

Lab 7 – MySQL Wine Database

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Test Case #1: All red wines, with a rating score between 95 and 100, sorted by price:

```
ohlone@ron-VirtualBox: ~/cs116/lab7/template
ohlone@ron-VirtualBox:~/cs116/lab7/template$ ./winedb
-----
MADE BY GREGORY BRISEBOIS
With files provided by Ron Sha
CS116 OHLONE COLLEGE
-----
Welcome to the wine database frontend! Please enter desired ranges.
Enter minimum price: 0
Enter maximum price: 999
Enter minimum score: 95
Enter maximum score: 100
Enter minimum vintage: 2000
Enter maximum vintage: 2015

What wine types would you like? 0 = all; 1 = white; 2 = red: 2

How would you like to sort?
0 = by name only;
1 = by price, then name;
2 = by rating, then name;
3 = by vintage, then name;
4 = by type, then vintage: 1
-----
| Wine Name                               | Vintage | Rating | Price | Type |
|-----|-----|-----|-----|-----|
| Chateau Doisy-Vedrine Barsac           | 2011    | 95     | 35    | Red  |
| Bedrock The Bedrock Heritage           | 2012    | 95     | 42    | Red  |
| Chateau Guiraud Sauternes              | 2011    | 97     | 50    | Red  |
| Castello di Ama Chianti                | 2010    | 95     | 52    | Red  |
| Prats & Symington Douro Chryseia       | 2011    | 97     | 55    | Red  |
| St.-Cosme Chateauneuf-du-Pape          | 2010    | 96     | 59    | Red  |
| Massolino Barolo                       | 2009    | 95     | 60    | Red  |
| Mount Eden Chardonnay Santa Cruz       | 2011    | 95     | 60    | Red  |
| Soter Pinot Noir Yamhill-Carlton        | 2012    | 95     | 60    | Red  |
| Two Hands Shiraz Barossa Garden         | 2012    | 95     | 69    | Red  |
| Mollydooker Shiraz Carnival of Love     | 2012    | 95     | 75    | Red  |
| Quinta do Vale Meao Douro              | 2011    | 97     | 76    | Red  |
| Dow Vintage Port                       | 2011    | 99     | 82    | Red  |
| Leeuwin Chardonnay River Art Series     | 2011    | 96     | 89    | Red  |
| Peter Michael Chardonnay                | 2012    | 95     | 90    | Red  |
| Fonseca Vintage Port                   | 2011    | 98     | 116   | Red  |
| Fontodi Colli della                    | 2011    | 95     | 120   | Red  |
| Concha y Toro Cabernet Sauvignon        | 2010    | 95     | 125   | Red  |
| Clos des Papes Chateauneuf-du-Pape     | 2012    | 97     | 135   | Red  |
| Chateau Leoville Las Cases St.-Julien   | 2011    | 95     | 165   | Red  |
|-----|-----|-----|-----|-----|
ohlone@ron-VirtualBox:~/cs116/lab7/template$
```

Test Case #2: All types, with a rating between 95 and 99, and a price between 20 and 60, sorted by rating:

```
ohlone@ron-VirtualBox: ~/cs116/lab7/template
ohlone@ron-VirtualBox:~/cs116/lab7/template$ ./winedb
-----
MADE BY GREGORY BRISEBOIS
With files provided by Ron Sha
CS116 OHLONE COLLEGE
-----
Welcome to the wine database frontend! Please enter desired ranges.
Enter minimum price: 20
Enter maximum price: 60
Enter minimum score: 95
Enter maximum score: 99
Enter minimum vintage: 2000
Enter maximum vintage: 2015

What wine types would you like? 0 = all; 1 = white; 2 = red: 0

How would you like to sort?
0 = by name only;
1 = by price, then name;
2 = by rating, then name;
3 = by vintage, then name;
4 = by type, then vintage: 2
|-----|
| Wine Name          | Vintage | Rating | Price | Type |
| Chateau Guiraud Sauternes | 2011    | 97     | 50    | Red  |
| Prats & Symington Douro Chryseia | 2011    | 97     | 55    | Red  |
| St.-Cosme Chateauneuf-du-Pape | 2010    | 96     | 59    | Red  |
| Bedrock The Bedrock Heritage | 2012    | 95     | 42    | Red  |
| Castello di Ama Chianti | 2010    | 95     | 52    | Red  |
| Chateau Doisy-Vedrines Barsac | 2011    | 95     | 35    | Red  |
| Massolino Barolo | 2009    | 95     | 60    | Red  |
| Mount Eden Chardonnay Santa Cruz | 2011    | 95     | 60    | Red  |
| Soter Pinot Noir Yamhill-Carlton | 2012    | 95     | 60    | Red  |
|-----|
ohlone@ron-VirtualBox:~/cs116/lab7/template$
```

Test Case #3: All types, sorted by type and vintage (the list was too long to fit on one page, but on the next page you can see where the list goes from red to white):

```
ohlone@ron-VirtualBox: ~/cs116/lab7/template
ohlone@ron-VirtualBox:~/cs116/lab7/template$ ./winedb
-----
MADE BY GREGORY BRISEBOIS
With files provided by Ron Sha
CS116 OHLONE COLLEGE
-----
Welcome to the wine database frontend! Please enter desired ranges.
Enter minimum price: 0
Enter maximum price: 999
Enter minimum score: 0
Enter maximum score: 100
Enter minimum vintage: 2000
Enter maximum vintage: 2015

What wine types would you like? 0 = all; 1 = white; 2 = red: 0

How would you like to sort?
0 = by name only;
1 = by price, then name;
2 = by rating, then name;
3 = by vintage, then name;
4 = by type, then vintage: 4
-----
| Wine Name                                | Vintage | Rating | Price | Type |
|-----|-----|-----|-----|-----|
| Massolino Barolo                        | 2009    | 95     | 60    | Red  |
| Bodegas Fournier Malbec                 | 2010    | 94     | 54    | Red  |
| Castello di Ama Chianti                | 2010    | 95     | 52    | Red  |
| Castello di Volpaia Chianti            | 2010    | 93     | 29    | Red  |
| Concha y Toro Cabernet Sauvignon       | 2010    | 95     | 125   | Red  |
| St.-Cosme Chateauneuf-du-Pape          | 2010    | 96     | 59    | Red  |
| Chateau de Beaucastel Chateauneuf-du-Pape | 2011    | 94     | 97    | Red  |
| Chateau Doisy-Vedrine Barsac           | 2011    | 95     | 35    | Red  |
| Chateau Guiraud Sauternes              | 2011    | 97     | 50    | Red  |
| Chateau Leoville Las Cases St.-Julien  | 2011    | 95     | 165   | Red  |
| Dow Vintage Port                       | 2011    | 99     | 82    | Red  |
| Emeritus Pinot Noir Russian River      | 2011    | 93     | 42    | Red  |
| Firriato Sicilia Santagostino          | 2011    | 91     | 23    | Red  |
| Fonseca Vintage Port                   | 2011    | 98     | 116   | Red  |
| Fontodi Colli della                    | 2011    | 95     | 120   | Red  |
| Leeuwin Chardonnay River Art Series    | 2011    | 96     | 89    | Red  |
| Mount Eden Chardonnay Santa Cruz       | 2011    | 95     | 60    | Red  |
| Podere Sapaio Bolgheri Volpolo         | 2011    | 93     | 35    | Red  |
| Prats & Symington Douro Chryseia      | 2011    | 97     | 55    | Red  |
| Quinta do Portal Douro Colheita        | 2011    | 92     | 15    | Red  |
| Quinta do Vale Meao Douro              | 2011    | 97     | 76    | Red  |
| Bedrock The Bedrock Heritage           | 2012    | 95     | 42    | Red  |
| Brewer-Clifton Pinot Noir Rita Hills   | 2012    | 94     | 40    | Red  |
| Clos des Papes Chateauneuf-du-Pape     | 2012    | 97     | 135   | Red  |
|-----|-----|-----|-----|-----|
```

Test Case #3 Continued:

ohlone@ron-VirtualBox: ~/cs116/lab7/template				
Chateau Doisy-Vedrine Barsac	2011	95	35	Red
Chateau Guiraud Sauternes	2011	97	50	Red
Chateau Leoville Las Cases St.-Julien	2011	95	165	Red
Dow Vintage Port	2011	99	82	Red
Emeritus Pinot Noir Russian River	2011	93	42	Red
Firriato Sicilia Santagostino	2011	91	23	Red
Fonseca Vintage Port	2011	98	116	Red
Fontodi Colli della	2011	95	120	Red
Leeuwin Chardonnay River Art Series	2011	96	89	Red
Mount Eden Chardonnay Santa Cruz	2011	95	60	Red
Podere Sapaio Bolgheri Volpolo	2011	93	35	Red
Prats & Symington Douro Chryseia	2011	97	55	Red
Quinta do Portal Douro Colheita	2011	92	15	Red
Quinta do Vale Meao Douro	2011	97	76	Red
Bedrock The Bedrock Heritage	2012	95	42	Red
Brewer-Clifton Pinot Noir Rita Hills	2012	94	40	Red
Clos des Papes Chateauf-neuf-du-Pape	2012	97	135	Red
Hamilton Russell Pinot Noir	2012	93	46	Red
Luca Malbec Uco Valley	2012	93	32	Red
Mollydooker Shiraz Carnival of Love	2012	95	75	Red
Peter Michael Chardonnay	2012	95	90	Red
Soter Pinot Noir Yamhill-Carlton	2012	95	60	Red
Two Hands Shiraz Barossa Garden	2012	95	69	Red
Bodegas Marques de Murrieta Castillo	2005	94	89	White
La Rioja Alta Rioja Vina Ardanza Reserva	2005	92	30	White
Disznoko Tokaji Aszu 5 Puttonyos	2006	94	49	White
Hidden Ridge Cabernet Sauvignon	2009	93	45	White
Marcassin Pinot Noir Sonoma Marcassin	2009	97	125	White
Abadia Retuerta Vino Duero	2010	92	35	White
Bodegas Montecillo Rioja Vina	2010	90	10	White
Domaine de Triennes Vin de Pays du	2010	90	20	White
E. Guigal Cote-Rotie Chateau d'Ampuis	2010	97	206	White
Feudo di Santa Croce Primitivo di	2010	91	22	White
Giuseppe Cortese Barbaresco Rabaja	2010	94	55	White
Giuseppe Rinaldi Barolo Brunate	2010	97	129	White
Godella Mencia Bierzo	2010	92	21	White
Lapostolle Clos Apalta	2010	94	89	White
Marques de Grinon Cabernet Sauvignon	2010	93	40	White
Masciarelli Montepulciano d'Abruzzo	2010	91	25	White
Nino Negri Valtellina Superiore Quadrio	2010	90	20	White
Oddero Barolo	2010	93	49	White
Pali Wine Co. Pinot Noir Santa Barbara	2010	90	23	White
TwentyFour Cabernet Sauvignon Napa Valley	2010	93	112	White
Vecchia Cantina di Montepulciano Vino	2010	90	15	White
Amavi Cabernet Sauvignon Walla Valley	2011	92	29	White
Antonio Barbadillo Manzanilla Sanlucar	2011	90	15	White
Carol Shelton Zinfandel Mendocino County	2011	90	19	White
Chateau Lamartine Cahors	2011	90	19	White

Test Case #4: Invalid inputs. For each data type, a number outside the bounds is entered, but the program rejects it. In the last example a non-numeric string is attempted.

```
ohlone@ron-VirtualBox: ~/cs116/lab7/template
ohlone@ron-VirtualBox:~/cs116/lab7/template$ ./winedb
-----
MADE BY GREGORY BRISEBOIS
With files provided by Ron Sha
CS116 OHLONE COLLEGE
-----
Welcome to the wine database frontend! Please enter desired ranges.
Enter minimum price: -1
Entered value must be between 0 and 9999, please try again.
Enter minimum price: 0
Enter maximum price: 10000
Entered value must be between 0 and 9999, please try again.
Enter maximum price: 9999
Enter minimum score: -1
Entered value must be between 0 and 100, please try again.
Enter minimum score: 0
Enter maximum score: 101
Entered value must be between 0 and 100, please try again.
Enter maximum score: 100
Enter minimum vintage: 1899
Entered value must be between 1900 and 2015, please try again.
Enter minimum vintage: 1900
Enter maximum vintage: 2016
Entered value must be between 1900 and 2015, please try again.
Enter maximum vintage: 2015

What wine types would you like? 0 = all; 1 = white; 2 = red: 3
Entered value must be between 0 and 2, please try again.

What wine types would you like? 0 = all; 1 = white; 2 = red: 2

How would you like to sort?
0 = by name only;
1 = by price, then name;
2 = by rating, then name;
3 = by vintage, then name;
4 = by type, then vintage: 5
Entered value must be between 0 and 4, please try again.

How would you like to sort?
0 = by name only;
1 = by price, then name;
2 = by rating, then name;
3 = by vintage, then name;
4 = by type, then vintage: not_a_number!!*(#@$%
Entered value must be a number, please try again.

How would you like to sort?
0 = by name only;
1 = by price, then name;
2 = by rating, then name;
```

Source Code

winedb.cpp

```
// Created by Gregory Brisebois with content from Ron Q. Sha

#include <mysql.h>
#include <stdio.h>
#include <stdlib.h>
#include <iostream>
#include <iomanip>
#include "dbconnect.h"
#include <string>
#include <cstring>
#include <sstream>

// We use a custom namespace to fix our to_string function
namespace patch
{
    template < typename T > std::string to_string( const T& n )
    {
        std::ostringstream stm ;
        stm << n ;
        return stm.str() ;
    }
}

using namespace patch;

// Course requirement - prints my own name on the console
void printMyName()
{
    cout << "-----" << endl;
    cout << "MADE BY GREGORY BRISEBOIS" << endl;
    cout << "With files provided by Ron Sha" << endl;
    cout << "CS116 OHLONE COLLEGE" << endl;
    cout << "-----" << endl;
}

// Checks if a value is within two other values
// @return - true if it is
bool inRange(int value, int min, int max)
{
    return value >= min && value <= max;
}

// Prompts the user for an input and rejects it if it is not valid
// @param prompt - custom string to use for prompt
// @param min - min acceptable value
// @param max - max acceptable value
// @return - the inputted value
int getValidIntInput(string prompt = "Enter value: ", int min = 0, int max = 0)
{
    // To hold the input
    int input = -1;

    // Used to track if the input is valid
    bool inputOkay = true;

    // Loop until the user gives us a good value
    do
    {
        inputOkay = true;
```

```

        cout << prompt;
        cin >> input;

        // Handle if input was non numeric
        if(!cin)
        {
            cout << "Entered value must be a number, please try again." << endl;
            inputOkay = false;
            cin.clear();
            cin.ignore(1000, '\n');
        }

        // Handle if input was out of range
        else if(!inRange(input, min, max))
        {
            cout << "Entered value must be between " << min << " and " << max << ",
please try again." << endl;
            inputOkay = false;
        }
    }
    while(!inputOkay);

    return input;
}

// Returns the mySQL code from the user's entered int
// @param sortInt - user entered choice
// @return - string of SQL
string getSortFromInt(int sortInt)
{
    switch(sortInt)
    {
        case 0:
            return "order by winename";
            break;

        case 1:
            return "order by price";
            break;

        case 2:
            return "order by rating desc";
            break;

        case 3:
            return "order by vintage";
            break;

        case 4:
            return "order by wineType, vintage";
            break;
    }
}

// Returns the mySQL code from the user's entered int
// @param sortInt - user entered choice
// @return - string of SQL
string getTypeFromInt(int typeInt)
{
    switch(typeInt)
    {
        case 0:
            return "";
            break;
    }
}

```



```

        case 1:
            return " and wineType = 'White'";
            break;

        case 2:
            return " and wineType = 'Red'";
            break;
    }
}

// Prompts the user for range and sort choices, and assembles a
// matching mySQL statement.
// @return - the SQL statement in string form.
string getSqlStatement()
{
    cout << "Welcome to the wine database frontend! Please enter desired ranges." <<
endl;

    int priceMin = getValidIntInput("Enter minimum price: ", 0, 9999);
    int priceMax = getValidIntInput("Enter maximum price: ", priceMin, 9999);

    int scoreMin = getValidIntInput("Enter minimum score: ", 0, 100);
    int scoreMax = getValidIntInput("Enter maximum score: ", scoreMin, 100);

    int yearMin = getValidIntInput("Enter minimum vintage: ", 1900, 2015);
    int yearMax = getValidIntInput("Enter maximum vintage: ", yearMin, 2015);

    string wineType = getTypeFromInt( getValidIntInput("\nWhat wine types would you like?
0 = all; 1 = white; 2 = red: ", 0, 2) );

    string sortType = getSortFromInt( getValidIntInput("\nHow would you like to sort?\n0
= by name only;\n1 = by price, then name;\n2 = by rating, then name;\n3 = by vintage, then
name;\n4 = by type, then vintage: ", 0, 4) );

    string statement = "select * from wineInfo where price >= " + to_string(priceMin) + "
and price <= " + to_string(priceMax) +
                                                                " and rating
>= " + to_string(scoreMin) + " and rating <= " + to_string(scoreMax) +
                                                                " and vintage
>= " + to_string(yearMin) + " and vintage <= " + to_string(yearMax) +
                                                                wineType + "
" + sortType + ", winename;";

    return statement;
}

int main()
{
    printMyName(); // Course requirement

    int wideColumn = 50; // column width for names
    int shortColumn = 10; // column width for non-names

    // Make a bar to use for the ends (formatting)
    string bar = "|";
    bar.append(shortColumn * 4 + wideColumn + 2, '-');
    bar.append("|");

    MYSQL *conn; // the connection
    MYSQL_RES *res; // the results
    MYSQL_ROW row; // the results row (line by line)

    struct connection_details mySQLD;

```



```

mysqlD.server = (char *)"localhost";    // where the mysql database is
mysqlD.user = (char *)"root";           // the root user of mysql
mysqlD.password = (char *)"password";   // the password of the root user in mysql
mysqlD.database = (char *)"mysql";      // the database to pick

// connect to the mysql database
conn = mysql_connection_setup(mysqlD);

// open our database
res = mysql_perform_query(conn, (char *)"use wine");

// Get the needed query in the form of a string
string statement = getSqlStatement();

// format our query string
string argString = statement;
char *myArg = new char[argString.length() + 1];
strcpy(myArg, argString.c_str());

// perform our query string
res = mysql_perform_query(conn, myArg);

delete [] myArg;

// Printing out the header
cout << bar << endl;
cout << "|" << setw(wideColumn)
    << left << "Wine Name"
    << setw(shortColumn)
    << "Vintage" << setw(shortColumn)
    << "Rating" << setw(shortColumn)
    << "Price" << setw(shortColumn)
    << "Type" << " |" << endl;

// Iterate through each row of data and print it
while ((row = mysql_fetch_row(res)) != NULL)
{
    cout << "|" << setw(wideColumn) << left << row[0]    // coulumn (field)
#1 - Wine Name
    << setw(shortColumn) << row[1] // field #2 - Vintage
    << setw(shortColumn) << row[2] // field #3 - Rating
    << setw(shortColumn) << row[3] // field #4 - Price
    << setw(shortColumn) << row[4] // field #5 - Wine type
    << " |" << endl;
}

// Close the bottom with another horizontal bar
cout << bar << endl;

/* clean up the database result set */
mysql_free_result(res);
/* clean up the database link */
mysql_close(conn);

return 0;
}

```