SaleDate  
-> FROM  
->     inventory  
-> RIGHT JOIN  
->     sales  
-> ON  
->     inventory.ProductID = sales.ProductID;
```

| ProductID | ProductName | StockQuantity | SaleID | SaleQuantity | SaleDate   |
|-----------|-------------|---------------|--------|--------------|------------|
| 1         | Product A   | 100           | 1      | 10           | 2023-01-01 |
| 2         | Product B   | 150           | 2      | 20           | 2023-01-02 |
| 3         | Product C   | 200           | 3      | 30           | 2023-01-03 |
| 4         | Product D   | 250           | 4      | 40           | 2023-01-04 |
| 5         | Product E   | 300           | 5      | 50           | 2023-01-05 |
| 6         | Product F   | 350           | 6      | 60           | 2023-01-06 |
| 7         | Product G   | 400           | 7      | 70           | 2023-01-07 |
| 8         | Product H   | 450           | 8      | 80           | 2023-01-08 |
| 9         | Product I   | 500           | 9      | 90           | 2023-01-09 |
| 10        | Product J   | 550           | 10     | 100          | 2023-01-10 |

```
10 rows in set (0.00 sec)
```