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| --- | --- |
| **Course Code: CSL603** | **Course Name: DWM LAB** |
| **Class: TE-CO** | **Batch: 3** |
| **Roll no: 18CO63** | **Name: SHAIKH TAUSEEF MUSHTAQUE ALI** |

**Experiment :04**

**Aim:** To perform various OLAP operations such as slice, dice, drilldown, rollup, pivot

**Output:**

Setting environment for using XAMPP for Windows.

tp@DESKTOP-K5A8CTB e:\xampp

# mysql -u root -p

Enter password:

Welcome to the MariaDB monitor. Commands end with ; or \g.

Your MariaDB connection id is 108

Server version: 10.4.18-MariaDB mariadb.org binary distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> use dwm;

Database changed

MariaDB [dwm]> show tables;

+---------------+

| Tables\_in\_dwm |

+---------------+

| abc |

| fact\_sales |

+---------------+

2 rows in set (0.001 sec)

MariaDB [dwm]> select \* from fact\_sales;

+-----+------+-------+-----------+-----------+

| id | year | month | product | sales\_qty |

+-----+------+-------+-----------+-----------+

| 1 | 2015 | 1 | hard disk | 15000 |

| 2 | 2015 | 2 | hard disk | 9000 |

| 3 | 2015 | 3 | hard disk | 16000 |

| 4 | 2015 | 4 | hard disk | 1000 |

| 5 | 2015 | 5 | hard disk | 9690 |

| 6 | 2015 | 6 | hard disk | 7800 |

| 7 | 2015 | 7 | hard disk | 13000 |

| 8 | 2015 | 8 | hard disk | 9800 |

| 9 | 2015 | 9 | hard disk | 13000 |

| 10 | 2015 | 10 | hard disk | 12680 |

| 11 | 2015 | 11 | hard disk | 15690 |

| 12 | 2015 | 12 | hard disk | 14200 |

| 13 | 2016 | 1 | hard disk | 1200 |

| 14 | 2016 | 2 | hard disk | 12200 |

| 15 | 2016 | 3 | hard disk | 1900 |

| 16 | 2016 | 4 | hard disk | 2500 |

| 17 | 2016 | 5 | hard disk | 15000 |

| 18 | 2016 | 6 | hard disk | 11000 |

| 19 | 2016 | 7 | hard disk | 10890 |

| 20 | 2016 | 8 | hard disk | 7300 |

| 21 | 2016 | 9 | hard disk | 9560 |

| 22 | 2016 | 10 | hard disk | 10610 |

| 23 | 2016 | 11 | hard disk | 19830 |

| 24 | 2016 | 12 | hard disk | 5630 |

| 25 | 2017 | 1 | hard disk | 15302 |

| 26 | 2017 | 2 | hard disk | 13090 |

| 27 | 2017 | 3 | hard disk | 11890 |

| 28 | 2017 | 4 | hard disk | 18722 |

| 29 | 2017 | 5 | hard disk | 8780 |

| 30 | 2017 | 6 | hard disk | 9820 |

| 31 | 2017 | 7 | hard disk | 3400 |

| 32 | 2017 | 8 | hard disk | 3190 |

| 33 | 2017 | 9 | hard disk | 8800 |

| 34 | 2017 | 10 | hard disk | 12920 |

| 35 | 2017 | 11 | hard disk | 1920 |

| 36 | 2017 | 12 | hard disk | 13050 |

| 37 | 2018 | 1 | hard disk | 1090 |

| 38 | 2018 | 2 | hard disk | 2908 |

| 39 | 2018 | 3 | hard disk | 11800 |

| 40 | 2018 | 4 | hard disk | 13900 |

| 41 | 2018 | 5 | hard disk | 9900 |

| 42 | 2018 | 6 | hard disk | 8350 |

| 43 | 2018 | 7 | hard disk | 5650 |

| 44 | 2018 | 8 | hard disk | 4950 |

| 45 | 2018 | 9 | hard disk | 9670 |

| 46 | 2018 | 10 | hard disk | 8020 |

| 47 | 2018 | 11 | hard disk | 10290 |

| 48 | 2018 | 12 | hard disk | 12030 |

| 49 | 2015 | 1 | keyboard | 1230 |

| 50 | 2015 | 2 | keyboard | 3000 |

| 51 | 2015 | 3 | keyboard | 3400 |

| 52 | 2015 | 4 | keyboard | 6700 |

| 53 | 2015 | 5 | keyboard | 1790 |

| 54 | 2015 | 6 | keyboard | 12900 |

| 55 | 2015 | 7 | keyboard | 2980 |

| 56 | 2015 | 8 | keyboard | 10900 |

| 57 | 2015 | 9 | keyboard | 9980 |

| 58 | 2015 | 10 | keyboard | 7880 |

| 59 | 2015 | 11 | keyboard | 6890 |

| 60 | 2015 | 12 | keyboard | 11890 |

| 61 | 2016 | 1 | keyboard | 8090 |

| 62 | 2016 | 2 | keyboard | 9010 |

| 63 | 2016 | 3 | keyboard | 6570 |

| 64 | 2016 | 4 | keyboard | 6100 |

| 65 | 2016 | 5 | keyboard | 7768 |

| 66 | 2016 | 6 | keyboard | 1908 |

| 67 | 2016 | 7 | keyboard | 11900 |

| 68 | 2016 | 8 | keyboard | 8900 |

| 69 | 2016 | 9 | keyboard | 8766 |

| 70 | 2016 | 10 | keyboard | 9878 |

| 71 | 2016 | 11 | keyboard | 7800 |

| 72 | 2016 | 12 | keyboard | 9000 |

| 73 | 2017 | 1 | keyboard | 8000 |

| 74 | 2017 | 2 | keyboard | 10900 |

| 75 | 2017 | 3 | keyboard | 9870 |

| 76 | 2017 | 4 | keyboard | 1770 |

| 77 | 2017 | 5 | keyboard | 7170 |

| 78 | 2017 | 6 | keyboard | 9880 |

| 79 | 2017 | 7 | keyboard | 10880 |

| 80 | 2017 | 8 | keyboard | 10180 |

| 81 | 2017 | 9 | keyboard | 12000 |

| 82 | 2017 | 10 | keyboard | 10200 |

| 83 | 2017 | 11 | keyboard | 12350 |

| 84 | 2017 | 12 | keyboard | 11310 |

| 85 | 2018 | 1 | keyboard | 9289 |

| 86 | 2018 | 2 | keyboard | 9010 |

| 87 | 2018 | 3 | keyboard | 1920 |

| 88 | 2018 | 4 | keyboard | 11920 |

| 89 | 2018 | 5 | keyboard | 9080 |

| 90 | 2018 | 6 | keyboard | 9000 |

| 91 | 2018 | 7 | keyboard | 8270 |

| 92 | 2018 | 8 | keyboard | 4220 |

| 93 | 2018 | 9 | keyboard | 2230 |

| 94 | 2018 | 10 | keyboard | 6770 |

| 95 | 2018 | 11 | keyboard | 7879 |

| 96 | 2018 | 12 | keyboard | 8089 |

| 97 | 2015 | 1 | monitor | 7009 |

| 98 | 2015 | 2 | monitor | 8999 |

| 99 | 2015 | 3 | monitor | 8780 |

| 100 | 2015 | 4 | monitor | 1780 |

| 101 | 2015 | 5 | monitor | 1080 |

| 102 | 2015 | 6 | monitor | 2290 |

| 103 | 2015 | 7 | monitor | 8290 |

| 104 | 2015 | 8 | monitor | 7090 |

| 105 | 2015 | 9 | monitor | 8780 |

| 106 | 2015 | 10 | monitor | 6760 |

| 107 | 2015 | 11 | monitor | 3029 |

| 108 | 2015 | 12 | monitor | 6780 |

| 109 | 2016 | 1 | monitor | 2290 |

| 110 | 2016 | 2 | monitor | 8900 |

| 111 | 2016 | 3 | monitor | 7000 |

| 112 | 2016 | 4 | monitor | 2800 |

| 113 | 2016 | 5 | monitor | 8020 |

| 114 | 2016 | 6 | monitor | 7878 |

| 115 | 2016 | 7 | monitor | 9800 |

| 116 | 2016 | 8 | monitor | 8950 |

| 117 | 2016 | 9 | monitor | 1090 |

| 118 | 2016 | 10 | monitor | 3490 |

| 119 | 2016 | 11 | monitor | 13490 |

| 120 | 2016 | 12 | monitor | 12390 |

| 121 | 2017 | 1 | monitor | 9180 |

| 122 | 2017 | 2 | monitor | 8000 |

| 123 | 2017 | 3 | monitor | 7890 |

| 124 | 2017 | 4 | monitor | 3890 |

| 125 | 2017 | 5 | monitor | 2990 |

| 126 | 2017 | 6 | monitor | 6990 |

| 127 | 2017 | 7 | monitor | 12000 |

| 128 | 2017 | 8 | monitor | 11020 |

| 129 | 2017 | 9 | monitor | 9800 |

| 130 | 2017 | 10 | monitor | 7800 |

| 131 | 2017 | 11 | monitor | 9878 |

| 132 | 2017 | 12 | monitor | 9800 |

| 133 | 2018 | 1 | monitor | 8700 |

| 134 | 2018 | 2 | monitor | 8670 |

| 135 | 2018 | 3 | monitor | 6770 |

| 136 | 2018 | 4 | monitor | 8790 |

| 137 | 2018 | 5 | monitor | 1980 |

| 138 | 2018 | 6 | monitor | 7789 |

| 139 | 2018 | 7 | monitor | 9880 |

| 140 | 2018 | 8 | monitor | 10890 |

| 141 | 2018 | 9 | monitor | 7677 |

| 142 | 2018 | 10 | monitor | 8700 |

| 143 | 2018 | 11 | monitor | 6750 |

| 144 | 2018 | 12 | monitor | 8700 |

| 145 | 2015 | 1 | pendrive | 18700 |

| 146 | 2015 | 2 | pendrive | 12900 |

| 147 | 2015 | 3 | pendrive | 19920 |

| 148 | 2015 | 4 | pendrive | 10190 |

| 149 | 2015 | 5 | pendrive | 11900 |

| 150 | 2015 | 6 | pendrive | 11800 |

| 151 | 2015 | 7 | pendrive | 18300 |

| 152 | 2015 | 8 | pendrive | 15670 |

| 153 | 2015 | 9 | pendrive | 12800 |

| 154 | 2015 | 10 | pendrive | 11900 |

| 155 | 2015 | 11 | pendrive | 12000 |

| 156 | 2015 | 12 | pendrive | 9010 |

| 157 | 2016 | 1 | pendrive | 13440 |

| 158 | 2016 | 2 | pendrive | 7040 |

| 159 | 2016 | 3 | pendrive | 16010 |

| 160 | 2016 | 4 | pendrive | 14500 |

| 161 | 2016 | 5 | pendrive | 12500 |

| 162 | 2016 | 6 | pendrive | 12920 |

| 163 | 2016 | 7 | pendrive | 11095 |

| 164 | 2016 | 8 | pendrive | 13080 |

| 165 | 2016 | 9 | pendrive | 12900 |

| 166 | 2016 | 10 | pendrive | 11200 |

| 167 | 2016 | 11 | pendrive | 12800 |

| 168 | 2016 | 12 | pendrive | 17800 |

| 169 | 2017 | 1 | pendrive | 19800 |

| 170 | 2017 | 2 | pendrive | 11900 |

| 171 | 2017 | 3 | pendrive | 9500 |

| 172 | 2017 | 4 | pendrive | 15000 |

| 173 | 2017 | 5 | pendrive | 17020 |

| 174 | 2017 | 6 | pendrive | 10220 |

| 175 | 2017 | 7 | pendrive | 11230 |

| 176 | 2017 | 8 | pendrive | 18050 |

| 177 | 2017 | 9 | pendrive | 12350 |

| 178 | 2017 | 10 | pendrive | 12350 |

| 179 | 2017 | 11 | pendrive | 10220 |

| 180 | 2017 | 12 | pendrive | 17620 |

| 181 | 2018 | 1 | pendrive | 16000 |

| 182 | 2018 | 2 | pendrive | 18720 |

| 183 | 2018 | 3 | pendrive | 12902 |

| 184 | 2018 | 4 | pendrive | 15020 |

| 185 | 2018 | 5 | pendrive | 17000 |

| 186 | 2018 | 6 | pendrive | 13900 |

| 187 | 2018 | 7 | pendrive | 12330 |

| 188 | 2018 | 8 | pendrive | 17800 |

| 189 | 2018 | 9 | pendrive | 15400 |

| 190 | 2018 | 10 | pendrive | 11200 |

| 191 | 2018 | 11 | pendrive | 11320 |

| 192 | 2018 | 12 | pendrive | 17320 |

| 193 | 2015 | 1 | RAM | 12210 |

| 194 | 2015 | 2 | RAM | 15000 |

| 195 | 2015 | 3 | RAM | 12900 |

| 196 | 2015 | 4 | RAM | 14390 |

| 197 | 2015 | 5 | RAM | 9390 |

| 198 | 2015 | 6 | RAM | 8990 |

| 199 | 2015 | 7 | RAM | 7820 |

| 200 | 2015 | 8 | RAM | 8010 |

| 201 | 2015 | 9 | RAM | 6980 |

| 202 | 2015 | 10 | RAM | 7677 |

| 203 | 2015 | 11 | RAM | 8090 |

| 204 | 2015 | 12 | RAM | 6700 |

| 217 | 2016 | 1 | RAM | 9700 |

| 218 | 2016 | 2 | RAM | 14700 |

| 219 | 2016 | 3 | RAM | 7900 |

| 220 | 2016 | 4 | RAM | 12000 |

| 221 | 2016 | 5 | RAM | 14050 |

| 222 | 2016 | 6 | RAM | 15600 |

| 223 | 2016 | 7 | RAM | 12600 |

| 224 | 2016 | 8 | RAM | 12800 |

| 225 | 2016 | 9 | RAM | 17890 |

| 226 | 2016 | 10 | RAM | 13490 |

| 227 | 2016 | 11 | RAM | 12335 |

| 228 | 2016 | 12 | RAM | 13500 |

| 229 | 2017 | 1 | RAM | 11800 |

| 230 | 2017 | 2 | RAM | 17300 |

| 231 | 2017 | 3 | RAM | 15690 |

| 232 | 2017 | 4 | RAM | 5700 |

| 233 | 2017 | 5 | RAM | 9080 |

| 234 | 2017 | 6 | RAM | 11800 |

| 235 | 2017 | 7 | RAM | 12380 |

| 236 | 2017 | 8 | RAM | 13220 |

| 237 | 2017 | 9 | RAM | 5320 |

| 238 | 2017 | 10 | RAM | 7000 |

| 239 | 2017 | 11 | RAM | 4890 |

| 240 | 2017 | 12 | RAM | 6600 |

| 241 | 2018 | 1 | RAM | 5600 |

| 242 | 2018 | 2 | RAM | 8090 |

| 243 | 2018 | 3 | RAM | 8690 |

| 244 | 2018 | 4 | RAM | 3400 |

| 245 | 2018 | 5 | RAM | 2720 |

| 246 | 2018 | 6 | RAM | 5069 |

| 247 | 2018 | 7 | RAM | 7870 |

| 248 | 2018 | 8 | RAM | 9800 |

| 249 | 2018 | 9 | RAM | 6500 |

| 250 | 2018 | 10 | RAM | 8800 |

| 251 | 2018 | 11 | RAM | 10900 |

| 252 | 2018 | 12 | RAM | 12890 |

+-----+------+-------+-----------+-----------+

240 rows in set (0.001 sec)

1. Slicing Operation:

MariaDB [dwm]> select \* from fact\_sales where product='pendrive';

+-----+------+-------+----------+-----------+

| id | year | month | product | sales\_qty |

+-----+------+-------+----------+-----------+

| 145 | 2015 | 1 | pendrive | 18700 |

| 146 | 2015 | 2 | pendrive | 12900 |

| 147 | 2015 | 3 | pendrive | 19920 |

| 148 | 2015 | 4 | pendrive | 10190 |

| 149 | 2015 | 5 | pendrive | 11900 |

| 150 | 2015 | 6 | pendrive | 11800 |

| 151 | 2015 | 7 | pendrive | 18300 |

| 152 | 2015 | 8 | pendrive | 15670 |

| 153 | 2015 | 9 | pendrive | 12800 |

| 154 | 2015 | 10 | pendrive | 11900 |

| 155 | 2015 | 11 | pendrive | 12000 |

| 156 | 2015 | 12 | pendrive | 9010 |

| 157 | 2016 | 1 | pendrive | 13440 |

| 158 | 2016 | 2 | pendrive | 7040 |

| 159 | 2016 | 3 | pendrive | 16010 |

| 160 | 2016 | 4 | pendrive | 14500 |

| 161 | 2016 | 5 | pendrive | 12500 |

| 162 | 2016 | 6 | pendrive | 12920 |

| 163 | 2016 | 7 | pendrive | 11095 |

| 164 | 2016 | 8 | pendrive | 13080 |

| 165 | 2016 | 9 | pendrive | 12900 |

| 166 | 2016 | 10 | pendrive | 11200 |

| 167 | 2016 | 11 | pendrive | 12800 |

| 168 | 2016 | 12 | pendrive | 17800 |

| 169 | 2017 | 1 | pendrive | 19800 |

| 170 | 2017 | 2 | pendrive | 11900 |

| 171 | 2017 | 3 | pendrive | 9500 |

| 172 | 2017 | 4 | pendrive | 15000 |

| 173 | 2017 | 5 | pendrive | 17020 |

| 174 | 2017 | 6 | pendrive | 10220 |

| 175 | 2017 | 7 | pendrive | 11230 |

| 176 | 2017 | 8 | pendrive | 18050 |

| 177 | 2017 | 9 | pendrive | 12350 |

| 178 | 2017 | 10 | pendrive | 12350 |

| 179 | 2017 | 11 | pendrive | 10220 |

| 180 | 2017 | 12 | pendrive | 17620 |

| 181 | 2018 | 1 | pendrive | 16000 |

| 182 | 2018 | 2 | pendrive | 18720 |

| 183 | 2018 | 3 | pendrive | 12902 |

| 184 | 2018 | 4 | pendrive | 15020 |

| 185 | 2018 | 5 | pendrive | 17000 |

| 186 | 2018 | 6 | pendrive | 13900 |

| 187 | 2018 | 7 | pendrive | 12330 |

| 188 | 2018 | 8 | pendrive | 17800 |

| 189 | 2018 | 9 | pendrive | 15400 |

| 190 | 2018 | 10 | pendrive | 11200 |

| 191 | 2018 | 11 | pendrive | 11320 |

| 192 | 2018 | 12 | pendrive | 17320 |

+-----+------+-------+----------+-----------+

48 rows in set (0.001 sec)

MariaDB [dwm]> select sum(sales\_qty) from fact\_sales where year=2015;

+----------------+

| sum(sales\_qty) |

+----------------+

| 570314 |

+----------------+

1 row in set (0.001 sec)

2. Dice Operation:

MariaDB [dwm]> select \* from fact\_sales where product='pendrive' and year='2015';

+-----+------+-------+----------+-----------+

| id | year | month | product | sales\_qty |

+-----+------+-------+----------+-----------+

| 145 | 2015 | 1 | pendrive | 18700 |

| 146 | 2015 | 2 | pendrive | 12900 |

| 147 | 2015 | 3 | pendrive | 19920 |

| 148 | 2015 | 4 | pendrive | 10190 |

| 149 | 2015 | 5 | pendrive | 11900 |

| 150 | 2015 | 6 | pendrive | 11800 |

| 151 | 2015 | 7 | pendrive | 18300 |

| 152 | 2015 | 8 | pendrive | 15670 |

| 153 | 2015 | 9 | pendrive | 12800 |

| 154 | 2015 | 10 | pendrive | 11900 |

| 155 | 2015 | 11 | pendrive | 12000 |

| 156 | 2015 | 12 | pendrive | 9010 |

+-----+------+-------+----------+-----------+

12 rows in set (0.001 sec)

3. Rollup Operation:

MariaDB [dwm]> select product, sum(sales\_qty) from fact\_sales group by product;

+-----------+----------------+

| product | sum(sales\_qty) |

+-----------+----------------+

| hard disk | 463922 |

| keyboard | 377417 |

| monitor | 351299 |

| pendrive | 664547 |

| RAM | 485831 |

+-----------+----------------+

5 rows in set (0.001 sec)

MariaDB [dwm]> select year, sum(sales\_qty) from fact\_sales group by year with rollup;

+------+----------------+

| year | sum(sales\_qty) |

+------+----------------+

| 2015 | 570314 |

| 2016 | 601258 |

| 2017 | 620672 |

| 2018 | 550772 |

| NULL | 2343016 |

+------+----------------+

5 rows in set (0.001 sec)

4. Pivot Operation:

MariaDB [dwm]> select product,sum(if(year=2015,sales\_qty,0))

-> as '2015',sum(if(year=2016,sales\_qty,0))

-> as '2016',sum(if(year=2017,sales\_qty,0))

-> as '2017',sum(if(year=2018,sales\_qty,0))

-> as '2018' from fact\_sales group by product;

+-----------+--------+--------+--------+--------+

| product | 2015 | 2016 | 2017 | 2018 |

+-----------+--------+--------+--------+--------+

| hard disk | 136860 | 107620 | 120884 | 98558 |

| keyboard | 79540 | 95690 | 114510 | 87677 |

| monitor | 70667 | 86098 | 99238 | 95296 |

| pendrive | 165090 | 155285 | 165260 | 178912 |

| RAM | 118157 | 156565 | 120780 | 90329 |

+-----------+--------+--------+--------+--------+

5 rows in set (0.001 sec)

5. Drilldown Operation:

MariaDB [dwm]> select year,sum(if(month=1,sales\_qty,0))

-> as 'JAN',sum(if(month=2,sales\_qty,0))

-> as 'FEB',sum(if(month=3,sales\_qty,0))

-> as 'MAR',sum(if(month=4,sales\_qty,0))

-> as 'APR',sum(if(month=5,sales\_qty,0))

-> as 'MAY',sum(if(month=6,sales\_qty,0))

-> as 'JUNE',sum(if(month=7,sales\_qty,0))

-> as 'JUL',sum(if(month=8,sales\_qty,0))

-> as 'AUG',sum(if(month=9,sales\_qty,0))

-> as 'SEP',sum(if(month=10,sales\_qty,0))

-> as 'OCT',sum(if(month=11,sales\_qty,0))

-> as 'NOV',sum(if(month=12,sales\_qty,0))

-> as 'DEC' from fact\_sales group by year;

+------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+

| year | JAN | FEB | MAR | APR | MAY | JUNE | JUL | AUG | SEP | OCT | NOV | DEC |

+------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+

| 2015 | 54149 | 48899 | 61000 | 34060 | 33850 | 43780 | 50390 | 51470 | 51540 | 46897 | 45699 | 48580 |

| 2016 | 34720 | 51850 | 39380 | 37900 | 57338 | 49306 | 56285 | 51030 | 50206 | 48668 | 66255 | 58320 |

| 2017 | 64082 | 61190 | 54840 | 45082 | 45040 | 48710 | 49890 | 55660 | 48270 | 50270 | 39258 | 58380 |

| 2018 | 40679 | 47398 | 42082 | 53030 | 40680 | 44108 | 44000 | 47660 | 41477 | 43490 | 47139 | 59029 |

+------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+-------+

4 rows in set (0.003 sec)